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Parent Difficulties in Emotion Regulation: Associations with Parent Emotion Socialization and Child Emotion Regulation

THESIS

submitted in partial satisfaction of the requirements for the degree of

MASTER OF ARTS

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by

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ABSTRACT OF THE THESIS

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By

Jocelyn Lai

Master of Arts in Social Ecology

University of California, Irvine, 2020

Associate Professor Jessica L. Borelli, Chair

Parent emotion socialization behaviors (i.e., parents' emotion expressions, responsiveness to, and regulation of their children's emotions) are associated with children's regulation of their own emotions. The link between socialization behaviors and child emotion regulation may have developmental implications, as children who exhibit greater difficulties regulating emotions also have worse social and mental health outcomes concurrently and predictively. Despite the vast body of research on parent emotion socialization, few studies have examined whether a mother's own regulation of emotions is associated with emotion socialization or toddler emotion regulation (16-24 months). Our study examined the association of self-reported and physiological indices of mothers' emotion regulation (ER) with self-reported parenting styles and child ER as observed in a behavioral task meant to elicit negative affect in the child (N = 153). Findings show mothers' self-reported ER difficulties was positively associated with more negative parenting attitudes and conditional regard (e.g., restricting parental affection based on expectations towards child's displays of anger and good behavior). Physiological indices of mothers' ER were associated with parenting sensitivity. However, both self-reported and physiological indices of mothers' ER difficulties were not associated with child distress or

emotion regulatory behaviors. Mothers' conditional regard toward child behavior and anger were associated with greater displays of child aggression. There may be unique differences in how subjective and objective indices of maternal ER are linked to parenting behaviors. Implications and limitations of these findings are discussed.

Keywords: Parent emotion socialization, maternal emotion regulation, child emotion regulation, emotion development

INTRODUCTION

Researchers have expanded beyond examining these individual difference factors to investigate contextual factors such as environmental and parental differences that may also be relevant to children's expression and regulation of emotion (Buss et al., 2019). The role of parent-child interactions, specifically the ways in which parents' feelings, behaviors, and responses towards their children's emotions may be associated with children's socio-emotional competency, has been a focus of particular interest (Eisenberg et al., 1998; Morris et al., 2017; Thompson, 1994; 2014). The ways in which parents directly or indirectly teach their children how to engage with their emotions is referred to as *parent emotion-socialization*. Parents' sensitivity, labeling, and reaction to their children's emotions can also be related to how children learn to respond to their own emotions through their parents (Kopp, 1989; Thompson, 1990). For example, parental display of positive emotion is associated with more expression of positive emotion in their children (Denham, 1997). Indeed, the parent role in the development of emotion in children is important and may have relevant links to child social functioning and psychopathology later in life. Despite the supporting literature regarding parent emotion socialization, few studies have explored how parents' ability to regulate their own emotions may relate to parent emotion socializing attitudes and behaviors, and their children's ability to regulate their own emotions. Furthermore, there is a lack of understanding whether there is measurement coherence (i.e., subjective and objective assessments) in how parent emotion regulation may relate to child emotion regulation. A majority of parent-child studies focus on mothers as a primary caregiver; thus, the aim of this study is to expand on the current literature to understand (1) how mothers' own emotion regulation difficulties may be associated with how they socialize their children's emotions and with their children's emotion regulation, and (2)

explore measurement coherence between self-report and physiological measures of mothers' emotion regulation.

Emotion Development and Regulation in Children

Emotions during infancy are used as expressive cues to communicate with their caregiver. Through these exchanges of emotion expression, such as crying out in hunger to attract attention from their caregiver, infants learn the contexts in which expressions will support goal-attainment (Tronick, 1989). By 6-months and through their first year, infants begin to develop an awareness of the ways in which their emotion expressions elicit responses from others, and are increasingly able to differentially engage with their caregivers (i.e., responsive or unresponsive parents) to have their needs met (Tronick & Beeghly, 2011). Emotion regulation (ER) refers to the conscious or unconscious altering of emotional experiences or expression, often based on one's preference or goals. Regulating emotions can be an effort to change, reduce, or increase the emotion experienced to modulate its trajectory (Gross, 1998; Gyurak et al., 2011; Thompson, 1994). The developmental literature places an emphasis on distinguishing between two different ER processes in childhood. Caregivers regulate their child's emotions (external), which involves different processes than a child engaging in self-regulatory behaviors (internal; Eisenberg et al., 2010). These external and internal ER processes change in frequency over time.

Initially, children rely on their caregivers and others to regulate their emotions (e.g., when a mother feeds or soothes her crying child); with age, they learn to self-regulate their emotions, taking initiative in seeking caregivers or adjusting their attention towards varying stimuli (Eisenberg & Morris, 2002). Researchers report that toddlers refine their understanding of emotion and self-regulated emotion skills in the 24-to-36-month period as they further develop their cognitive and language skills (Bridges & Grolnick, 1995; Kopp, 1989; Kopp &

Neufeld, 2003). For example, one study showed that infants at 12-months and 18-months used more self-regulating emotion strategies (i.e., self-soothing or distracting behaviors) than at 6-months of age (Mangelsdorf et al., 1995). By the preschool years, children begin to utilize more problem-solving and coping-related strategies to regulate emotions (Eisenberg & Morris, 2002). In summary, prior literature provides evidence for initial emotion regulatory behaviors as early as toddlers between the ages of 12-18 months old.

Effortful control is an aspect of self-regulation exhibited through varying temperamental traits, including soothability, abilities to both inhibit or initiate behavior as necessary, and to shift and focus attention (Rothbart & Bates, 2007). A child's abilities to self-regulate behavior can be applied to child emotion and emotion regulation. Studies have shown that with age, children are more able to engage in effortful control (Kochanska et al., 2000). Given that effortful control is viewed as a temperament trait of ER, it appears to be stable over time (Kochanska et al., 2000; Spinrad et al., 2007). A child's effortful control is thus relevant to later abilities or difficulties in self-related emotion regulatory behaviors. Child *effortful control* and ER is often measured as parental-report or with teacher and self-report ratings among older children as there may be challenges in using physiological measures with toddlers. Few researchers have used behavioral indices to assess child effortful control (Eisenberg et al., 1999; 2005; Silk et al., 2006), which may also offer a less subjective way to measure child ER. Those that have used behavioral assessments, however, did not specifically examine associations with parents' own ER, and thus additional research is needed to understand how parental ER may relate to children's behavioral expressions of ER.

ER difficulties is an overarching term that includes the inability to regulate emotion, exhibition of extreme emotions, or expression of emotions that are inappropriate for the given

context (Gratz & Roemer, 2004). ER difficulties in toddlers make take on the form of behaviors such as severe tantrums (e.g., screaming, crying, kicking, throwing), distancing and isolation, anxiety, or stubbornness. ER difficulties is associated with forms of psychopathology and symptomatology in children (Compas et al., 2017; Southam-Gerow & Kendall, 2002). Greater levels of child anxiety, depression, and externalizing behaviors are linked to their engagement in more maladaptive regulation (i.e., disengagement or rumination) and less use of adaptive ER (Betts et al., 2009; Hughes et al., 2010; Silk et al., 2003; Thompson, 2001). Though seemingly bi-directional in their association, it is important to consider potential mechanisms for how difficulties in ER and psychopathology occur in order to support healthy child development.

Because many forms of psychopathology are associated with dysregulation of emotion, it is important to consider the factors relevant to emotion difficulties in children. Recent findings have argued that the ability to flexibly apply a variety (more diverse array) of different ER strategies is associated with beneficial outcomes within individuals (Aldao et al., 2015). These findings support the idea that the ability to regulate and respond to emotions in different contexts could be beneficial, and aligns with Eisenberg and colleagues' proposal (1998) that what is considered adaptive socialization of emotion and behaviors from the parent toward the child depends on the context in which the emotion and behavior would be most desirable. Thus, the role of parents and their socialization of emotion in their children may be crucial for development of flexible ER skills among children.

Links Between Parent Emotion Socialization & Child ER

A review conducted by Bariola and colleagues (2011) on parents' emotion socialization indicated that parenting styles, parent expression of emotion, responses to children's emotion, and parental regulation of child emotion all play a role in how children develop ER skills. It has

been further suggested that through social referencing, the observation and modeling of behaviors to adopt as one's own, children will model their own regulation of emotion based upon their parents (Thompson, 1994). Morris and colleagues (2007) proposed a tripartite model of parent emotion socialization factors related to child ER, consisting of (1) observational learning, modeling, social referencing of parent behaviors, (2) parental practices (i.e., emotion coaching, response to child's emotions), (3) family emotional climate, parenting style, attachment relationship (e.g., family display rules of emotion, marital conflict, etc.). An abundance of literature on parent emotion socialization and child ER have provided support of the tripartite model. Greater *parenting sensitivity* and maternal warmth has been linked to child self-regulatory behaviors (Eisenberg, et al., 2005) Furthermore, negative responses to child's negative emotions and punitive parenting have been associated with worse regulation in children (Eisenberg et al., 1999; Morris et al., 2007). Parent beliefs about emotion may also be associated with their children's experiences of emotions. If a parent believes that certain negative emotional states are bad and are to be avoided, they may encourage their own children to similarly devalue those negative states. Alternatively, parents who believe that these negative emotions have functional purposes and should be explored may educate their children to express them in context-appropriate ways (Gottman et al., 1997). Although parent expressions and responses to their child's emotions are commonly examined parent emotion socialization behaviors, other aspects of parenting styles and attitudes may be linked to adaptive child ER.

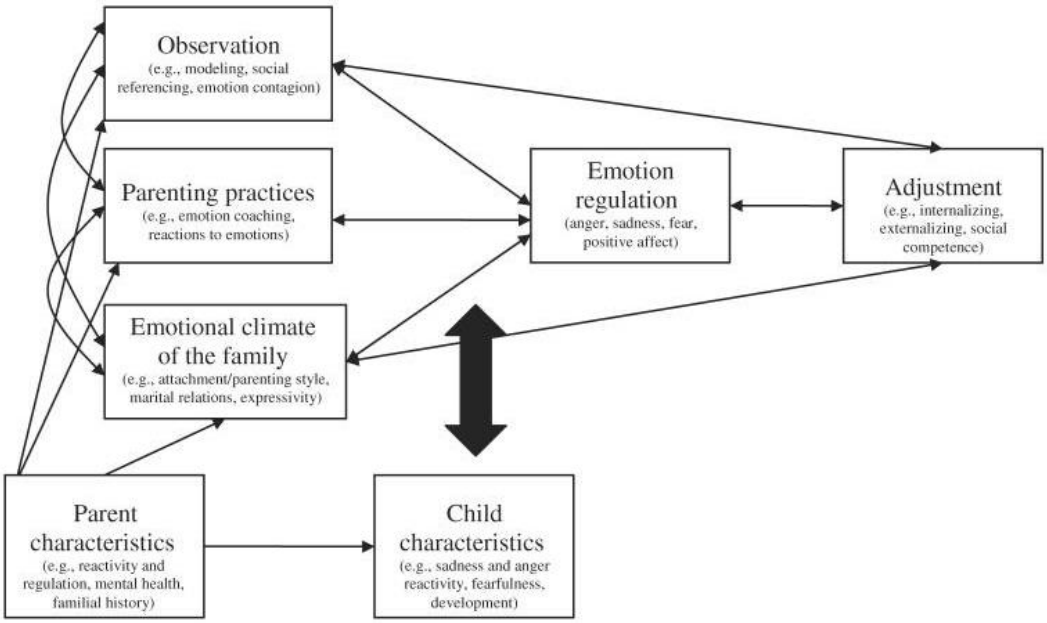

Figure 1. Morris tripartite model of parent and family factors that are related to child emotion regulation (Morris et al., 2007)

Parents' conditional regard is the withholding (*parent conditional negative regard; PCNR*) or display (*parent conditional positive regard; PCPR*) of affection based on whether their children meet desired behaviors or expectations (Assor et al., 2004). Among kindergarten-aged children and high school adolescents, parental conditional regard is associated with worse emotional skills (Roth & Assor, 2010) and greater regulation difficulties (Roth et al., 2009). These findings reflect the importance of parents' approval or disapproval of their child's emotions and behaviors as it may relate to their children's capacity to regulate emotions. Although there is limited data assessing this among toddlers, the associations between conditional regard and child ER may be prevalent and extend to this age range, as toddlers start to comprehend expressive and emotion cues from their caregiver as ways to ensure that their needs are met. Further studies are necessary to address this gap.

In addition to conditional regard, parents' own *attitudes* or *satisfaction* in parenting may influence how they engage in socialization behaviors with their child. For example, parents with greater negative attitudes (i.e., viewing child as a hassle or more like others) towards their child

or who have less satisfaction in their parenting may be more dismissive or less persistent in responding to their child's emotions. Thus, a parent's many emotion socialization behaviors may be important to the adaptive socialization of emotion in children, which is linked to a variety of child outcomes. Comprehension, expression, and regulation of emotions are all important components that define the socialization of emotion in children. Adaptive socialization of emotions involves not only being able to comprehend the emotions of oneself and others, but also expressing and regulating emotions in line with the social and cultural context (Eisenberg et al., 1998; Saarni, 2000; Thompson, 2014). These aspects of parent emotion socialization have a wide range of beneficial outcomes relating to socioemotional functioning. At-risk, low-income, elementary school-aged children who have greater emotional knowledge and behavioral control were reported by parents and teachers to adjust better in social settings and exhibit lower internalizing behaviors such as depression and anxiety (Schultz et al., 2001); emotional knowledge was also associated with academic competence (Izard et al., 2011). In addition, children with more ER skills tend to have fewer behavioral problems and better relationships with the teachers among kindergarten-aged children (Graziano et al., 2007). Based on these findings, children's adaptive emotion socialization (e.g., emotion knowledge and control) and capacity to regulate emotion may be factors that mediates parent socialization of emotion with children's adaptive social functioning (Eisenberg et al., 1998). Despite both theoretical and empirical support for the association between parent emotion socialization and child emotion and ER, there is limited knowledge on whether parent ER relates to parenting attitudes and behaviors. Additionally, few studies have explored how parent ER relates to parental conditional regard. Thus, while a parent's many emotion socialization behaviors may be important to the adaptive socialization of emotion in children, parents' *own* ER too, could be a factor in both

parents' engagement in emotion socialization behaviors and child ER. Thus, one of the goals of this current study is to examine links between parents' own ER and parent emotion socialization behaviors.

Links Between Parent ER and Child ER

Parent ER is an aspect of parenting practices that refers to the ways in which parents try to help regulate their children's emotions (Bariola et al., 2011; Rutherford et al., 2015); it is also sometimes referred to as emotion coaching. With age, children may engage in more self-regulating strategies, and parents in turn may be less directive in regulating their children's emotions. A parent may offer rewards as a form of distraction or provide their child with comfort or alternative ways to think about a situation. One study that used a disappointment task in the lab found that mothers' use of attentional refocusing and reappraisal to help regulate their child's emotions was associated with lowered anger and sadness intensity post-task within children ages 4 to 6 years old (Morris et al., 2011). There is also evidence of correlation between ER strategies parents use to help their children regulate and the actual use of these strategies by their children (Stansbury & Sigman, 2000). While parent ER or coaching as a parent emotion socialization behavior is linked with child ER, a parents' *own* way of regulating their emotions may be relevant to their parental emotion socialization behaviors.

In addition to the three key factors of parent emotion socialization in the tripartite model, the model includes parent characteristics, such as parents' own values, responses, and methods for regulating their own emotions. For example, one study by Silk and colleagues (2006) reported that children ages 4-7 with depressed mothers were more likely to engage in passive regulatory behaviors and engage in less attentional shifting than children with non-depressed mothers. A child may observe the way their parents emotionally react and regulate as ways to

respond similarly in future events. This may include parents' regulation of emotion when interacting with their child (via modeling) or even when children observe their parents amid family conflict. Alternatively, this could also reflect child observation of their parents' poor regulation from work stress that bleeds into the home environment, or when parents display difficulties regulating even in moments as small as grocery shopping and errands. However, few studies have particularly examined how parents' *own* regulation of emotion may relate to parent emotion socialization and child regulation (Bariola et al., 2011). Parents' own capacity or difficulty in regulating their own emotions may prevent them from engaging in adaptive parenting behaviors relevant to emotion socialization in children (Rutherford et al., 2015). For example, difficulties in regulating emotion may be linked to differences in parents' expression of positive or negative affect, or inappropriate responses to child emotion and behaviors. In addition, these difficulties may also be associated with worsened abilities to regulate their own child's emotions, and thus relating to difficulties in the child's ability to regulate emotions. Parents' own ER or lack thereof could be a crucial initial factor in how children learn to respond and regulate their emotions.

