

ABSTRACT

Title of Dissertation: LONGITUDINAL ASSOCIATIONS BETWEEN PARENT-CHILD INTERACTIONS AND CHILDREN'S SOCIOEMOTIONAL FUNCTIONING IN ETHNICALLY DIVERSE FAMILIES

Angelica Alonso, Doctor of Philosophy, 2024

Dissertation directed by: Professor Natasha J. Cabrera
Department of Human Development and Quantitative Methodology

Theoretical and empirical evidence identify parenting behaviors as one of the most robust predictors of children's socioemotional development. However, this body of evidence is primarily based on White middle-class mothers and children. As such, it remains unclear whether these developmental processes are generalizable to ethnic minority children who are reared in different sociocultural contexts. The present dissertation consists of three interrelated studies that examined longitudinal associations between parent-child interactions (parents' emotion socialization; responsive parenting; parent-child dyadic synchrony) and children's socioemotional functioning (socioemotional competence; executive function; self-regulation) in ethnically diverse mothers, fathers, and their young children. I also examined children's regulatory skills and parent-child dyadic synchrony as mediators and child emotionality as a moderator of these associations. Empirical Study 1 examined how mothers' and fathers' emotion socialization behaviors (ESB) at 18 and 24 months were associated with toddlers' social competence at 24 and 30 months. Fathers' non-supportive ESBs to negative emotions at 18 months were positively associated with social competence at 30 months. There was a negative association between mothers' non-supportive ESBs to negative emotions at 24 months and social

competence at 30 months only for toddlers with high negative emotionality. A positive association between fathers' emotion coaching of negative emotions at 18 months and 30-month social competence emerged only when mothers did not provide any emotion coaching. Empirical Study 2 examined longitudinal associations between mothers' and fathers' responsive parenting at 9 months and children's socioemotional functioning (executive function and socioemotional competence) at age 3. This study also tested children's effortful control at 24 months as a mediator and emotionality as a moderator of these associations. Only mothers' responsive parenting at 9 months was associated with greater socioemotional competence at age 3. There was no support for effortful control and emotionality as a mediator and moderator, respectively, of associations between maternal or paternal responsive parenting and socioemotional functioning. Empirical Study 3 examined direct associations between mother- and father-child synchrony at 18 months and toddlers' self-regulation at 24 months and indirect associations through parent-child synchrony at 24 months. I also examined child emotionality as a moderator of direct associations and explored whether participation in a parenting intervention had impacts on synchrony and self-regulation. Father-child synchrony at 24 months mediated associations between earlier synchrony and self-regulation. Child emotionality did not moderate associations between synchrony and self-regulation. Finally, mothers and fathers in the treatment conditions exhibited greater synchrony with their children at 24 months than parents in the control group. Collectively, these findings indicate the unique ways that ethnically diverse mothers and fathers contribute to their children's socioemotional development. These studies highlight the need for further research examining mechanisms (mediators and moderators) as additional sources of within-group variability in socioemotional functioning. Doing so will help diversify the science

of normative socioemotional development and can inform program efforts to best support ethnic minority children in developing strong socioemotional skills.

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CHILDREN'S SOCIOEMOTIONAL FUNCTIONING IN ETHNICALLY DIVERSE
FAMILIES

by

Angelica Alonso

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Advisory Committee:

Professor Natasha J. Cabrera, Chair
Associate Professor Claudia Galindo, Dean's Representative
Dr. Tamara Halle
Professor Geetha Ramani
Professor Peter Steiner

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Dedication

I dedicate this dissertation to my husband, Tavo, and my son, Luca.

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Table of Contents

Dedication.....	ii
Acknowledgements.....	iii
Table of Contents.....	vii
General Introduction.....	1
Empirical Study 1.....	28
Empirical Study 2.....	87
Empirical Study 3.....	140
General Discussion.....	182

General Introduction

Decades of theoretical and empirical evidence indicate that parenting behaviors are strong determinants of child development (Bornstein, 2019; National Academies of Sciences, Engineering, and Medicine, 2016). Parent-child interactions characterized by parental responsiveness (e.g., warmth; sensitivity) and reciprocity (e.g., mutual enjoyment; shared positive affect) are associated with more positive developmental outcomes, including socioemotional functioning (Deans, 2020; Harrist & Waugh, 2002; Rodrigues et al., 2021). Socioemotional functioning consists of behavioral, cognitive, and emotion-related skills that enable children to initiate and maintain positive social interactions and adapt to various social contexts (Cillessen & Bellmore, 2014). These skills include understanding, expressing, and regulating emotions (emotional competence); the ability to regulate thoughts, behaviors, and emotions in a goal-directed manner (self-regulation; executive function); and interpersonal skills such as perspective-taking, cooperation, and problem-solving (social competence; Denham et al., 2006).