Given that *effortful control* is viewed as a temperamental characteristic of ER that is stable over time, both parent and child ER are likely to involve a complex system involving genes, environmental contexts, and their interaction. Across the literature, ER ability is associated with systemic factors including discrimination (Gill & Matheson, 2006), work and family environment (Repetti et al., 2009), and socioeconomic status (Côté et al., 2010). Just as there is support in the literature finding links between parenting characteristics and child socioemotional functioning when examining genes and parenting behaviors (Kochanska et al., 2009), parent emotion socialization and its interaction with genes and the environment may also

likely be relevant to aspects of both parent and child ER. Notwithstanding, a majority of the literature has focused on how parent ER and parent emotion socialization are directly associated with child ER irrespective of genetic factors. Though findings appear supportive, the relations remain unclear and further studies are necessary to better understand this aspect of child ER.

From the few studies of parents' own ER, there have been variations in the method, measurement, age of children, and results relating parent ER to child ER. In the studies examining parental use of different *types* of ER strategies, one study reported that less maternal suppression but not reappraisal in a vignette-interview paradigm was associated with greater child (7-9 years old) ER, as indicated by teacher's reporting using the ER checklist (Rogers et al., 2016). Another study found that greater maternal but not paternal self-reported suppression was associated with more frequent self-reported suppression in youth ages 9 to 19 years of age (Bariola et al., 2012). Using both self-report and physiological measurements of emotion and physiological regulation, Shih and colleagues found that greater parental resting respiratory sinus-arrhythmia and self-reported use of reappraisal along with encouraged use of reappraisal in their child (ages 3-7 years of age) in a disappointment lab task was associated with children's own physiological reactivity but not reduced emotional expression (Shih et al., 2018). Other studies have focused on parent ER difficulties. One study recruiting mothers varying in severity for borderline personality disorder indicated that mothers' self-reported ER difficulties was associated with greater child (36-60 months old) expression of sadness in an anger-eliciting task, which from a functional view of emotion, may reflect dysregulation in the form of emotion expression in the wrong context (Binion & Zalewski, 2018). Another study incorporated both self-report and behavioral measures of ER, involving a discussion task between the child (8-11 years old) and their mother (Morelen et al., 2016). Mothers completed a self-report measure of

their own ER difficulties and their child's regulation, and children completed self-reports of their own ER difficulties. Maternal self-reported ER difficulties was associated with greater maternal reported child ER difficulties, but observer coded adaptive maternal ER was only marginally associated with child self-reported ER. Maternal self-reported ER difficulties was also associated with non-supportive parenting behaviors (e.g., punitive responses, dismissal or minimization of child distress), however when considering demographic variables, all the findings were marginal. Additionally, the authors reported that unsupportive parenting mediated the relation between maternal self-reported ER difficulties and maternal reports of child ER difficulties (Morelen et al., 2016). These studies provide support for the links between parent and child ER.

Some studies have also examined parent emotion socialization factors that mediate the relation between parent ER and child ER. Are and Shaffer (2016) reported that family expressivity of emotions mediated mothers' reported own ER difficulties and child (ages 3-5) ER difficulties and lability. One other study reported that mother and father response to child negative emotions (ages 7-12) mediated the link between their ER difficulties and their child's ER difficulties, and that partner's ER difficulties further moderated this association (Han et al., 2015). Another reported that adolescent-reported harsh parenting mediated the association between mothers' self-reported own ER difficulties and adolescent reported ER difficulties (Sarıtaş et al., 2013). Despite these initial findings, the data were often cross-sectional in their mediation analyses and often relied on self-report and behavioral assessments of mother and child ER. Parent's own self-reported ER difficulties may bias perceptions of their child's ER. Studies may consider objective methods such as physiological assessments (i.e., heart-rate variability; HRV) to measure ER difficulties. Furthermore, there are limited studies investigating these relations with children at a younger age, and how parent ER is linked to other aspects of

parent emotion socialization. Overall, additional studies using multi-methods to assess parent and child ER may help to better understand their associations as well as links with parent emotion socialization.

Based on the neurovisceral integration model, neural networks interact with the autonomic nervous system in ways where physiological arousal adjusts in response to internal and external demands in order to better equip individuals to adapt and respond (Thayer et al., 2009). Resting heart rate variability (HRV) may be considered an index of both self- and emotion- regulation, where greater vagal-mediated HRV reflects greater variability between heart beats (Appelhans & Luecken, 2006; Segerstrom & Solberg Nes, 2007). The variability is viewed as adaptive, as it primes individuals to respond to stressors more flexibly. Consistent with this model, prior literature points to negative associations between HRV and difficulties in ER (Williams et al., 2015; Visted et al., 2017). Because previous literature has indicated that there may be lack of coherence across emotion responses (i.e., self-report from physiology or expression; Mauss et al., 2005), a mixed-methods approach including both subjective (self-report) and objective (HRV) may help to underline differences across these assessments of ER. Few studies have either examined mother physiological regulation (Shih et al., 2018) or child physiological regulation (Calkins & Johnson, 1998; Calkins et al., 1998); in addition, these studies either did not assess child behavior ER or focused on parent emotion socialization behaviors with child physiological regulation. Thus, further examination using a multi-method approach may help us better understand these associations.

Examining ER difficulties or strategies in isolation (e.g., reappraisal or suppression) solely with subjective measures and connecting these separately to a single outcome (e.g., emotional lability; self-report vs. behavioral measures of child ER) limits the scope of

understanding the varying mechanisms that associate parent and child ER. To our knowledge, no study has used both mother self-reported ER difficulties and physiological indices (i.e., HRV) as a predictor of parenting behaviors and child ER. Within the literature that does examine parent and child ER, there is a large variation in the age range of children across these studies (i.e., 24-months to 19 years old); this is crucial given the shifts in development across the lifespan. Thus, more research is needed to verify past findings and understand the relation between parent's own ER and child ER.

Current Study

The current study aimed to investigate whether mothers' difficulties with ER are related to mothers' emotion socialization and their child's ER. We used both self-report and physiological indices to assess measurement coherence. Our study expanded upon the extant literature to include both subjective (self-report) and objective assessments (HRV) of mothers' ER and explored the associations with behavioral assessments as a unique, objective measure of child ER during a toy removal behavioral task aimed at eliciting child distress and observing coping strategies as regulatory behaviors. Child ER was measured via child distress intensity and use of coping strategies. We were also interested in whether mothers' ER was associated with emotion socialization practices (e.g., self-reported parenting attitudes, satisfaction, conditional regard, and behavioral displays of sensitivity), and if these emotion socialization practices in turn were related to child ER. This study examined toddlers between ages 18-24 months to understand early indicators of self-ER while reducing social and age-related factors that may be relevant to the development of emotion regulation skills (e.g., peers, schools, etc.). Using Morris and colleagues' tripartite model (2007) as the framework for our study aims, our conceptual model for the associations are displayed in Figure 2. However, given the cross-sectional nature

of the data, we were unable to test for mediation of mothers' emotion socialization behaviors between mother and child ER. Thus, for this study, we restricted the investigation to examining direct associations only.

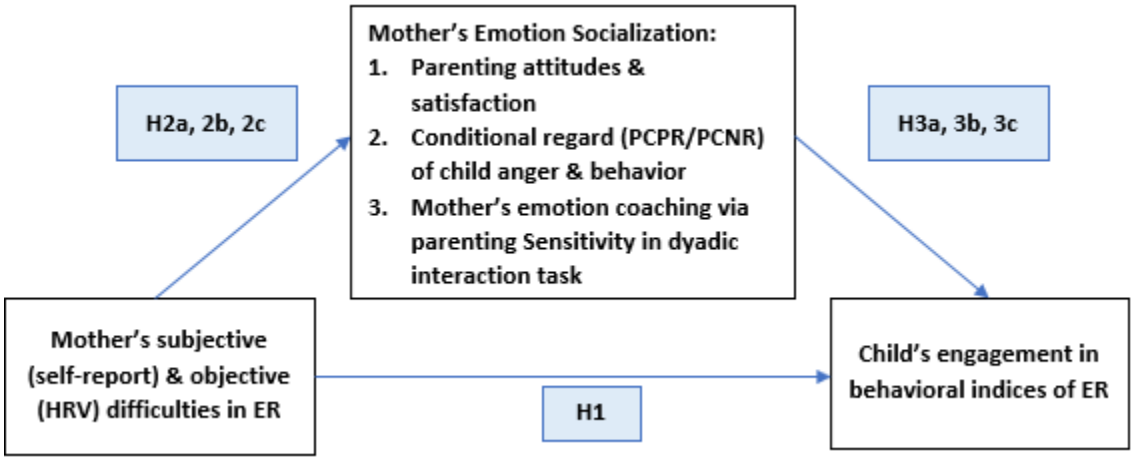

Figure 2. Expected associations among mothers' ER, emotion socialization, and child ER.

Aim #1: Assess the direct relation between mothers' own ER with child ER

Hypothesis 1: Mothers with greater ER difficulties and lower HRV will have children with greater emotion dysregulation during the behavioral task, in the form of greater distress, aggression and less engagement in adaptive regulatory behaviors.

Aim #2: Assess the relation between mothers' own ER and emotion socialization behaviors (i.e., satisfaction in parenting, negative attitudes about their child, conditional regard, and child sensitivity).

Hypothesis 2a: Mothers with greater ER difficulties and lower HRV report worse subjective parenting satisfaction and greater negative attitudes towards their child.

Hypothesis 2b: Mothers with greater ER difficulties and lower HRV report greater PCR and NCR towards their child's anger and behavior.

Hypothesis 2c: Mothers with greater ER difficulties and lower HRV display less sensitivity to their child during a mother-child interactive task.

Aim #3: Assess the potential relation between mothers' emotion socialization with child ER.

Hypothesis 3a: Mothers who report worse subjective parenting satisfaction and attitudes towards their child have children with greater dysregulation during the behavioral task in the form of greater distress, aggression and less engagement in adaptive regulatory behaviors.

Hypothesis 3b: Mothers who engage in more PCR and NCR towards their child's anger and behavior have children with greater dysregulation during the behavioral task in the form of greater distress, aggression and less engagement in adaptive regulatory behaviors.

Hypothesis 3c: Mothers who express greater sensitivity towards their child have children with less dysregulation during the behavioral task in the form of less distress, aggression and greater engagement in adaptive regulatory behaviors.

METHOD

Study procedures were part of a larger longitudinal lab study investigating parent-child relations and evaluating the efficacy of an intervention to support parenting sensitivity and outcomes. In this paper, we focus on a subset of mother and child assessments at baseline (prior to intervention) relevant to our aims. In order to reduce variability in parenting experiences and responses due to health conditions, mothers were excluded if they had more than three children, were on medication that may influence heart rate, or had children with developmental disabilities. Because the measurements and instructions were in English, non-English speaking families were excluded as well. The study was approved by the Institutional Review Board at Pomona College.

Participants

Mother and child dyads (N = 164 dyads) were recruited from a community sample through newspaper advertisements, flyers posted in family frequented locations (e.g., schools,

daycares, pediatrician offices, bookstores, etc.), and through online advertisements on social media platforms within the greater Los Angeles area. At varying institutions (e.g., schools), the officials were contacted and if permitted, flyers were sent home to parents. Thirteen dyads did not complete the baseline visits; thus, the total dyads in our sample was $N = 153$.

Mothers' age ranged between 19 to 44 years ($M = 30.69$, $SD = 5.18$) and children's age ranged between 16 and 27 months ($M = 21$ months, $SD = 2.47$ months; 53% female). The sample was considerably diverse in terms of race/ethnicity and socioeconomic status; our sample was ethnically 41% Latinx, and racially 67% Caucasian, 2% Native American, 2% African American, 6% Asian American, 11% biracial, and 12% other; about 31% of families reported an annual income below $40,000, 32% reported an annual income between $40,000-$80,000, and 37% reported an annual income of $81,000 or higher.

Procedure

We will describe the procedures relevant to the present study. At the beginning of the study, mothers and their children were invited to the lab to complete a lab visit. Mothers provided consent for herself and parental consent for her toddler. After consent, mothers were informed about the study procedures and scheduled future study sessions with the experimenter. Mothers were then given options of different interactive teaching tasks arranged by level of difficulty (e.g., stacking blocks, stringing beads, holding a rattle) to engage in with her child for 5-minutes. This was used to assess mothers' emotion socialization behaviors (i.e., parental sensitivity). Once this was complete, mothers sat in the room and completed questionnaires while their toddler completed a series of behavioral lab tasks with the experimenter. The behavioral task (i.e., a toy removal task) was used to assess toddlers' emotion regulatory behaviors. In a different lab visit, only the mother returned to the lab to complete a physiological

assessment and a series of interviews. The resting baseline of the physiological assessment was used to assess a trait-measure of vagal-mediated heart-rate variability. For the lab visits, mothers were compensated $30 (a total of $60) and their child was paid in the form of a small toy.

We examined mothers' ER using self-report assessments and resting HRV as an objective, indirect measure of ER. Self-report measures and coding of a behavioral interactive task done between mother and child were used to assess parenting attitudes and behaviors. For child ER, we used a coding system of a behavioral task completed by the child without the mothers' direct involvement. The difference in parent and child ER measures were in part because we are using secondary data and did not assess parental reporting of child ER. However, this allowed us to assess child ER more objectively while reducing potential parental reporting bias; physiological assessments of child were not measured given their young age. All data are from the initial lab visits.

Measures

Demographics. Demographic measures (mothers' age, education, income, subjective socioeconomic status, race/ethnicity, child age, sex, and whether the child has a sibling) were included in the questionnaires completed by mothers.

Mothers' Emotion Regulation.

Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004). The DERS is a commonly used scale to assess difficulties in emotion regulation and has shown internal reliability ($\alpha = .93$; Gratz & Roemer, 2004). The self-report measure includes 36-items total and six subscales used to assess attention, experience, and response to emotion, as well as an individual's self-reported rating of their regulation of emotion ("When I'm upset, I become irritated with myself for feeling that way", or "When I'm upset, it takes me a long time to feel

better."). The subscales include (1) non acceptance of emotional responses, (2) difficulty engaging in goal-directed behavior, (3) impulse control difficulties, (4) lack of emotional awareness, (5) limited access to emotion regulation strategies, (6) lack of emotional clarity. Items are rated on a 5-point rating scale (1 = "Almost never", 5 = "Almost always"). For this study, we used the total score of all the items (range 36-170; M = 66.95; SD = 18.61; α =.94).

Heart-rate Variability (HRV). HRV was measured using portable physiological equipment developed by Mindware Technologies. During the baseline assessment, mothers were seated in a comfortable chair in a quiet room alone and wore non-invasive sensors to capture electrocardiography. Physiological measures were collected while the mothers were presented with a 5-minute nature video to capture baseline physiological responses. In general, HRV has been used as an objective measure of emotion responding and regulation, such that lower HRV reflects greater sympathetic reactivity and less flexibility in response to environmental stressors (Appelhans & Luecken, 2006). Baseline HRV in particular is used as an index of emotion regulation, where greater resting HRV as assessed using either high-frequency heart-rate variability (HF-HRV) or root mean squares of successive differences (RMSSD) has been linked to emotion regulation capacity (Williams et al., 2015; 2019). Following procedures from Williams and colleagues, variability was recorded based on inter-beat intervals and used to calculate HF-HRV; intervals were aggregated in order to calculate a single-time point assessment of HF-HRV as trait physiology (2015; 2019). HF-HRV scores were natural log transformed (ln) to meet linear assumptions (Ellis et al., 2008; M = 6.57; SD = 1.02).

Child Temperament. Child temperament, particularly effortful control (attentional focusing, shift, inhibition) was assessed at baseline. Temperament was assessed to account for

child characteristics that may relate to child emotion regulation aside from parent characteristics and parenting practices (refer to figure 1).

Early Child Behavioral Questionnaire - Short Form (ECBQ-SF; Putnam et al., 2006). The ECBQ-SF is a validated 107-item parent self-report measure that includes 18 subscales (e.g., inhibitory control, sadness, activity level/energy, etc.) to assess temperament and behavior of children ages 16-36 months old (α = .62-.86; Putnam et al., 2006). Parents rated items about their children on a 7-point Likert scale (1 = "Never", 7 = "Always"). The short-form uses the attentional focusing (Att-F; "When playing alone, how often did your child become easily distracted?"), attentional shift (Att-S; "After having been interrupted, how often did your child have difficulty returning to the previous activity?"), low intensity pleasure ("When playing outdoors, how often did your child enjoy sitting quietly in the sunshine?"), cuddliness ("When being held on your lap, how often did your child seem to enjoy him/herself?"), and inhibitory control (Inh; "When asked to wait for a desirable item, how often did your child wait patiently?") subscales to indicate *effortful control* (Putnam et al., 2010). However, multiple studies have used some variation of Att-F, Att-S, and Inh only to assess *effortful control* (Eisenberg et al., 2005; Morris et al., 2002; Spinrad et al., 2007). Because we used data collected from a previous study, we calculated an *effortful control* average score when combining the following subscales included in the study: attentional focusing, attentional shift, cuddliness, and inhibition. Items are summed for a total, averaged, and standardized to combine subscales (Range: 1-7; M = 4.69; SD = .62; α = .85).

Child Emotion Regulation Measures.

Emotion Behavioral-Regulation Tasks (Calkins & Johnson, 1998). The task used to assess child emotion behavioral regulation involved the experimenter providing the child with a

toy of their choice (from three options) to play with for 1-minute (Calkins & Johnson, 1998). The experimenter then asked for the toy back, at which time the experimenter placed the toy in a transparent plastic container. The child was encouraged to try opening the box on their own for two minutes. Afterwards, the experimenter helped the child to take the toy out of the box and returned it to the child to play with. The purpose of this task was to elicit frustration; emotional responses and behaviors were coded for adaptive (i.e., staying engaged in the task, seeking help from their mother or experimenter) and maladaptive regulation (i.e., distress intensity, fussing, throwing the container).

Child Distress (Calkins & Johnson, 1998). Distress was coded using video recordings from the toy removal task. Four raters coded distress intensity for each 10-second interval of the two-minute task using a 6-point rating scale (0 = no distress, 1 = brief fret or whimper, 2 = repeated fretting or whimpering or brief shout, 3 = repeated exclamations or shouts, 4 = full blown scream or cry, 5 = any of the above plus full body collapse or temper tantrum). A mean score was calculated across all 10-second intervals (Distress ICC = .94; Range = 0 – 5; M = 0.65, SD = 0.78).

Child Emotion Regulatory Behaviors (Calkins & Johnson, 1998). Toddler's regulatory behaviors were coded from video recordings of the toy removal task. Four raters coded the presence (1) or absence (0) of four behaviors in 10-second intervals (12 intervals, 120 seconds total) across the duration of the task: aggression (banging, kicking, throwing, hitting the jar, experimenter or mother; ICC = .73; Range = 0 – 1; M = 0.24, SD = 0.26), mother orientation (turning towards or engaging with mother, talking to, playing with, or pulling on mother; ICC = .95; Range = 0 – 1; M = 0.29, SD = 0.30), constructive other-coping (asking mother or experimenter for help; ICC = .68; Range = 0 – 1; M = 0.50, SD = 0.28), constructive self-coping

(persistence in opening the jar, remaining engaged in the task; ICC = .81; Range = 0 – 1; *M* = 0.59, *SD* = 0.27). All four codes were square root transformed for normality of distribution.

Parenting Attitudes and Emotion Socialization Measures.

Index of Parental Attitudes (IPA; Hudson, 1997). The IPA is a consistent 25-item self-report measure designed to assess the extent, severity, or magnitude of parent-child relationship problems (α = .97; Hudson, 1997). Caregivers respond to items ("I wish my child was more like others I know.") on a 7-point rating scale (1 = "None of the time", 7 = "All of the time"). The IPA has two cut-off scores, the first indicating clinically significant problems (30+) and the second indicating severe problems with the potential for violence (70). Items are summed and averaged (Range: 1-7; *M* = 1.72; *SD* = 0.41; α = .88).

Kansas Parental Satisfaction (KPS; James et al., 1985). The KPS is a reliable three-item self-report scale that assesses parents' satisfaction with (a) their child's behavior, (b) themselves as a parent, and (c) their relationship with their child. The KPS is considered to be reliable, with Cronbach's alpha ranging from .78 to .85 in two samples of parents (James et al., 1985). The items are rated on a 7-point scale (1 = "Extremely Dissatisfied", 7 = "Extremely Satisfied") where they are then totaled and averaged (Range: 1-7; *M* = 5.66; *SD* = 0.86; α = .76) .

Parent Conditional Regard – Toddlers (Roth et al., 2009). This 22-item measures parents' use of conditional regard with their toddlers in the achievement, emotion, and general behavior domains. There are 5 subscales, each separated by positive and negative conditional regard respectively (a total of 10 subscales). Participants rate items (e.g., "When my child controls his/her anger, I give him/her more affection than usual", or "I teach my child to behave appropriately by making him/her feel that part of my affection depends on how s/he acts.") on a 5-point rating scale (1 = "Strongly disagree", 5 = "Strongly agree"). For the purpose of this

study, we focused on the positive and negative conditional regard towards child anger and behavior subscales (Range: 1-5; $M_{posanger}$ = 3.14; $SD_{posanger}$ = 0.84; $\alpha_{posanger}$ = .71; $M_{neganger}$ = 2.17; $SD_{neganger}$ = 0.88; $\alpha_{neganger}$ = .69; $M_{posbehave}$ = 3.17; $SD_{posbehave}$ = 0.87; $\alpha_{posbehave}$ = .56; $M_{negbehave}$ = 2.16; $SD_{negbehave}$ = 0.92; $\alpha_{negbehave}$ = .61).

The Nursing Child Assessment Satellite Training - Sensitivity subscale (NCAST; Barnard & Eyres, 1979). The NCAST is a standardized, caregiver-child interaction assessment tool for children ages birth to 36-months. The 73 binary-item tool (0 = "No", 1 = "Yes") is used in observations to rate the quality of these interactions. Caregivers choose one task (e.g., stacking blocks, stringing beads, holding a rattle, etc.) from a list of tasks organized by level of difficulty. The task lasts for five minutes and is video recorded with duo cameras to capture parent and child. Raters then view the recording and code for various behaviors. For this study, we focused on behavioral cues of parent sensitivity, which consisted of 11 items to assess mother sensitivity when approaching the task with their child and in response to their child (e.g. "caregiver praises child's successes or partial successes" or "caregiver positions child so that child can reach and handle teaching materials"; range: 0-11; M = 9.30; SD = 1.10; α = 0.85).

DATA ANALYTIC PLAN

Data was prepared and analyzed using SPSS version 26. Because we used secondary data, a sensitivity power analysis was conducted. Given the sample size (N = 153), we were powered to detect small effects of .05 to .07 at power = .80, alpha = .05. Prior to analyses, outcome variables of interest were checked and transformed (log base 10 or square root for positive skew; squared or cubed for negative skew) to meet assumptions of normality. Descriptive statistics and correlations were assessed. Although the majority of the literature has focused on parent characteristics or behaviors predicting aspects of child socioemotional

development, these associations are likely bidirectional, in that children with worsened temperament may elicit more negative emotions and parenting behaviors (Eisenberg et al., 1998; 1999; Kiff et al., 2011; Lengua & Kovacs, 2005). As well, there is support for differences in parent socialization behaviors depending on socioeconomic status (Martini et al., 2004) and the gender of both parents and of their child (Cassano et al., 2007; Garside & Klimes-Dougan, 2002) . Because we focused on mothers, we only included child gender as covariates to account for these differences. Thus, we examined maternal self-reported ER as measured by DERS total and lower HRV as predictors and included mother education, age, child gender, and temperament from the baseline as potential covariates. Child emotion dysregulation was measured by distress intensity and child regulatory behaviors (aggression, mother orientation, constructive other-coping, and constructive self-coping). Parent emotion socialization was measured by parenting attitudes, satisfaction, conditional regard, and sensitivity.

To address H1, a hierarchical linear regression was conducted. This was done for self-report ER difficulties and HRV, respectively. Mothers' DERS was used to assess child distress intensity and child regulatory behaviors. Next, we examined maternal HRV as the predictor of child distress intensity and child regulatory behaviors. For each model, child gender and effortful control was included as covariates in set 1. Child distress from the task was included as a covariate in set 1 when assessing child self-regulatory behaviors.

Regression models:

First step: Covariates - Child gender and temperament, distress (for regulatory behaviors)
Second step: Mothers' ER

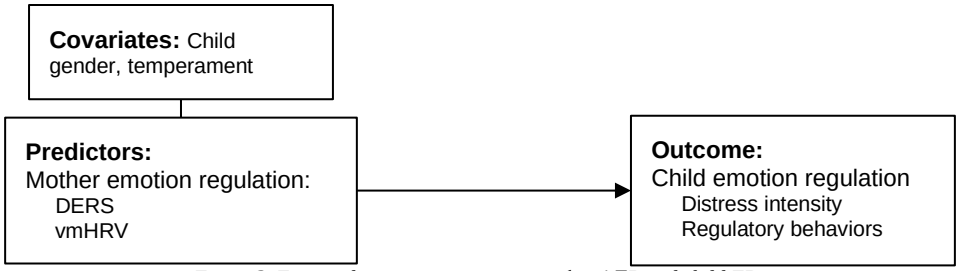

Figure 3. Expected associations among mothers' ER and child ER.

To address H2a, H2b, and H2c, a hierarchical linear regression was conducted with mothers' education, age, and child effortful control as set 1, and maternal ER as set 2. This was done for DERS and HRV respectively to assess parenting attitudes, parenting satisfaction , positive and negative conditional regard to child anger and behavior, and maternal sensitivity.

First step: Covariates - Mother education, age, and child temperament

Second step: Mothers' ER

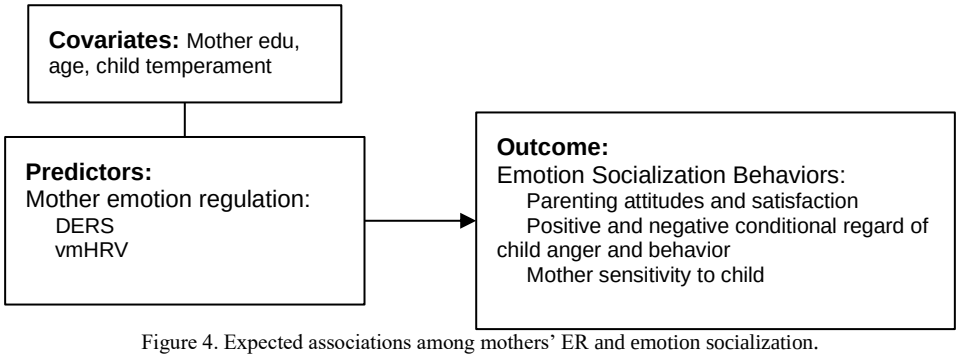

Figure 4. Expected associations among mothers' ER and emotion socialization.

To address H3a, H3b, and H3c, a hierarchical linear regression was conducted with mothers' emotion socialization behaviors as predictors of child ER, including child gender and effortful control as covariates. Similar to H1, child distress from the task was included as a covariate when assessing child self-regulatory behaviors. Each emotion socialization construct was used to separately assess child ER through distress intensity and child regulatory behaviors.

First step: Covariates - Child gender and temperament, distress (for regulatory behaviors)

Second step: Mothers' Parenting and Emotion Socialization Behaviors

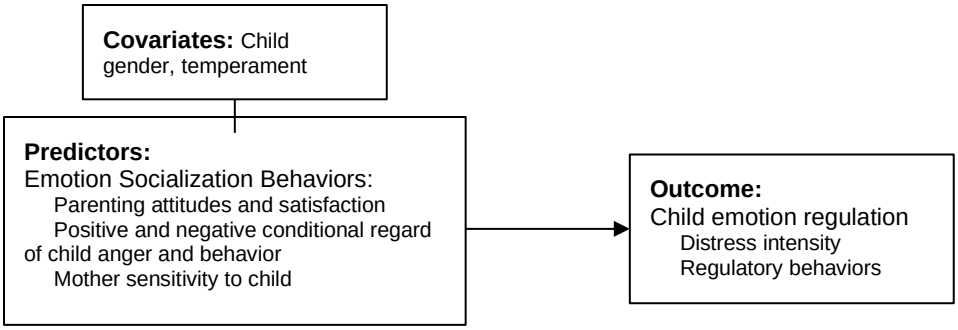

Figure 5. Expected associations among mothers' emotion socialization and child ER.

RESULTS

N = 153 mother-child dyads were enrolled. Due to missing self-report (*n* = 12) and physiology (*n* = 37) data as well as incompletion of the toy removal behavioral task (*n* = 14), listwise deletion was used through SPSS version 26. The total sample was *N* = 141 for self-report measures, *N* = 139 for child ER measures, and *N* = 116 for HRV data. Table 1-3 displays correlations among predictors, covariates, and outcome variables of interest.

Is Mothers' ER associated with Child ER?

Including covariates of interest, both DERS and HRV did not explain a significant proportion of variation nor was it a significant linear predictor of child distress, child aggression, mother orientation, constructive other-coping, or constructive self-coping during the toy removal task (see Table 4a and 4b).

Is Mothers' ER associated with Mothers' Emotion Socialization Behaviors?

Mothers' DERS was a significant linear predictor of negative parental attitudes [b = 0.002, 95% CI_{boot}(0.001, 0.003), $t(136) = 5.045$, $p < .001$], parenting satisfaction [b = -1.289, 95% CI_{boot}(-1.896, -0.658), $t(137) = -4.215$, $p < .001$], NCR of child anger [b = 0.003, 95% CI_{boot}(.000, .005), $t(136) = 1.899$, $p = .035$], and PCR of child behavior [b = 0.011, 95% CI_{boot}(.004, .019), $t(136) = 2.640$, $p = .006$] when partialling out other predictors. Within each model, there was a significant change in proportion of variation explained when including

mothers' DERS, except for NCR of child anger (see Table 5a). DERS was not a significant linear predictor of PCR child anger, NCR of child behavior, and mother sensitivity.

Mothers' HRV was a significant linear predictor of mothers' sensitivity (b = 4.719, 95% CI_{boot}(.953, 9.039), t(101) = 2.171, p = .032) when partialling out other predictors, and explained a significant change in proportion of variation [ΔR^2 = .043, ΔF(1, 101) = 4.713, p = .032]. HRV however was not a significant linear predictor for negative parental attitudes, parenting satisfaction, PCR and NCR of child's anger, or PCR and NCR of child's behavior (see Table 5b).

Is Mother's Emotion Socialization associated with Child ER?

To assess the relation between mothers' emotion socialization and child ER, hierarchical regression analyses were conducted including child gender and child effortful control as the first set of predictors and Mothers' parenting attitude, satisfaction, conditional regard, and sensitivity as the second set of predictors respectively. For all results refer to Table 6a-g. We will briefly summarize relevant findings. Negative parental attitudes, parenting satisfaction, mother sensitivity, and PCRanger did not explain a significant proportion of variation and were not significant predictors of child distress and regulatory behaviors.

Mother's NCR towards child anger did improve the proportion of variation explained in child aggression [ΔR^2 = .036, ΔF(1, 125) = 4.755, p = .031] and was a significant linear predictor when partialling out the other predictors [b = 0.060, 95% CI_{boot}(.004, .117), t(124) = 2.181, p = .041], but not for child distress, mother orientation, constructive other-coping, and constructive self-coping.

Mother's PCR of child behavior did improve the proportion of variation explained in child aggression [ΔR^2 = .056, ΔF(1, 125) = 7.625, p = .007] and was a significant linear predictor

when partialling out the other predictors [b = 0.074, 95% CI_{boot}(.015, .133), t(125) = 2.761, p = .016], but not for child distress nor other regulatory behaviors.

Mother's NCR of child behavior did improve the proportion of variation explained in child aggression [ΔR^2 = .035, ΔF(1, 125) = 4.705, p = .032] and was a significant linear predictor when partialling out the other predictors [b = .054, 95% CI_{boot}(-.001, .108), t(125) = 2.169, p = .049].

DISCUSSION

The study used the tripartite model suggested by Morris and colleagues (2007) to examine the relation between parent behaviors and child ER and in particular, whether parents' own ER was associated with child ER. This may have important implications for child development, as parenting factors and child ER are relevant in the formation of socio-emotional competency and reduced likelihood for onset of behavioral problems (Behrendt et al., 2019). Based on our results, however, mothers' own ER difficulties was not associated with child ER. More specifically, neither mothers' self-reported difficulties in ER nor their resting HRV were associated with toddler distress intensity or self-regulatory behaviors (i.e., child aggression, mother orientation, constructive other and self-coping) during a child frustration toy removal task. Mothers' ER was linked with their own parenting styles and emotion socialization behaviors, where greater mothers' subjective ER difficulties were associated with greater negative parental attitudes, worse parenting satisfaction, and more NCR towards child anger and PCR towards child behaviors. Mothers' HRV was not associated with these outcomes; however, it was associated with greater mothers' sensitivity to child cues during an interactive parent-child behavioral task. The differences across different measurements may reflect self-report bias within mothers. Although mothers' own ER was not linked to child's ER, mothers' emotion

socialization behavior of NCR towards child anger, PCR and NCR towards child behavior were associated with greater child aggression during the toy removal task. Negative parenting attitudes, parenting satisfaction, mothers' sensitivity, and PCR towards child anger were not associated with child distress or regulatory behaviors. Partial findings are displayed in figure 6.

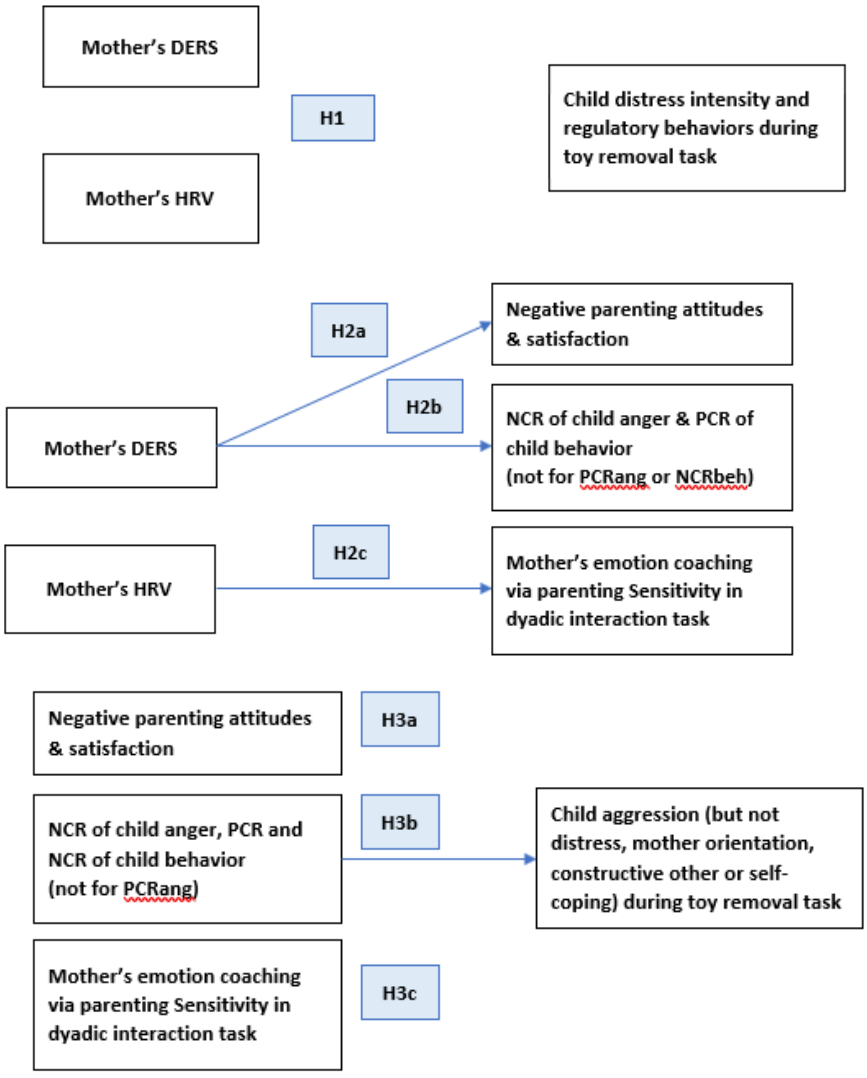

Figure 6. Partial findings for hypotheses, indicating significant and non-significant associations.

One strength of this proposal is that it combines both subjective and objective measures into one study thus offering insight into different aspects of the same construct of interest. As such we could assess convergence in measures of parenting behaviors and child ER. Furthermore, to our knowledge it is the first to examine mothers' HRV as an index of regulatory

capacity and its relation to child ER. Although there are numerous studies examining parent emotion socialization behaviors with child ER as assessed through both parent self-report and behavioral measures, few have specifically examined parent ER and its direct association to child ER as assessed through a behavioral task. Our study also was aimed at examining early indicators of self-regulatory behaviors of emotion in children that may support previous findings in older children, especially since children display self-regulatory behaviors as early as 18-24 months old. Our findings did not reveal direct associations between mothers' difficulties with ER and child ER, which is inconsistent with previous findings of mothers' self-reported ER difficulties linked to mothers' report of child ER difficulties among children ages 3-12 (Are & Shaffer, 2016; Han et al., 2015; Morelen et al., 2016). However, these inconsistencies in findings may reflect the complexities involved in ER processes as well as the measurement of ER. For example, other studies that have examined types of strategies have found that mothers' suppression was associated with child suppression, but mothers' reappraisal was not associated with child reappraisal (Bariola et al., 2012; Rogers et al., 2016). Children may learn ER strategies more through observing parent behaviors, where parents' *expressive suppression* may be more apparent than when parents *reappraise* their emotion. Thus, there may be nuances in the way ER skills are transferred from parent to child. Furthermore, discrepancies in findings may reflect differences in mothers' subjective ratings of their child's ER difficulties and how their child may actually engage in regulatory behaviors in a frustration task. Mother or caregiver-reported child ER difficulties may reflect self-reporting bias. Indeed, in the study conducted by Morelen and colleagues, mother and child ER dysregulation as assessed through behavioral coding of a conflict discussed between parent and child was not associated with mothers' report of child ER difficulties (2016). Thus, prior work shows relations between mothers' self-reported

own ER and their child's ER yet also supports that behavioral coding of mother and child ER is not associated with self-reported ER difficulties. In this current study, mothers' self-report and HRV was not associated with child behavioral ER, and so the finding highlights the importance of examining potential nuanced differences in experiential, physiological, and behavioral assessments. Similar to how mothers' depression may bias their reporting of child symptoms (Gartstein et al., 2009; Richters & Pellegrini, 1989), a parents' own perceived difficulties regulating may make them more likely to perceive their child as having difficulties regardless of their child's behavior. Prior findings showed that mothers' RSA withdrawal is associated with mothers' sensitivity, indicating more responsiveness to child cues (Joosen et al., 2013; Moore et al., 2009). In this study, mothers' HRV was not directly associated with child ER but was associated with mothers' parenting sensitivity; the finding may imply potential mediation, but this needs to be examined in longitudinal designs. For example, mothers' HRV could be relevant in how mothers respond to their child's needs and assist them in regulating. Through this process, children may then model their parents' behavior or responsiveness to engage in regulatory behaviors themselves. With age, children may also better process their parents' behaviors and responsiveness to then mirror and adopt these emotion displays, cues, and regulatory strategies into their own repertoire. Longitudinal investigation of these associations can help us better understand the relation across these parent-child constructs.

Regarding differences in emotional coherence across experiential, behavioral, and physiological assessments of emotion (Mauss et al., 2005), there may be variation in coherence across assessments of ER. In studies using student samples, researchers found coherence or associations between subjective reports and in-direct physiological assessments ER using HRV (Williams et al., 2015; 2019). While there may be lack of coherence in emotion experiences, ER

coherence across different types of assessments may exist. However, in this current study, mothers' HRV and DERS were not associated. One potential interpretation is that HRV is an indirect measure of ER capacity, and thus there may be lack of coherence in how individuals report their own regulation difficulties or capacities and how they physiologically regulate. Additionally, the finding may reflect possible differences in samples, or how there may be physiological and psychological shifts in mothers during the transition to parenthood. Parenting itself is considered a relatively impactful life event and may bring unique challenges and stressors that parents navigate (Saxbe et al., 2018). On top of becoming a parent to a toddler, mothers may balance multiple responsibilities not limited to maintaining romantic and familial relationships, work or career stressors, parenting for the first time, or caring for more than one child. In doing so, mothers may feel as though they better understand and know how to regulate their emotions when physiologically they respond to those challenges in ways that reflect prior encounters with stressors. Alternatively, mothers may be forced to internally regulate their physiology in stressful parenting situations, yet they may continue to report feeling difficulties in regulating their emotions. When examining measurement differences, compared to another Western sample of mothers (Are & Shaffer, 2016), our mother sample reported similar average levels of DERS, whereas college samples reported higher levels of difficulties regulating (Williams et al., 2015; 2019). The difference could reflect mothers' self-reporting bias, or that mothers develop coping skills that allow them to better regulate their emotions. To better understand these differences in samples, additional studies are necessary to understand differences across ER assessments and groups.

In addition to examining mothers' ER and child ER, the findings showed that mothers' self-reported regulation difficulties were associated with negative parental attitudes and less

parenting satisfaction, NCR towards child anger, and PCR towards child behavior. Mothers with greater difficulties regulating may feel more frustration and distress when faced with challenges in parenting. The findings may reflect mothers' views regarding their child and the overall satisfaction they receive in their parental role. Dysregulated mothers may also have maladaptive views towards emotions (i.e., avoidance of certain emotions) and this may relate to how they determine acceptable and unacceptable emotions and behaviors in their own children. These views in part could be tied to parents' teaching of emotions, through selective displays of affection depending on their child engaging in what they believe are acceptable behaviors, despite it being maladaptive (i.e., dismissing negative emotions) or related to more difficulties in ER (i.e., avoidance). Mothers' HRV was not associated with mothers' self-reported parenting attitudes and behaviors, which further highlights the need to compare self-reported ratings with behavioral and physiological assessments; mothers' self-perceived difficulties in regulating as well as their own perceptions regarding parenting and their child's ER may differ from how they physiologically or behaviorally respond to parenting situations.

When examining the direct association between mothers' ER with child ER and mothers' emotion socialization behaviors, we investigated if aspects of mothers' emotion socialization behaviors were related to child ER. The findings support previous literature where mothers' negative responses to child emotions or expressivity is associated with child ER and psychopathology by assessing additional parenting styles and behaviors based on Morris' tripartite model (2007). Based on the current study, only NCR towards child anger and both PCR and NCR towards child behavior were related to displays of child aggression. Because conditional regard refers to the selective affection towards a child based on parental expectations, it may be related to prior work examining parental negative responses to child emotions or

engagement of hostile, controlling, punitive parenting behaviors. Parents may withdraw affection and instead show disapproval in order to draw desirable child behaviors, or alternatively only offer affection when their child engages in those desirable behaviors. In doing so, children may feel more dysregulated (i.e., agitated) when mothers withdraw affection or have challenges in engaging in alternative coping strategies. Work by Roth and colleagues found that adolescents who reported greater PCR from their parents and more compulsion to comply with parents' expectations were more likely to engage in suppressive regulation (2009). Our findings contribute to the existing literature of parental responses to child emotions and behaviors as important to child regulation and socioemotional functioning later in life. We also add to prior findings by examining PCR and NCR links with toddlers' ER. Further studies may help elucidate how conditional regard may interact with other types of parental responses.

Negative parenting attitudes and parenting satisfaction were not associated with child ER. Because mothers' negative parenting attitudes and parenting satisfaction could be considered internal beliefs, these may have less relation towards child ER, and instead come across in more behavioral ways such as punitive and hostile responses to child's emotions and behaviors. Lastly, mothers' sensitivity was not associated with child ER. Our study primarily focused on how children independently respond to a frustration task, as well as assessed sensitivity from a separate parent-child task. Mothers' sensitivity may differ if they are directly interacting with their child, or actively assisting the child in regulating their frustration and distress.

Limitations & Future Directions

Our study is not without limitations. One difference with our study compared to the Calkins study (1998) is that mothers were not involved in the behavioral task, as we focused on child self-regulatory behaviors as opposed to mother-assisted regulation. A future study may

further consider how parents' *own* regulation along with their regulation or coaching of child emotion during an interactive task relate to child ER. Because this is secondary data, we did not have self-report or physiological assessments of child ER, and thus were unable to examine measurement coherence across experiential, behavioral, or physiological assessments of child ER. Another limitation is that the data were cross-sectional, and thus limited in assessing indirect effects between parent ER and child ER through parent emotion socialization behaviors. Although a few studies have examined mediation pathways between parent ER and child ER (Are & Shaffer, 2016; Han et al., 2015; Sarıtaş et al., 2013), these have also been cross-sectional. One study, however, did find that mothers' positive expressivity mediated the association between mothers' use of reappraisal and child ER 4-years later (Tan & Smith, 2019). A next step would be to consider more novel ways to assess parent and child ER in both individual and dyadic settings, incorporate multiple ways to assess ER, as well as a longitudinal approach to examining other aspects of mother's emotion socialization mediating mother's ER with child's ER, which would also better address bidirectionality.

As parents are likely to influence how their child behaves, child characteristics including temperament may in turn influence how parents respond to their child. The association between parents' responsiveness and child temperament might occur in the concept of a feedback loop, where children with greater negative affectivity and worsened effortful control might elicit negative parenting behaviors that further exacerbate child difficulties in regulation as well as internalizing and externalizing symptoms. Future investigations may use longitudinal assessments to better understand bidirectional effects between parent ER and child ER, while taking into consideration child temperament and including assessments of parent emotion socialization behaviors.

An additional limitation is that this study does not account for genetic factors (Sheese et al., 2009) or gene and environmental interactions relevant to child ER (Kochanska et al., 2009). Furthermore, there may be external systemic factors (i.e., exposure to trauma, discrimination) that relate to difficulties in ER. Future investigations may consider including assessments of mother and child genotype and include other factors to assess links with mother's ER and socialization with child ER. Because this study focused on mother-child dyads, paternal ER was not examined. It is possible that paternal ER differences are also associated with child ER ability. Research on fathers and their role in child development has often been ignored in the literature, though some researchers have suggested models in which fathers' abilities to engage in the external environment may be more relevant to child social anxiety and externalizing behaviors (Bogels & Perotti, 2011). Children might also observe how their father's regulate in order to learn how to regulate their own emotions. Furthermore, family climates have changed such that there may be fewer nuclear families and more instances where grandparents are involved with caregiving of the children. Thus, grandparents and their capacity for ER may be another factor related to child ER. In sum, the current study focused on mothers, because mothers are often the primary caregivers, but it is likely that children will be influenced by multiple caregivers in the family.

Self-regulation of emotion may also differ from efforts to regulate others' emotions. For example, individuals may offer reframing for their friend but engage in distraction when regulating their own emotions. In the context of parenting, parents embody multiple roles when it comes to the regulation of their child's emotions, or how they regulate their own emotions in various contexts (i.e., in the workplace compared to at home) may differ. Thus, interpersonal regulation may be more relevant as opposed to parents' own abilities to regulate their emotions.

Similarly, there are studies focused on parent regulation of child emotion while others focus on parents' regulation of their own emotions. Furthermore, parent regulation outside of the parenting context could shape how parents express or regulate emotions in the home (Repetti et al., 2009). Assessing parent-related ER specifically or how ER difficulties may vary across contexts may help to clarify how parent ER is related to child ER. Future studies may consider examining both self and interpersonal regulation in future parent-child studies of emotion.

Researchers too have argued that parenthood itself may change ER (Rutherford, et al., 2015), as parents may have a stronger reaction to child distress than non-parents (Nishitani et al., 2011; Proverbio et al., 2006). Furthermore, parenting may require parents to draw upon regulatory resources that are related to their relationship histories (i.e., attachment, trauma) and that require other social support (i.e., co-parenting support) relevant to how parents express, respond, and engage with their child's emotions. While prior work examining parent ER has looked at difficulties using DERS or ER strategies primarily through reappraisal and suppression, there are other strategies parents may use with regard to parenting and in daily life. Parents may also engage in parent-specific regulatory strategies. The idea of *niche-picking* (Morris et al., 2007) or *provisions of opportunities* (Parke, 1994) is an interesting concept that parents will actively choose the kinds of events their children may experience and the emotional stimuli they would be exposed to. As well, researchers have recently developed a measure to assess parent ER in the context of disciplining their child, which may further tease apart context into how general or self-ER might differ from parent specific ER (Lorber, 2012; Lorber et al., 2016). Therefore, it is important to consider how ER may differ in relation to the parenting world. Future studies could examine parent emotion regulation before and after parenthood.

7. Conclusion

In conclusion, our findings regarding mothers' ER, mothers' emotion socialization behaviors, and child ER were partially supported. Self-reported ER difficulties were not associated with physiological indices of ER difficulties within mothers, providing a need to better understand coherence across different assessments of ER, and whether these associations differ across populations (i.e., college samples from parents). Self-perceptions of ER difficulties may change over time or differentially relate to parenting attitudes and behaviors. Mothers' self-reported ER was related to conditional regard, which in turn was associated with child aggression. Thus, partial findings would benefit from future longitudinal studies that allow for mediational analyses. Our study contributes to previous findings in examining initial self-emotion regulation behaviors among toddlers, incorporating mothers' HRV as an assessment of ER difficulties, and including other aspects of parent emotion socialization behaviors not previously examined. As mentioned above, we offer insight to these partial findings as well as relevant future directions. To summarize, studies may implement a longitudinal approach to understand bi-directionality and possible mediation pathways, and use a comprehensive battery of ER assessments to address (1) differences across emotion responses systems (i.e., experiential, behavioral, and physiological), (2) more ways in which individuals may regulate their emotions, (3) complex processes and varying contexts that may play out between parent ER and child ER.

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Table 1.
Correlations between mothers' ER and child ER

	1	2	3	4	5	6	7	8	9	10	11
DERS	1										
HRV	0.013	1									
Education	-.214*	0.024	1								
Mother Age	-0.088	-.238*	.397***	1							
Child Gender	.185*	0.135	-0.001	-0.078	1						
Effortful Control	-.340***	-0.017	0.076	-0.056	-.198*	1					
Child Distress	-0.063	-0.092	0.018	-0.048	0.062	0.094	1				
Child Aggress	0.117	0.036	0.052	0.027	0.063	0.062	0.162	1			
Child Construct-self	-0.019	0.066	-0.003	-0.059	0.163	0.094	0.018	-0.017	1		
Child Mother Orientation	-0.028	-0.049	0.083	0.104	-0.050	-0.001	0.161	-0.075	-0.155	1	
Child Construct-other	0.021	-0.155	-0.016	0.058	0.018	.188*	.171*	0.091	.243**	-.197*	1

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

Table 2.
Correlations between mothers' ER and emotion socialization behaviors

	Correlations												
	1	2	3	4	5	6	7	8	9	10	11	12	13
DERS	1												
HRV	0.013	1											
Education	-.214*	0.024	1										
Mother Age	-0.088	-.238*	.397***	1									
Child Gender	.185*	0.135	-0.001	-0.078	1								
Effortful Control	-.340***	-0.017	0.076	-0.056	-.198*	1							
IPA	.411***	-0.126	0.155	.288***	0.081	-.419***	1						
KPS	-.439***	0.098	-0.062	-0.136	-0.028	.410***	-.623***	1					
NCAST Sensitivity	-0.019	0.104	-0.044	0.109	-.319***	0.117	-0.027	0.062	1				
PCR Anger	.214**	0.114	-.210*	-0.074	0.028	-.234**	0.036	-0.064	0.026	1			
NCR Anger	.265**	0.148	-0.135	-.242**	0.090	-.251**	0.134	-0.063	-0.085	.554***	1		
PCR Behavior	.300***	0.034	-.200*	-.193*	0.062	-.170*	0.142	-0.115	-0.097	.612***	.552***	1	
NCR Behavior	.212**	0.110	-0.076	-0.066	-0.021	-0.135	0.158	-0.036	0.001	.462***	.707***	.495***	1

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

Table 3.

Correlations between mothers' emotion socialization behaviors and child ER

	1	2	3	4	5	6	7	8	9	10	11	12
IPA	1											
KPS	-.623***	1										
NCAST Sensitivity	-0.027	0.062	1									
PCR Anger	0.036	-0.064	0.026	1								
NCR Anger	0.134	-0.063	-0.085	.554***	1							
PCR Behavior	0.142	-0.115	-0.097	.612***	.552***	1						
NCR Behavior	0.158	-0.036	0.001	.462***	.707***	.495***	1					
Child Distress	-0.036	0.047	-0.098	0.001	-0.004	0.006	0.095	1				
Child Aggress	0.022	0.000	0.023	0.096	0.136	.177*	0.165	0.162	1			
Child Construct-self	-0.068	0.046	0.058	-0.025	-0.094	0.082	-0.027	0.018	-0.017	1		
Child Mother Orientation	0.037	-0.099	-0.012	-0.072	-0.019	-0.047	-0.032	0.161	-0.075	-0.155	1	
Child Construct-other	0.020	0.084	-0.017	-0.050	-0.023	0.073	.170*	.171*	0.091	.243**	-.197*	1

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

Table 4a.

Hierarchical linear regression of mothers' DERS and child ER

	1				2			
	b (SE) 95%CIboot [lowerCI, upperCI]	*b**	*t(125)*	*F(3,126)*	*b (SE) 95%CIboot [lowerCI, upperCI]*	*b**	*t(125)*	*F(4,125)*
Child distress			*t(126)*	*F(2,127)*			*t(126)*	*F(3,126)*
Child Gender	0.065 (0.084) [-0.097, 0.231]	0.070	0.774	-	0.071 (0.086) [-0.094, 0.238]	0.077	0.831	-
Effortful Control	0.041 (0.059) [-0.075, 0.159]	0.054	0.589	-	0.031 (0.063) [-0.096, 0.152]	0.041	0.428	-
DERS	-	-	-	-	-0.001 (0.002) [-0.005, 0.003]	-0.044	-0.459	-
Constant	0.430 (0.288) [-0.140, 0.998]	-	1.251	-	0.547 (0.382) [-0.161, 1.335]	-	1.276	-
R^2	0.006	-	-	0.390	0.008	-	-	*F (3,126)* = 0.328
Adj R^2	-0.010	-	-	-	-0.016	-	-	-
ΔR	-	-	-	-	0.002	-	-	*F(1,126)* = 0.210
Child aggress								
Child Gender	0.032 (0.048) [-0.062, 0.128]	0.060	0.661	-	0.018, (0.049) [-0.075, 0.117]	0.034	0.374	-
Effortful Control	0.023 (0.033) [-0.041, 0.087]	0.052	0.578	-	0.046 (0.035) [-0.021, 0.113]	0.104	1.113	-
Child Distress	0.074 (0.057) [-0.035, 0.186]	0.131	1.480	-	0.078 (0.056) [-0.030, 0.189]	0.138	1.572	-
DERS	-	-	-	-	0.003 (0.001) [0.000, 0.005]†	0.178	1.908	-
Constant	0.062 (0.161) [-0.253, 0.376]	-	0.316	-	-0.210 (0.213) [-0.618, 0.205]	-	-0.875	-
R^2	0.023	-	-	1.007	0.051	-	-	1.681
Adj R^2	0.00	-	-	-	0.021	-	-	-
ΔR	-	-	-	-	0.028	-	-	*F(1,125)* = 3.639
Child mom orient								
Child Gender	-0.044 (0.053) [-0.146, 0.059]	-0.073	-0.803	-	-0.041 (0.053) [-0.145, 0.063]	-0.066	-0.725	-
Effortful Control	-0.016 (0.045) [-0.102, 0.074]	-0.031	-0.340	-	-0.022 (0.047) [-0.112, 0.073]	-0.043	-0.453	-
Child Distress	0.101 (0.063) [-0.020, 0.229]	0.153	1.736	-	0.100 (0.063) [-0.021, 0.227]	0.151	1.711	-
DERS	-	-	-	-	-0.001 (0.002) [-0.004, 0.002]	-0.042	-0.443	-

Constant	0.304 (0.214) [-0.126, 0.722]	-	1.342	-	0.377 (0.280) [-0.174, 0.912]	-	1.340	-
R^2	0.027	-	-	1.165	0.029	-	-	0.917
Adj R^2	0.004	-	-	-	-0.003	-	-	-
ΔR	-	-	-	-	0.002	-	-	*F(1,125)* = 0.196
Child construct-other								
Child Gender	0.023 (0.049) [-0.075, 0.117]	0.042	0.472	-	0.016 (0.051) [-0.087, 0.112]	0.028	0.313	-
Effortful Control	0.090 (0.038) [0.015, 0.163]*	0.192	2.178	-	0.102 (0.040) [0.021, 0.178]*	0.220	2.380	-
Child Distress	0.110 (0.053) [0.004, 0.211]*	0.181	2.108	-	0.112 (0.054) [0.007, 0.214]*	0.185	2.148	
DERS	-	-	-	-	0.001 (0.002) [-0.002, 0.004]	0.094	1.020	-
Constant	-0.019 (0.191) [-0.398, 0.353]	-	-0.092	-	-0.171 (0.244) [-0.637, 0.328]	-	-0.679	-
R^2	0.071*	-	-	3.234*	0.079	-	-	2.686*
Adj R^2	0.049*	-	-	-	0.050	-	-	-
ΔR	-	-	-	-	0.008	-	-	*F(1,125)* = 1.040
Child construct-self								
Child Gender	0.109 (0.045) [0.020, 0.198]*	0.201	2.245	-	0.112 (0.046) [0.021, 0.204]*	0.207	2.274	-
Effortful Control	0.059 (0.040) [-0.018, 0.140]	0.130	1.457	-	0.054 (0.042) [-0.029, -0.139]	0.119	1.270	-
Child Distress	0.005 (0.057) [-0.106, 0.122]	0.009	0.107	-	0.005 (0.057) [-0.107, 0.120]	0.008	0.089	-
DERS	-	-	-	-	-0.001 (0.001) [-0.003, 0.002]	-0.038	-0.411	-
Constant	0.256 (0.192) [-0.123, 0.619]	-	1.288	-	0.316 (0.234) [-0.135, 0.800]	-	1.277	-
R^2	0.046	-	-	2.021	0.047	-	-	1.548
Adj R^2	0.023	-	-	-	0.017	-	-	-
ΔR	-	-	-	-	0.001	-	-	*F(1,125)* = 0.169

† *p<.10. *p < .05. **p < .01 ***p <.001.*

Table 4b.

Hierarchical linear regression of mothers' HRV and child ER

	1				2			
	b (SE) 95%CIboot [lowerCI, upperCI]	*b**	*t(95)*	*F(3,96)*	*b (SE) 95%CIboot [lowerCI, upperCI]*	*b**	*t(136)*	*F(4,95)*
Child distress			*t(96)*	*F(2,97)*				*F(3,96)*
Child Gender	0.032 (0.091) [-0.141, 0.213]	0.036	0.341	-	0.043 (0.091) [-0.129, 0.228]	0.048	0.452	-
Effortful Control	0.042 (0.064) [-0.084, 0.165]	0.059	0.556	-	0.040 (0.065) [-0.089, 0.167]	0.056	0.534	-
DERS	-	-	-	-	-0.057 (0.052) [-0.158, 0.046]	-0.116	-1.141	-
Constant	0.416 (0.313) [-0.189, 1.049]	-	1.101	-	0.797 (0.510) [-0.202, 1.813]	-	1.582	-
R^2	0.004	-	-	0.173	0.017	-	-	0.550
Adj R^2	-0.017	-	-	-	-0.014	-	-	-
ΔR	-	-	-	-	0.013	-	-	*F(1,96)* = 1.302
Child aggress								
Child Gender	0.024 (0.052) [-0.079, 0.128]	0.048	0.451	-	0.022 (0.053) [-0.082, 0.126]	0.045	0.417	-
Effortful Control	0.010 (0.036) [-0.063, 0.080]	0.025	0.234	-	0.010 (0.036) [-0.063, 0.080]	0.025	0.237	-
Child Distress	0.030 (0.063) [-0.091, 0.154]	0.053	0.525	-	0.032 (0.064) [-0.093, 0.154]	0.057	0.552	-
DERS	-	-	-	-	0.008 (0.032) [-0.056, 0.071]	0.030	0.293	-
Constant	0.146 (0.179) [-0.197, 0.509]	-	0.682	-	0.090 (0.278) [-0.460, 0.641]	-	0.308	-
R^2	0.005	-	-	0.172	0.006	-	-	0.149
Adj R^2	-0.026	-	-	-	-0.036	-	-	-
ΔR	-	-	-	-	0.001	-	-	*F(1,95)* = 0.086
Child mom orient								
Child Gender	0.012 (0.060) [-0.105, 0.133]	0.019	0.183	-	0.013 (0.061) [-0.104, 0.135]	0.021	0.200	-
Effortful Control	-0.015 (0.047) [-0.107, 0.076]	-0.029	-0.283	-	-0.015 (0.047) [-0.108, 0.076]	-0.029	-0.284	-
Child Distress	0.0182 (0.078) [0.033, 0.339]*	0.257	2.598	-	0.180 (0.078) [0.028, 0.339]*	0.254	2.545	-
DERS	-	-	-	-	-0.007 (0.036) [-0.081, 0.058]	-0.019	-0.188	-
Constant	0.258 (0.222) [-0.174, 0.702]	-	0.987	-	0.303 (0.340) [-0.351, 1.006]	-	0.856	-

R^2	0.067†	-	-	2.290†	0.067	-	-	1.709*
Adj R^2	0.038†	-	-	-	0.028	-	-	-
ΔR	-	-	-	-	0.000	-	-	*F(1,95)* = 0.035
Child construct-other								
Child Gender	0.053 (0.057) [-0.060, 0.164]	0.091	0.901	-	0.062 (0.057) [-0.049, 0.176]	0.107	1.054	-
Effortful Control	0.126 (0.043) [0.038, 0.209]**	0.268	2.641	-	0.125 (0.041) [0.042, 0.206]**	0.266	2.637	-
Child Distress	0.098 (0.070) [-0.042, 0.237]	0.149	1.532	-	0.087 (0.069) [-0.048, 0.223]	0.132	1.360	-
DERS	-	-	-	-	-0.046 (0.030) [-0.106, 0.015]	-0.145	-1.482	-
Constant	-0.222 (0.220) [-0.649, 0.223]	-	-0.931	-	0.094 (0.305) [-0.539, 0.660]	-	0.296	-
R^2	0.093*	-	-	3.283*	0.114	-	-	3.043*
Adj R^2	0.065*	-	-	-	0.076	-	-	-
ΔR	-	-	-	-	0.021	-	-	*F(1,95)* = 2.198
Child construct-self								
Child Gender	0.133 (0.055) [0.024, 0.239]*	0.229	2.234	-	0.131 (0.057) [0.017, 0.238]*	0.227	2.186	-
Effortful Control	0.072 (0.046) [-0.022, 0.163]	0.154	1.500	-	0.072 (0.047) [-0.022, 0.164]	0.155	1.496	-
Child Distress	**0.053 (0.072) [-0.091, 0.194]**	**0.082**	**0.832**	**-**	**0.055 (0.074) [-0.092, 0.199]**	**0.085**	**0.850**	**-**
DERS	-	-	-	-	0.008 (0.032) [-0.052, 0.072]	0.024	0.237	-
Constant	0.152 (0.224) [-0.279, 0.620]	-	0.634	-	0.101 (0.323) [-0.528, 0.745]	-	0.310	-
R^2	0.066†	-	-	2.246†	0.066	-	-	1.682
Adj R^2	0.036†	-	-	-	0.027	-	-	-
ΔR	-	-	-	-	0.001	-	-	*F(1,95)* = 0.056

† *p<.10. *p < .05. **p < .01 ***p <.001.*

Table 5a.

Hierarchical linear regression of mothers' DERS and emotion socialization behaviors

	1				2			
	b (SE) 95%CIboot [lowerCI, upperCI]	*b**	*t(136)*	*F(3,137)*	*b (SE) 95%CIboot [lowerCI, upperCI]*	*b**	*t(136)*	*F(4,136)*
IPA								
Education	0.008 (0.005) [-0.002, 0.019]	0.117	1.434	-	0.013 (0.005) [0.003, 0.023]*	0.179	2.350	-
Mother Age	0.004 (0.001) [0.001, 0.007]**	0.223	2.732	-	0.005 (0.001) [0.002, 0.007]**	0.245	3.252	-
Effortful Control	-0.059 (0.014) [-0.086, -0.031]***	-0.383	-5.081	-	-0.041 (0.013) [-0.066, -0.015]***	-0.268	-3.661	-
DERS	-	-	-	-	0.002 (0.000) [0.001, 0.003]***	0.374	5.045	-
Constant	0.347 (0.078) [0.196, 0.501]***	-	4.890	-	0.108 (0.079) [-0.044, 0.266]	-	1.339	-
R^2	0.234***	-	-	13.989***	0.355***	-	-	18.727***
Adj R^2	0.218***	-	-	-	0.336***	-	-	-
ΔR	-	-	-	-	0.121***	-	-	*F(1,136)* = 25.452***
KPS								
Education	-4.390 (4.064) [-12.316, 3.689]	-0.082	-0.972	-	-7.339 (3.892) [-14.953, .176]†	-0.138	-1.698	-
Mother Age	-0.809 (1.214) [-3.039, 1.678]	-0.059	-0.691	-	-1.074 (1.170) [-3.285, 1.338]	-0.078	-0.970	-
Effortful Control	45.468 (8.982) [27.875, 63.337]***	0.398	5.082	-	33.584 (9.194) [15.454, 51.857]**	0.294	3.770	-
DERS	-	-	-	-	-1.289 (0.319) [-1.896, -0.658]***	-0.333	-4.215	-
Constant	16.782 (58.451) [-101.890, 129.881]	-	0.304	-	176.628 (68.848) [41.075, 312.325]*	-	2.741	-
R^2	0.170***	-	-	9.412***	0.265***	-	-	12.357***
Adj R^2	0.152***	-	-	-	0.244***	-	-	-
ΔR	-	-	-	-	0.095***	-	-	*F(1,137)* = 17.765***
Mother Sensitivity								
Education	-1.892 (1.524) [-4.820, 1.277]	-0.119	-1.286	-	-1.793 (1.532) [-4.605, 1.476]	-0.112	-1.201	-
Mother Age	0.633 (0.417) [-0.240, 1.412]	0.154	1.671	-	0.642 (0.415) [-0.225, 1.423]	0.156	1.688	-
Effortful Control	4.069 (2.817) [-1.086, 10.035]	0.120	1.401	-	4.481 (2.960) [-0.847, 10.735]	0.132	1.460	-
DERS	-	-	-	-	0.044 (0.100) [-0.149, 0.252]	0.039	0.425	-

Constant	48.443 (17.145) [13.595, 81.137]	-	2.687	-	42.925 (19.736) [1.387, 79.419]	-	1.927	-
R^2	0.033	-	-	1.540	0.034	-	-	1.193
Adj R^2	0.012	-	-	-	0.006	-	-	-
ΔR	-	-	-	-	0.001	-	-	*F(1,134)* = 0.180
PCRAng								
Education	-0.632 (0.325) [-1.253, 0.025]†	-0.164	-1.813	-	-0.524 (0.326) [-1.157, 0.130]	-0.135	-1.484	-
Mother Age	-0.033 (0.084) [-0.202, 0.128]	-0.033	-0.366	-	-0.027 (0.082) [-0.194, 0.130]	-0.027	-0.301	-
Effortful Control	-1.634 (0.608) [-2.762, -0.348]**	-0.198	-2.394	-	-1.250 (0.644) [-2.505, 0.019]†	-0.152	-1.741	-
DERS	-	-	-	-	0.041 (0.024) [-0.007, 0.085]†	0.145	1.632	-
Constant	21.174 (4.037) [13.016, 28.924]***	-	5.038	-	18.824 (4.157) [10.907, 27.338]***	-	4.260	-
R^2	0.075*	-	-	3.717*	0.093*	-	-	3.488*
Adj R^2	0.055*	-	-	-	0.066*	-	-	-
ΔR	-	-	-	-	0.018	-	-	*F(1,136)* = 2.664
NCRAng								
Education	-0.001 (0.020) [-0.039, 0.036]	-0.005	-0.058	-	0.006 (0.020) [-0.033, 0.044]	0.026	0.299	-
Mother Age	-0.016 (0.005) [-0.025, -0.005]**	-0.268	-3.070	-	-0.015 (0.005) [-0.024, -0.005]**	-0.261	-3.018	-
Effortful Control	-0.126 (0.035) [-0.191, -0.057]***	-0.261	-3.255	-	-0.101 (0.036) [-0.169, -0.028]**	-0.209	-2.482	-
DERS	-	-	-	-	0.003 (0.001) [0.000, 0.005]*	0.163	1.899	-
Constant	2.512 (0.214) [2.082, 2.928]***	-	10.523	-	2.178 (0.242) [1.702, 2.659]***	-	7.395	-
R^2	0.133***	-	-	6.978***	0.155***	-	-	6.235***
Adj R^2	0.114***	-	-	-	0.130***	-	-	-
ΔR	-	-	-	-	0.022	-	-	*F(1,136)* = 3.607
PCRBeh								
Education	-0.089 (0.059) [-0.205, 0.025]	-0.136	-1.50	-	-0.059 (0.059) [-0.177, 0.059]	-0.091	-1.009	-
Mother Age	-0.024 (0.015) [-0.053, 0.004]	-0.142	-1.572	-	-0.022 (0.014) [-0.049, 0.004]	-0.132	-1.496	-
Effortful Control	-0.185 (0.10) [-0.385, 0.007]†	-0.132	-1.595	-	-0.081 (0.103) [-0.288, 0.119]	-0.58	-0.675	-
DERS	-	-	-	-	0.011 (0.004) [0.004, 0.019]**	0.232	2.640	-
Constant	5.056 (0.673) [3.758, 6.371]***	-	7.095	-	3.688 (0.798) [2.158, 5.285]***	-	4.244	-
R^2	0.072*	-	-	3.531*	0.117**	-	-	4.506**

Adj R^2	0.051*	-	-	-	0.091**	-	-	-
ΔR	-	-	-	-	0.045**	-	-	*F(1,136)* = 6.969**
NCRBeh								
Education	-0.007 (0.021) [-0.049, 0.033]	-0.032	-0.339	-	0.001 (0.022) [-0.044, 0.043]	0.005	0.053	-
Mother Age	-0.002 (0.006) [-0.013, 0.009]	-0.033	-0.355	-	-0.002 (0.005) [-0.012, 0.009]	-0.025	-0.273	-
Effortful Control	-0.064 (0.041) [-0.144, 0.020]	-0.127	-1.490	-	-0.033 (0.043) [-0.117, 0.050]	-0.066	-0.743	-
DERS	-	-	-	-	0.003 (0.002) [0.000, 0.007]†	0.189	2.077	-
Constant	1.816 (0.269) [1.291, 2.343]***	-	6.886	-	1.414 (0.341) [0.782, 2.125]***	-	4.356	-
R^2	0.019	-	-	0.889	0.049	-	-	1.762
Adj R^2	-0.002	-	-	-	0.021	-	-	-
ΔR	-	-	-	-	.030*	-	-	*F(1,136)* = 4.315*

† *p<.10. *p < .05. **p < .01 ***p <.001.*

Table 5b.

Hierarchical linear regression of mothers' HRV and emotion socialization behaviors

	1				2			
	b (SE) 95%CIboot [lowerCI, upperCI]	*b**	*t(136)*	*F(3,103)*	*b (SE) 95%CIboot [lowerCI, upperCI]*	*b**	*t(136)*	*F(4,102)*
IPA								-
Education	0.011 (0.006) [-0.001, 0.022]†	0.147	1.613	-	0.011 (0.006) [0.000, 0.023]†	0.156	1.699	-
Mother Age	0.004 (0.002) [0.001, 0.008]**	0.242	2.663	-	0.004 (0.002) [0.001, 0.008]*	0.224	2.393	-
Effortful Control	-0.066 (0.016) [-0.095, -0.034]***	-0.436	-5.259	-	-0.065 (0.016) [-0.095, -0.033]***	-0.434	-5.218	-
HRV	-	-	-	-	-0.008 (0.009) [-0.024, 0.011]	-0.070	-0.822	-
Constant	0.372 (0.090) [0.195, 0.545]***	-	4.770	-	0.429 (0.122) [0.174, 0.655]**	-	4.121	-
R^2	0.304***	-	-	14.989***	0.308***	-	-	11.375***
Adj R^2	0.284***	-	-	-	0.281***	-	-	-
ΔR	-	-	-	-	0.005	-	-	*F (1,102)* = 0.676
KPS								
Education	-6.880 (4.570) [-16.421, 1.661]	-0.125	-1.294	-	-7.207 (4.581) [-16.854, 1.387]	-0.131	-1.342	-
Mother Age	-1.229 (1.397) [-3.922, 1.561]	-0.086	-0.897	-	-1.062 (1.467) [-3.864, 1.860]	-0.075	-0.753	-
Effortful Control	48.749 (10.167) [29.381, 69.046]***	0.426	4.841	-	48.681 (10.103) [29.736, 69.366]***	0.426	4.817	-
HRV	-	-	-	-	3.880 (7.825) [-11.585, 19.065]	0.047	0.529	-
Constant	15.308 (66.834) [-117.742, 144.105]	-	0.242	-	-14.059 (89.022) [-189.096, 160.916]	-	-0.167	-
R^2	0.210***	-	-	9.217***	0.212***	-	-	6.935***
Adj R^2	0.187***	-	-	-	0.182***	-	-	-
ΔR	-	-	-	-	0.002	-	-	*F (1,103)* = 0.280
Mother Sensitivity								
Education	-0.301 (1.866) [-3.680, 3.578]	-0.020	-0.185	-	-0.693 (1.859) [-4.044, 3.182]	-0.046	-0.431	-
Mother Age	0.366 (0.456) [-0.573, 1.205]	0.094	0.876	-	0.563 (0.427) [-0.390, 1.390]	0.145	1.341	-
Effortful Control	4.955 (2.904) [-0.294, 11.222]†	0.159	1.611	-	4.831 (2.883) [-0.260, 11.194]†	0.155	1.599	-

HRV	-	-	-	-	4.719 (2.059) [0.953, 9.039]*	0.213	2.171	-
Constant	46.411 (18.215) [8.848, 80.230]*	-	2.380	-	11.017 (24.956) [-39.080, 59.550]	-	0.438	-
R^2	0.030	-	-	1.045	0.073	-	-	1.991
Adj R^2	0.001	-	-	-	0.036	-	-	-
ΔR	-	-	-	-	0.043*	-	-	*F (1, 101)* = 4.713*
PCRAng								
Education	-0.768 (0.374) [-1.513, -0.025]*	-0.202	-1.966	-	-0.845 (0.384) [-1.624, -0.107]*	-0.223	-2.168	-
Mother Age	-0.015 (0.094) [-0.208, 0.168]	-0.015	-0.146	-	0.024 (0.098) [-0.165, 0.220]	0.025	0.239	-
Effortful Control	-1.737 (0.649) [-2.977, -0.453]**	-0.221	-2.348	-	-1.753 (0.628) [-2.948, -0.514]**	-0.223	-2.391	-
HRV	-	-	-	-	0.911 (0.575) [-0.151, 2.089]	0.162	1.711	-
Constant	21.309 (4.411) [12.775, 30.090]***	-	4.588	-	14.415 (6.328) [1.246, 26.461]*	-	2.356	-
R^2	0.099*	-	-	3.818*	0.124**	-	-	3.648**
Adj R^2	0.073*	-	-	-	0.090**	-	-	-
ΔR	-	-	-	-	0.025†	-	-	*F (1,103)* = 2.926†
NCRAng								
Education	-0.011 (0.023) [-0.058, 0.034]	-0.052	-0.515	-	-0.013 (0.024) [-0.061, 0.033]	-0.058	-0.575	-
Mother Age	-0.013 (0.006) [-0.024, -0.001]*	-0.228	-2.274	-	-0.012 (0.006) [-0.024, 0.000]*	-0.215	-2.083	-
Effortful Control	-0.137 (0.038) [-0.214, -0.063]**	-0.298	-3.250	-	-0.137 (0.038) [-0.213, -0.063]**	-0.298	-3.246	-
HRV	-	-	-	-	0.017 (0.031) [-0.042, 0.078]	.052	0.562	-
Constant	2.513 (0.228) [2.080, 2.970]***	-	9.515	-	2.382 (0.336) [1.699, 3.008]***	-	6.765	-
R^2	0.146**	-	-	5.909**	0.148***	-	-	4.481**
Adj R^2	0.121**	-	-	-	0.115**	-	-	-
ΔR	-	-	-	-	0.003	-	-	*F(1,103)* = 0.316
PCRBeh								
Education	-0.100 (0.068) [-0.232, 0.038]	-0.152	-1.475	-	-0.099 (0.069) [-0.236, 0.039]	-0.151	-1.442	-
Mother Age	-0.025 (0.018) [-0.060, 0.009]	-0.149	-1.440	-	-0.026 (0.018) [-0.061, 0.010]	-0.152	-1.428	-
Effortful Control	-0.223 (0.110) [-0.450, -0.012]*	-0.163	-1.726	-	-0.223 (0.111) [-0.447, -0.007]*	-0.163	-1.716	-
HRV	-	-	-	-	-0.013 (0.091) [-0.190, 0.171]	-0.013	-0.135	-

Constant	5.310 (0.759) [3.898, 6.887]***	-	6.555	-	5.406 (1.050) [3.297, 7.480]***	-	4.997	-
R^2	0.091*	-	-	3.481*	0.091*	-	-	2.590*
Adj R^2	0.065*	-	-	-	0.056*	-	-	-
ΔR	-	-	-	-	0.000	-	-	*F(1,103)* = 0.018
NCRBeh								
Education	-0.010 (0.024) [-0.058, 0.037]	-0.042	-0.394	-	-0.012 (0.024) [-0.060, 0.034]	-0.052	-0.482	-
Mother Age	0.001 (0.006) [-0.011, 0.014]	0.020	0.183	-	0.002 (0.006) [-0.010, 0.015]	0.039	0.354	-
Effortful Control	-0.070 (0.044) [-0.159, 0.013]	-0.145	-1.477	-	-0.070 (0.044) [-0.160, 0.013]	-0.146	-1.485	-
HRV	-	-	-	-	0.027 (0.036) [-0.042, 0.099]	0.078	0.787	-
Constant	1.751 (0.296) [1.191, 2.380]***	-	5.909	-	1.547 (0.420) [0.690, 2.342]**	-	3.919	-
R^2	0.024	-	-	0.845	0.030	-	-	0.786
Adj R^2	-0.004	-	-	-	-0.008	-	-	-
ΔR	-	-	-	-	0.006	-	-	*F(1,103)* = 0.619

† *p<.10. *p < .05. **p < .01 ***p <.001.*

Table 6a.

Hierarchical linear regression of mothers' parent attitudes and child ER

	1				2			
	b (SE) 95%CIboot [lowerCI, upperCI]	*b**	*t(125)*	*F(3,126)*	*b (SE) 95%CIboot [lowerCI, upperCI]*	*b**	*t(125)*	*F(4,125)*
Child distress			*t(126)*	*F(2,127)*			*t(126)*	*F(3,126)*
Child Gender	0.060 (0.083) [-0.100, 0.224]	0.065	0.721	-	0.060 (0.083) [-0.100, 0.227]	0.065	0.721	-
Effortful Control	0.052 (0.058) [-0.064, 0.165]	0.067	0.745	-	0.056 (0.063) [-0.067, 0.179]	0.072	0.744	-
IPA	-	-	-	-	0.016 (0.127) [-0.212, 0.279]	0.014	0.144	-
Constant	0.379 (0.284) [-0.170, 0.936	-	1.110	-	0.334 (0.428) [-0.532, 1.149)	-	0.715	-
R^2	0.007	-	-	0.444	0.007	-	-	*F (3,126)* = 0.300
Adj R^2	-0.009	-	-	-	-0.017	-	-	-
ΔR	-	-	-	-	0.000	-	-	*F(1,126)* = 0.021
Child aggress								
Child Gender	0.033 (0.048) [-0.061, 0.127]	0.062	0.684	-	0.033 (0.048) [-0.060, 0.129]	0.062	0.687	-
Effortful Control	0.030 (0.032) [-0.032, 0.096]	0.069	0.762	-	0.039 (0.036) [-0.032, 0.111]	0.090	0.927	-
Child Distress	0.069 (0.058) [-0.045, 0.182]	0.120	1.361	-	0.068 (0.059) [-0.049, 0.183]	0.120	1.349	-
IPA	-	-	-	-	0.038 (0.069) [-0.106, 0.165]	0.058	0.608	-
Constant	0.030 (0.160) [-0.295, 0.335]	-	0.156	-	-0.079 (0.245) [-0.566, 0.412]	-	-0.297	-
R^2	0.023	-	-	0.982	0.026	-	-	0.825
Adj R^2	0.000	-	-	-	-0.005	-	-	-
ΔR	-	-	-	-	0.003	-	-	*F(1,125)* = 0.370
Child mom orient								
Child Gender	-0.043 (0.051) [-0.145, 0.057]	-0.070	-0.776	-	-0.043 (0.052) [-0.145, 0.058]	-0.070	-0.772	-
Effortful Control	-0.009 (0.045) [-0.094, 0.081]	-0.018	-0.194	-	-0.007 (0.050) [-0.099, 0.095]	-0.013	-0.133	-
Child Distress	0.096 (0.064) [-0.024, 0.230]	0.145	1.647	-	0.096 (0.064) [-0.024, 0.230]	0.145	1.639	-
IPA	-	-	-	-	0.010 (0.074) [-0.130, 0.165]	0.012	0.132	-
Constant	0.274 (0.214) [-0.157, 0.684]	-	1.214	-	0.247 (0.314) [-0.412, 0.833]	-	0.802	-

R^2	0.025	-	-	1.056	0.025	-	-	0.790
Adj R^2	0.001	-	-	-	-0.007	-	-	-
ΔR	-	-	-	-	0.017	-	-	*F(1,125)* = 0.017
Child construct-other								
Child Gender	0.027 (0.047) [-0.068, 0.123]	0.049	0.554	-	0.028 (0.048) [-0.066, 0.123]	0.050	0.570	-
Effortful Control	0.094 (0.038) [0.020, 0.170]*	0.200	2.275	-	0.118 (0.039) [0.043, 0.195]**	0.252	2.687	-
Child Distress	0.109 (0.54) [0.002, 0.213]*	0.179	2.082	-	0.108 (0.055) [-0.001, 0.214]*	0.177	2.073	-
IPA	-	-	-	-	0.100 (0.064) [-0.034, 0.218]	0.141	1.539	-
Constant	-0.040 (0.190) [-0.411, 0.335]	-	-0.194	-	-0.325 (0.252) [-0.821, 0.174]	-	-1.185	-
R^2	0.075*	-	-	3.404*	0.092*	-	-	3.173*
Adj R^2	0.053*	-	-	-	0.063*	-	-	-
ΔR	-	-	-	-	0.017	-	-	*F(1,125)* = 2.368
Child construct-self								
Child Gender	0.106 (0.045) [0.018, 0.193]*	0.195	2.178	-	0.106 (0.045) [0.018, 0.196]*	0.195	2.169	-
Effortful Control	0.050 (0.041) [-0.029, 0.130]	0.111	1.245	-	0.050 (0.043) [-0.036, 0.137]	0.111	1.157	-
Child Distress	0.010 (0.058) [-0.101, 0.130]	0.017	0.192	-	0.010 (0.059) [-0.102, 0.129]	0.017	0.192	-
IPA	-	-	-	-	0.000 (0.069) [-0.124, 0.145]	0.000	-0.002	-
Constant	0.294 (0.194) [-0.082, 0.683]	-	1.478	-	0.294 (0.265) [-0.244, 0.814]	-	1.086	-
R^2	0.042	-	-	1.839	0.042	-	-	1.368
Adj R^2	0.019	-	-	-	0.011	-	-	-
ΔR	-	-	-	-	0.000	-	-	*F(1,125)* = 0.000

† *p<.10. *p < .05. **p < .01 ***p <.001.*

Table 6b.

Hierarchical linear regression of mothers' parenting satisfaction and child ER

	1				2			
	b (SE) 95%CIboot [lowerCI, upperCI]	*b**	*t(126)*	*F(3,127)*	*b (SE) 95%CIboot [lowerCI, upperCI]*	*b**	*t(126)*	*F(4,126)*
Child distress			*t(127)*	*F(2,128)*			*t(127)*	*F(3,127)*
Child Gender	0.068 (0.084) [-0.092, 0.233]	0.074	0.819	-	0.068 (0.084) [-0.091, 0.236]	0.074	0.812	-
Effortful Control	0.043 (0.058) [-0.075, 0.155]	0.056	0.624	-	0.042 (0.061) [-0.087, 0.156]	0.055	0.562	-
KPS	-	-	-	-	0.002 (0.054) [-0.095, 0.112]	0.004	0.044	-
Constant	0.420 (0.285) [-0.118, 1.005]	-	1.230	-	0.413 (0.356) [-0.243, 1.158]	-	1.098	-
R^2	0.007	-	-	0.439	0.007	-	-	*F (3,127) =* 0.291
Adj R^2	-0.009	-	-	-	-0.017	-	-	-
ΔR	-	-	-	-	0.000	-	-	*F(1,127) =* 0.002
Child aggress								
Child Gender	0.036 (0.047) [-0.057, 0.129]	0.068	0.756	-	0.037 (0.047) [-0.058, 0.128]	0.070	0.770	-
Effortful Control	0.026 (0.033) [-0.040. 0.092]	0.059	0.655	-	0.032 (0.036) [-0.041, 0.105]	0.072	0.745	-
Child Distress	0.076 (0.058) [-0.041, 0.188]	0.132	1.507	-	0.076 (0.059) [-0.040, 0.192]	0.133	1.504	-
KPS	-	-	-	-	-0.011 (0.031) [-0.073, 0.045]	-0.035	-0.374	-
Constant	0.047 (0.163) [-0.268, 0.372]	-	0.240	-	0.080 (0.194) [-0.312, 0.454]	-	0.372	-
R^2	0.026	-	-	1.114	0.027	-	-	0.865
Adj R^2	0.003	-	-	-	-0.004	-	-	-
ΔR	-	-	-	-	0.001	-	-	*F(1,126) =* 0.140
Child mom orient								
Child Gender	-0.040 (0.052) [-0.146, 0.063]	-0.065	-0.726	-	-0.037 (0.052) [-0.142, 0.066]	-0.061	-0.678	-
Effortful Control	-0.013 (0.045) [-0.098, 0.079]	-0.025	-0.275	-	0.006 (0.052) [-0.096, 0.105]	0.012	0.126	-
Child Distress	0.102 (0.062) [-0.014, 0.229]	0.155	1.762	-	0.102 (0.062) [-0.017, 0.225]	0.155	1.767	-
KPS	-	-	-	-	-0.034 (0.038) [-0.099, 0.049]	-0.098	-1.041	-

Constant	0.288 (0.214) [-0.144, 0.705]	-	1.280	-	0.393 (0.240) [-0.082, 0.856]	-	1.595	-
R^2	0.027	-	-	1.156	0.035	-	-	1.139
Adj R^2	0.004	-	-	-	0.004	-	-	-
ΔR	-	-	-	-	0.008	-	-	*F(1,126)* = 1.083
Child construct-other								
Child Gender	0.028 (0.048) [-0.066, 0.122]	0.050	0.573	-	0.028 (0.048) [-0.068, 0.119]	0.050	0.569	-
Effortful Control	0.093 (0.037) [0.020, 0.165]*	0.199	2.269	-	0.092 (0.041) [0.013, 0.177]*	0.197	2.088	-
Child Distress	0.111 (0.054) [0.007, 0.215]*	0.183	2.137	-	0.111 (0.054) [0.010, 0.218]*	0.183	2.128	
KPS	-	-	-	-	0.001 (0.039) [-0.084, 0.068]	0.004	0.039	-
Constant	-0.036 (0.186) [-0.400, 0.336]	-	-0.176	-	-0.039 (0.231) [-0.505, 0.392]	-	-0.176	-
R^2	0.075*	-	-	3.441*	0.075*	-	-	2.561*
Adj R^2	0.053*	-	-	-	0.046*	-	-	-
ΔR	-	-	-	-	0.000	-	-	*F(1,126)* = 0.001
Child construct-self								
Child Gender	0.103 (0.046) [0.014, 0.192]*	0.189	2.117	-	0.103 (0.045) [0.013, 0.192]*	0.190	2.119	-
Effortful Control	0.054 (0.040) [-0.025, 0.133]	0.120	1.348	-	0.058 (0.045) [-0.026, 0.152]	0.129	1.341	-
Child Distress	0.004 (0.058) [-0.106, 0.121]	0.006	0.070	-	0.004 (0.058) [-0.104, 0.124]	0.006	0.071	-
KPS	-	-	-	-	-0.007 (0.037) [-0.090, 0.052]	-0.023	-0.248	-
Constant	0.279 (0.192) [-0.089, 0.659]	-	1.405	-	0.301 (0.228) [-0.114, 0.778]	-	1.379	-
R^2	0.041	-	-	1.787	0.041	-	-	1.346
Adj R^2	0.018	-	-	-	0.011	-	-	-
ΔR	-	-	-	-	0.000	-	-	*F(1,126)* = 0.062

† *p<.10. *p < .05. **p < .01 ***p <.001.*

Table 6c.

Hierarchical linear regression of mothers' sensitivity and child ER

	1				2			
	b (SE) 95%CIboot [lowerCI, upperCI]	*b**	*t(123)*	*F(3,124)*	*b (SE) 95%CIboot [lowerCI, upperCI]*	*b**	*t(123)*	*F(4,123)*
Child distress			*t(124)*	*F(2,125)*			*t(124)*	*F(3,124)*
Child Gender	0.069 (0.086) [-0.098, 0.237]	0.073	0.802	-	0.033 (0.091) [-0.140, 0.215]	0.036	0.377	-
Effortful Control	0.041 (0.060) [-0.075, 0.157]	0.053	0.577	-	0.052 (0.059) [-0.061, 0.168]	0.066	0.725	-
Mother Sensitivity	-	-	-	-	-0.057 (0.046) [-0.144, 0.038]	-0.136	-1.450	-
Constant	0.434 (0.292) [-0.124, 1.012]	-	1.248	-	0.916 (0.507) [-0.135, 1.883]†	-	1.908	-
R^2	0.006	-	-	0.407	0.023	-	-	*F (3,124)* = 0.975
Adj R^2	-0.009	-	-	-	-0.001	-	-	-
ΔR	-	-	-	-	0.017	-	-	*F(1,124)* = 2.102
Child aggress								
Child Gender	0.042 (0.049) [-0.053, 0.141]	0.079	0.869	-	0.047 (0.052) [-0.055, 0.149]	0.088	0.926	-
Effortful Control	0.022 (0.033) [-0.045, 0.088]	0.049	0.538	-	0.020 (0.033) [-0.046, 0.085]	0.045	0.495	-
Child Distress	0.076 (0.058) [-0.041, 0.189]	0.133	1.499	-	0.078 (0.060) [-0.042, 0.196]	0.137	1.525	-
Mother Sensitivity	-	-	-	-	0.008 (0.026) [-0.043, 0.057]	0.032	0.342	-
Constant	0.064 (0.165) [-0.259, 0.388]	-	0.323	-	-0.002 (0.296) [-0.591, 0.571]	-	-0.008	-
R^2	0.027	-	-	1.125	0.027	-	-	0.867
Adj R^2	0.003	-	-	-	-0.004	-	-	-
ΔR	-	-	-	-	0.001	-	-	*F(1,123)* = 0.117
Child mom orient								
Child Gender	-0.045 (0.053) [-0.150, 0.060]	-0.074	-0.813	-	-0.049 (0.057) [-0.158, 0.064]	-0.081	-0.852	-
Effortful Control	-0.019 (0.045) [-0.105, 0.072]	-0.037	-0.405	-	-0.017 (0.046) [-0.106, 0.076]	-0.034	-0.371	-
Child Distress	0.099 (0.063) [-0.019, 0.229]	0.151	1.698	-	0.097 (0.064) [-0.021, 0.232]	0.148	1.643	
Mother Sensitivity	-	-	-	-	-0.007 (0.025) [-0.055, 0.045]	-0.025	-0.270	-

Constant	0.324 (0.217) [-0.114, 0.746]	-	1.422	-	0.384 (0.300) [-0.217, 0.953]	-	1.202	-
R^2	0.027	-	-	1.131	0.027	-	-	0.860
Adj R^2	0.003	-	-	-	-0.004	-	-	-
ΔR	-	-	-	-	0.001	-	-	*F(1,123)* = 0.073
Child construct-other								
Child Gender	0.049 (0.047) [-0.043, 0.139]	0.089	1.006	-	0.051 (0.048) [-0.043, 0.145]	0.092	1.003	-
Effortful Control	0.093 (0.036) [0.021, 0.164]*	0.202	2.289	-	0.092 (0.037) [0.019, 0.165]*	0.201	2.251	-
Child Distress	0.110 (0.053) [0.008, 0.215]*	0.187	2.161	-	0.111 (0.053) [0.008, 0.215]*	0.188	2.152	-
Mother Sensitivity	-	-	-	-	0.003 (0.021) [-0.037, 0.045]	0.013	0.140	-
Constant	-0.039 (0.182) [-0.413, 0.313]	-	-0.194	-	-0.066 (0.249) [-0.571, 0.400]	-	-0.236	-
R^2	0.081*	-	-	3.628*	0.081*	-	-	2.705*
Adj R^2	0.058*	-	-	-	0.051*	-	-	-
ΔR	-	-	-	-	0.000	-	-	*F(1,123)* = 0.020
Child construct-self								
Child Gender	0.114 (0.045) [0.025, 0.202]*	0.209	2.328	-	0.135 (0.050) [0.037, 0.232]*	0.247	2.660	-
Effortful Control	0.054 (0.041) [-0.023, 0.136]	0.120	1.331	-	0.047 (0.041) [-0.033, 0.129]	0.105	1.163	-
Child Distress	0.002 (0.058) [-0.109, 0.121]	0.004	0.047	-	0.012, 0.059 [-0.101, 0.134]	0.021	0.243	-
Mother Sensitivity	-	-	-	-	0.035 (0.024) [-0.011, 0.081]	0.140	1.517	-
Constant	0.279 (0.193) [-0.103, 0.649]	-	1.391	-	-0.016 (0.292) [-0.582, 0.551]	-	-0.059	-
R^2	0.048	-	-	2.063	0.065†	-	-	2.139†
Adj R^2	0.024	-	-	-	0.035†	-	-	-
ΔR	-	-	-	-	0.017	-	-	*F(1,123)* = 2.301

† *p<.10. *p < .05. **p < .01 ***p <.001.*

Table 6d.

Hierarchical linear regression of mothers' PCR of child anger and child ER

	1				2			
	b (SE) 95%CIboot [lowerCI, upperCI]	*b**	*t(125)*	*F(3,126)*	*b (SE) 95%CIboot [lowerCI, upperCI]*	*b**	*t(125)*	*F(4,125)*
Child distress			*t(126)*	*F(2,127)*			*t(126)*	*F(3,126)*
Child Gender	0.079 (0.083) [-0.084, 0.244]	0.085	0.936	-	0.076 (0.083) [-0.085, 0.245]	0.082	0.908	-
Effortful Control	0.052 (0.059) [-0.062, 0.167]	0.068	0.745	-	0.065 (0.059) [-0.052, 0.179]	0.085	0.909	-
PCRAng	-	-	-	-	0.042 (0.047) [-0.053, 0.134]	0.074	0.814	-
Constant	0.370 (0.286) [-0.194, 0.928]	-	1.077	-	0.178 (0.340) [-0.488, 0.836]	-	0.426	-
R^2	0.009	-	-	0.587	0.014	-	-	*F (3,126)* = 0.975
Adj R^2	-0.006	-	-	-	-0.009	-	-	-
ΔR	-	-	-	-	0.005	-	-	*F(1,126)* = 0.663
Child aggress								
Child Gender	0.031 (0.048) [-0.060, 0.126]	0.059	0.648	-	0.029 (0.048) [-0.062, 0.126]	0.055	0.608	-
Effortful Control	0.022 (0.033) [-0.044, 0.087]	0.049	0.546	-	0.037 (0.036) [-0.031, 0.111]	0.085	0.921	-
Child Distress	0.080 (0.059) [-0.034, 0.195]	0.141	1.592	-	0.074 (0.057) [-0.035, 0.182]	0.130	1.478	-
PCRAng	-	-	-	-	0.048 (0.032) [-0.012, 0.112]	0.151	1.671	-
Constant	0.067 (0.162) [-0.248, 0.387]	-	0.344	-	-0.153 (0.225) [-0.615, 0.268]	-	-0.652	-
R^2	0.026	-	-	1.128	0.047	-	-	1.556
Adj R^2	0.003	-	-	-	0.017	-	-	-
ΔR	-	-	-	-	0.021†	-	-	*F(1,125)* = 2.791†
Child mom orient								
Child Gender	-0.047 (0.052) [-0.149, 0.056]	-0.077	-0.855	-	-0.046 (0.052) [-0.148, 0.056]	-0.075	-0.828	-
Effortful Control	-0.019 (0.045) [-0.104, 0.071]	-0.037	-0.407	-	-0.029 (0.046) [-0.117, 0.061]	-0.058	-0.621	-
Child Distress	0.109 (0.064) [-0.010, 0.243]†	0.165	1.875	-	0.113 (0.064) [-0.005, 0.247]†	0.171	1.941	
PCRAng	-	-	-	-	-0.033 (0.034) [-0.095, 0.040]	-0.089	-0.978	-

Constant	0.318 (0.212) [-0.112, 0.725]	-	1.409	-	0.468 (0.262) [-0.050, 0.980]†	-	1.715	-
R^2	0.031	-	-	1.342	0.038	-	-	1.245
Adj R^2	0.008	-	-	-	0.008	-	-	-
ΔR	-	-	-	-	0.007	-	-	*F(1,125)* = 0.956
Child construct-other								
Child Gender	0.034 (0.048) [-0.062, 0.128]	0.060	0.680	-	0.034 (0.049) [-0.063, 0.129]	0.061	0.691	-
Effortful Control	0.098 (0.037) [0.025, 0.171]*	0.208	2.366	-	0.093 (0.039) [0.016, 0.169]*	0.198	2.177	-
Child Distress	0.106 (0.054) [0.002, 0.212]†	0.174	2.025	-	0.108 (0.054) [0.001, 0.214]†	0.177	2.051	-
PCRAng	-	-	-	-	-0.015 (0.028) [-0.072, 0.039]	-0.045	-0.510	-
Constant	-0.059 (0.189) [-0.425, 0.308]	-	-0.288	-	0.012 (0.232) [-0.443, 0.481]	-	0.049	-
R^2	0.077*	-	-	3.486*	0.079*	-	-	2.664*
Adj R^2	0.055*	-	-	-	0.049*	-	-	-
ΔR	-	-	-	-	0.002	-	-	*F(1,125)* = 0.260
Child construct-self								
Child Gender	0.107 (0.046) [0.019, 0.195]*	0.197	2.195	-	0.107 (0.046) [0.018, 0.195]*	0.197	2.183	-
Effortful Control	0.058 (0.041) [-0.024, 0.137]	0.128	1.433	-	0.059 (0.042) [-0.026, 0.138]	0.131	1.412	-
Child Distress	-0.001 (0.057) [-0.107, 0.117]	-0.001	-0.015	-	-0.001 (0.058) [-0.110, 0.115]	-0.002	-0.023	-
PCRAng	-	-	-	-	0.003 (0.030) [-0.056, 0.062]	0.009	0.102	-
Constant	0.260 (0.195) [-0.102, 0.646]	-	1.299	-	0.246 (0.238) [-0.196, 0.740]	-	1.013	-
R^2	0.044	-	-	1.921	0.044	-	-	1.432
Adj R^2	0.021	-	-	-	0.013	-	-	-
ΔR	-	-	-	-	0.000	-	-	*F(1,125)* = 0.010

† *p<.10. *p < .05. **p < .01 ***p <.001.*

Table 6e.

Hierarchical linear regression of mothers' NCR of child anger and child ER

	1				2			
	b (SE) 95%CIboot [lowerCI, upperCI]	*b**	*t(125)*	*F(3,126)*	*b (SE) 95%CIboot [lowerCI, upperCI]*	*b**	*t(125)*	*F(4,125)*
Child distress			*t(126)*	*F(2,127)*			*t(126)*	*F(3,126)*
Child Gender	0.079 (0.083) [-0.078, 0.243]	0.085	0.936	-	0.076 (0.083) [-0.080, 0.240]	0.082	0.901	-
Effortful Control	0.052 (0.059) [-0.066, 0.168]	0.068	0.745	-	0.063 (0.063) [-0.064, 0.187]	0.081	0.847	-
NCRAng	-	-	-	-	0.023 (0.053) [-0.083, 0.129]	0.043	0.455	-
Constant	0.370 (0.289) [-0.194, 0.952]	-	1.077	-	0.273 (0.360) [-0.434, 0.993]	-	0.673	-
R^2	0.009	-	-	0.587	0.011	-	-	*F (3,126)* = 0.458
Adj R^2	-0.006	-	-	-	-0.013	-	-	-
ΔR	-	-	-	-	0.002	-	-	*F(1,126)* = 0.207
Child aggress								
Child Gender	0.031 (0.048) [-0.062, 0.126]	0.059	0.648	-	0.025 (0.048) [-0.069, 0.119]	0.047	0.522	-
Effortful Control	0.022 (0.033) [-0.046, 0.086]	0.049	0.546	-	0.050 (0.037) [-0.023, 0.119]	0.113	1.209	-
Child Distress	0.080 (0.059) [-0.035, 0.196]	0.141	1.592	-	0.076 (0.057) [-0.036, 0.191]	0.133	1.526	-
NCRAng	-	-	-	-	0.060 (0.029) [0.004, 0.117]*	0.201	2.181	-
Constant	0.067 (0.163) [-0.244, 0.403]	-	0.344	-	-0.191 (0.209) [-0.591, 0.224]	-	-0.842	-
R^2	0.026	-	-	1.128	0.062†	-	-	2.060†
Adj R^2	0.003	-	-	-	0.032†	-	-	-
ΔR	-	-	-	-	0.036*	-	-	*F(1,125)* = 4.755*
Child mom orient								
Child Gender	-0.047 (0.052) [-0.150, 0.055]	-0.077	-0.855	-	-0.046 (0.052) [-0.149, 0.057]	-0.076	-0.835	-
Effortful Control	-0.019 (0.046) [-0.105, 0.071]	-0.037	-0.407	-	-0.022 (0.047) [-0.114, 0.072]	-0.044	-0.461	-
Child Distress	0.109 (0.064) [-0.011, 0.236]†	0.165	1.875	-	0.109 (0.064) [-0.011, 0.236]†	0.166	1.876	
NCRAng	-	-	-	-	-0.008 (0.033) [-0.069, 0.059]	-0.023	-0.244	-

Constant	0.318 (0.218) [-0.115, 0.730]	-	1.409	-	0.352 (0.253) [-0.141, 0.838]	-	1.324	-
R^2	0.031	-	-	1.342	0.031	-	-	1.014
Adj R^2	0.008	-	-	-	0.000	-	-	-
ΔR	-	-	-	-	0.000	-	-	*F(1,125)* = 0.059
Child construct-other								
Child Gender	0.034 (0.049) [-0.065, 0.130]	0.060	0.680	-	0.033 (0.050) [-0.066, 0.131]	0.059	0.670	-
Effortful Control	0.098 (0.037) [0.024, 0.173]*	0.208	2.366	-	0.099 (0.040) [0.021, 0.179]*	0.211	2.268	-
Child Distress	0.106 (0.055) [-0.002, 0.211]†	0.174	2.025	-	0.106 (0.055) [-0.004, 0.212]†	0.174	2.012	-
NCRAng	-	-	-	-	0.003 (0.029) [-0.057, 0.058]	0.009	0.096	-
Constant	-0.059 (0.188) [-0.439, 0.314]	-	-0.288	-	-0.071 (0.226) [-0.511, 0.375]	-	-0.295	-
R^2	0.077*	-	-	3.486*	0.077*	-	-	2.596*
Adj R^2	0.055*	-	-	-	0.047*	-	-	-
ΔR	-	-	-	-	0.000	-	-	*F(1,125)* = 2.596
Child construct-self								
Child Gender	0.107 (0.045) [0.018, 0.198]*	0.197	2.195	-	0.110 (0.046) [0.021, 0.203]*	0.203	2.257	-
Effortful Control	0.058 (0.040) [-0.021, 0.136]	0.128	1.433	-	0.044 (0.041) [-0.034, 0.125]	0.097	1.030	-
Child Distress	-0.001 (0.059) [-0.116, 0.112]	-0.001	-0.015	-	0.001 (0.059) [-0.117, 0.114]	0.002	0.028	-
NCRAng	-	-	-	-	-0.030 (0.026) [-0.082, 0.022]	-0.098	-1.060	-
Constant	0.260 (0.192) [-0.114, 0.638]	-	1.299	-	0.390 (0.207) [-0.013, 0.803]†	-	1.662	-
R^2	0.044	-	-	1.921	0.052	-	-	1.723
Adj R^2	0.021	-	-	-	0.022	-	-	-
ΔR	-	-	-	-	0.009	-	-	*F(1,125)* = 1.124

† *p<.10. *p < .05. **p < .01 ***p <.001.*

Table 6f.

Hierarchical linear regression of mothers' PCR of child behavior and child ER

	1				2			
	b (SE) 95%CIboot [lowerCI, upperCI]	*b**	*t(125)*	*F(3,126)*	*b (SE) 95%CIboot [lowerCI, upperCI]*	*b**	*t(125)*	*F(4,125)*
Child distress			*t(126)*	*F(2,127)*			*t(126)*	*F(3,126)*
Child Gender	0.079 (0.083) [-0.080, 0.245]	0.085	0.936	-	0.076 (0.084) [-0.085, 0.245]	0.082	0.902	-
Effortful Control	0.052 (0.059) [-0.066, 0.165]	0.068	0.745	-	0.061 (0.059) [-0.056, 0.173]	0.079	0.852	-
PCRbeh	-	-	-	-	0.032 (0.051) [-0.071, 0.129]	0.059	0.653	-
Constant	0.370 (0.286) [-0.177, 0.942]	-	1.077	-	0.230 (0.340) [-0.434, 0.887]	-	0.567	-
R^2	0.009	-	-	0.587	0.012	-	-	*F (3,126)* = 0.532
Adj R^2	-0.006	-	-	-	-0.011	-	-	-
ΔR	-	-	-	-	0.003	-	-	*F(1,126)* = 0.426
Child aggress								
Child Gender	0.031 (0.049) [-0.063, 0.129]	0.059	0.648	-	0.026 (0.048) [-0.067, 0.122]	0.048	0.548	-
Effortful Control	0.022 (0.033) [-0.042, 0.089]	0.049	0.546	-	0.042 (0.035) [-0.022, 0.113]	0.097	1.075	-
Child Distress	0.080 (0.060) [-0.038, 0.197]	0.141	1.592	-	0.072 (0.057) [-0.042, 0.186]	0.127	1.470	-
PCRbeh	-	-	-	-	0.074 (0.030) [0.015, 0.133]*	0.242	2.761	-
Constant	0.067 (0.165) [-0.262, 0.382]	-	0.344	-	-0.257 (0.211) [-0.687, 0.146]	-	-1.147	-
R^2	0.026	-	-	1.128	0.082*	-	-	2.797*
Adj R^2	0.003	-	-	-	0.053*	-	-	-
ΔR	-	-	-	-	0.056**	-	-	*F(1,125)* = 7.625**
Child mom orient								
Child Gender	-0.047 (0.052) [-0.150, 0.052]	-0.077	-0.855	-	-0.045 (0.053) [-0.149, 0.055]	-0.074	-0.821	-
Effortful Control	-0.019 (0.045) [-0.103, 0.072]	-0.037	-0.407	-	-0.025 (0.045) [-0.110, 0.065]	-0.050	-0.543	-
Child Distress	0.109 (0.063) [-0.009, 0.240]†	0.165	1.875	-	0.111 (0.063) [-0.004, 0.244]†	0.169	1.913	
PCRbeh	-	-	-	-	-0.024 (0.031) [-0.084, 0.040]	-0.068	-0.760	-

Constant	0.318 (0.214) [-0.118, 0.724]	-	1.409	-	0.424 (0.237) [-0.043, 0.877]†	-	1.596	-
R^2	0.031	-	-	1.342	0.035	-	-	1.148
Adj R^2	0.008	-	-	-	0.005	-	-	-
ΔR	-	-	-	-	0.004	-	-	*F(1,125)* = 0.578
Child construct-other								
Child Gender	0.034 (0.047) [-0.058, 0.129]	0.060	0.680	-	0.032 (0.048) [-0.059, 0.128]	0.057	0.642	-
Effortful Control	0.098 (0.037) [0.026, 0.169]	0.208	2.366	-	0.105 (0.038) [0.031, 0.178]	0.223	2.486	-
Child Distress	0.106 (0.054) [-0.006, 0.208]	0.174	2.025	-	0.103 (0.054) [-0.009, 0.206]	0.170	1.969	-
PCRbeh	-	-	-	-	0.025 (0.027) [-0.030, 0.078]	0.076	0.871	-
Constant	-0.059 (0.186) [-0.429, 0.307]	-	-0.288	-	-0.168 (0.217) [-0.589, 0.266]	-	-0.702	-
R^2	0.077*	-	-	3.486*	0.082*	-	-	2.799*
Adj R^2	0.055*	-	-	-	0.053*	-	-	-
ΔR	-	-	-	-	0.006	-	-	*F(1,125)* = 0.759
Child construct-self								
Child Gender	0.107 (0.046) [0.019, 0.198]*	0.197	2.195	-	0.105 (0.046) [0.017, 0.197]*	0.192	2.146	-
Effortful Control	0.058 (0.041) [-0.024, 0.141]	0.128	1.433	-	0.068 (0.043) [-0.014, 0.151]	0.149	1.639	-
Child Distress	-0.001 (0.057) [-0.111, 0.112]	-0.001	-0.015	-	-0.004 (0.057) [-0.115, 0.107]	-0.007	-0.086	-
PCRbeh	-	-	-	-	0.034 (0.029) [-0.023, 0.090]	0.108	1.212	-
Constant	0.260 (0.197) [-0.125, 0.652]	-	1.299	-	0.111 (0.239) [-0.349, 0.575]	-	0.472	-
R^2	0.044	-	-	1.921	0.055	-	-	1.814
Adj R^2	0.021	-	-	-	0.025	-	-	-
ΔR	-	-	-	-	0.011	-	-	*F(1,125)* = 1.470

† *p<.10. *p < .05. **p < .01 ***p <.001.*

Table 6g.

Hierarchical linear regression of mothers' NCR of child behavior and child ER

	1				2			
	b (SE) 95%CIboot [lowerCI, upperCI]	*b**	*t(125)*	*F(3,126)*	*b (SE) 95%CIboot [lowerCI, upperCI]*	*b**	*t(125)*	*F(4,125)*
Child distress			*t(126)*	*F(2,127)*			*t(126)*	*F(3,126)*
Child Gender	0.079 (0.082) [-0.078, 0.244]	0.085	0.936	-	0.081 (0.082) [-0.074, 0.245]	0.087	0.970	-
Effortful Control	0.052 (0.059) [-0.065, 0.169]	0.068	0.745	-	0.071 (0.060) [-0.048, 0.190]	0.092	1.004	-
NCRbeh	-	-	-	-	0.074 (0.047) [-0.013, 0.173]	0.150	1.695	-
Constant	0.370 (0.285) [-0.186, 0.939]	-	1.077	-	0.122 (0.327) [-0.523, 0.751]	-	0.329	-
R^2	0.009	-	-	0.587	0.031	-	-	*F (3,126)* = 1.354
Adj R^2	-0.006	-	-	-	0.008	-	-	-
ΔR	-	-	-	-	0.022†	-	-	*F(1,126)* = 2.872†
Child aggress								
Child Gender	0.031 (0.049) [-0.066, 0.126]	0.059	0.648	-	0.034 (0.049) [-0.061, 0.131]	0.064	0.720	-
Effortful Control	0.022 (0.033) [-0.041, 0.086]	0.049	0.546	-	0.036 (0.034) [-0.031, 0.103]	0.082	0.907	-
Child Distress	0.080 (0.058) [-0.036, 0.193]	0.141	1.592	-	0.064 (0.059) [-0.052, 0.181]	0.112	1.273	-
NCRbeh	-	-	-	-	0.054 (0.028) [-0.001, 0.108]*	0.192	2.169	-
Constant	0.067 (0.160) [-0.243, 0.378]	-	0.344	-	-0.108 (0.192) [-0.494, 0.256]	-	-0.514	-
R^2	0.026	-	-	1.128	0.061†	-	-	2.047†
Adj R^2	0.003	-	-	-	0.031†	-	-	-
ΔR	-	-	-	-	0.035*	-	-	*F(1,125)* = 4.705*
Child mom orient								
Child Gender	-0.047 (0.052) [-0.147, 0.059]	-0.077	-0.855	-	-0.048 (0.052) [-0.149, 0.057]	-0.079	-0.869	-
Effortful Control	-0.019 (0.045) [-0.106, 0.070]	-0.037	-0.407	-	-0.023 (0.045) [-0.110, 0.067]	-0.046	-0.496	-
Child Distress	0.109 (0.063) [-0.009, 0.238]†	0.165	1.875	-	0.114 (0.063) [-0.006, 0.242]†	0.173	1.936	
NCRbeh	-	-	-	-	-0.017 (0.030) [-0.072, 0.045]	-0.052	-0.580	-

Constant	0.318 (0.213) [-0.107, 0.732]	-	1.409	-	0.373 (0.224) [-0.079, 0.813]†	-	1.520	-
R^2	0.031	-	-	1.342	0.034	-	-	1.085
Adj R^2	0.008	-	-	-	0.003	-	-	-
ΔR	-	-	-	-	0.003	-	-	*F(1,125)* = 0.336
Child construct-other								
Child Gender	0.034 (0.048) [-0.061, 0.130]	0.060	0.680	-	0.037 (0.047) [-0.056, 0.129]	0.065	0.747	-
Effortful Control	0.098 (0.038) [0.022, 0.171]**	0.208	2.366	-	0.112 (0.037) [0.037, 0.185]**	0.238	2.696	-
Child Distress	0.106 (0.054) [-0.004, 0.209]†	0.174	2.025	-	0.090 (0.056) [-0.023, 0.194]	0.148	1.726	-
NCRbeh	-	-	-	-	0.052 (0.028) [-0.002, 0.110]†	0.175	2.018	-
Constant	-0.059 (0.190) [-0.427, 0.316]	-	-0.288	-	-0.228 (0.199) [-0.615, 0.194]	-	-1.047	-
R^2	0.077*	-	-	3.486*	0.106**	-	-	3.696**
Adj R^2	0.055*	-	-	-	0.077**	-	-	-
ΔR	-	-	-	-	0.029*	-	-	*F(1,125)* = 4.072*
Child construct-self								
Child Gender	0.107 (0.045) [0.020, 0.194]*	0.197	2.195	-	0.107 (0.046) [0.018, 0.196]*	0.197	2.183	-
Effortful Control	0.058 (0.041) [-0.023, 0.137]	0.128	1.433	-	0.057 (0.041) [-0.024, 0.138]	0.127	1.390	-
Child Distress	-0.001 (0.057) [-0.112, 0.110]	-0.001	-0.015	-	-0.0005 (0.058) [-0.113, 0.111]	0.000	0.000	-
NCRbeh	-	-	-	-	-0.003 (0.025) [-0.049, 0.047]	-0.009	-0.101	-
Constant	0.260 (0.195) [-0.118, 0.658]	-	1.299	-	0.268 (0.205) [-0.123, 0.684]	-	1.233	-
R^2	0.044	-	-	1.921	0.044	-	-	1.432
Adj R^2	0.021	-	-	-	0.013	-	-	-
ΔR	-	-	-	-	0.000	-	-	*F(1,125)* = 0.010

† *p<.10. *p < .05. **p < .01 ***p <.001.*