Children vary greatly in their socioemotional skills due to independent and joint contributions of child characteristics (e.g., temperament) and environmental influences (e.g., quality of parent-child interactions). For example, high emotionally reactive children are more likely to exhibit poorer socioemotional outcomes (Liew et al., 2004; Raikes et al., 2007; Sanson et al., 2011). In contrast, children's socioemotional development benefits when their early caregiving environments are characterized by high levels of warmth and sensitivity and when they have positive parent-child relationships (Cabrera et al., 2007; Davis et al., 2017; Spinrad et al., 2007).

The complex ways in which these contextual factors interactively shape development can be understood through theoretical models, including relational developmental systems theory, developmental cascades, and the heuristic model of emotion socialization (Eisenberg et al., 1998; Masten & Cicchetti, 2010; Overton, 2013). A common underlying premise of these theories is that parenting behaviors have direct influences on child outcomes. These theories also describe the mechanisms – that is, mediation and moderation – through which parent-child interactions shape development. For example, parent-child interactions are related to later socioemotional functioning through its effects on earlier skills (e.g., self-regulation) and parent-child interactions later in development (Eisenberg et al., 1998; Masten & Cicchetti, 2010; Overton, 2013). Additionally, the effect of parenting behaviors on socioemotional outcomes varies as a function of child-level contextual factors, such as temperament (Eisenberg et al., 1998).

However, the empirical evidence on how child temperament, parent-child interactions, and children's socioemotional development are related has several limitations. First, much of what we know about relations among these factors is based on studies of primarily White middle-class mothers and children. The exclusion of fathers, who make unique contributions to their children's development, leads to an incomplete picture of the socialization process through which children become socially and emotionally competent (Cabrera, 2016; Leidy et al., 2013). Second, these relations have been less extensively studied in the first three years of life despite research indicating that during toddlerhood, children begin to acquire intrapersonal and interpersonal skills that facilitate positive social interactions (Brownell & Kopp, 2007).

Third, although there is an increasing number of studies investigating these processes using samples that include ethnic minority families, analyses often consist of cross-group comparisons between ethnic minority families, who are often low-income, and White families,

who are often middle-class (Cabrera et al., 2021). This approach relies on averages that obscure within-group variability – that is, they prevent us from identifying the contextual factors that bring about individual differences in ethnic minority children’s socioemotional development. A better approach is an examination of within-group differences that keeps socioeconomic status constant, as this approach demonstrates which factors other than socioeconomic status can promote positive developmental outcomes for children (Cabrera et al., 2021). Moreover, a within-group approach enables us to examine whether the developmental processes observed in White samples are generalizable to racially and ethnically diverse children who are reared in different sociocultural contexts.

Finally, studies on contextual factors and parent-child interactions are primarily descriptive or limited to main effects on socioemotional functioning. Comparatively, fewer studies have examined how these associations vary by child emotionality, a dimension of temperament reflecting a proneness to experiencing and expressing negative affect (Rothbart et al., 2011). Research suggests that parenting behaviors affect socioemotional functioning differently depending on the child’s temperament, such that high emotionally reactive children demonstrate susceptibility to both supportive and negative parenting behaviors (Belsky et al., 2007; Kiff et al., 2011). However, findings testing temperament x parenting interactions are inconsistent; thus, further empirical attention is required to better understand how these interaction effects shape socioemotional development in early childhood. Furthermore, as development is a dynamic process, it is also important to identify factors that mediate associations between parent-child interactions and socioemotional functioning. These include mediation through (1) children’s earlier skills as they set the foundation for similar, related skills

later in development and (2) later parent-child interactions as the strength of associations with socioemotional skills may differ depending on the child's developmental period.

This dissertation addresses these gaps by examining how mothers' and fathers' parenting behaviors and the quality of mother- and father-child interactions are longitudinally associated with toddlers' socioemotional functioning in ethnically diverse families (Studies 1, 2, and 3). In addition, I examined effortful control (Study 2) and dyadic synchrony, a measure of the parent-child relationship, (Study 3) as mediators of these associations. I also explored whether direct associations between parent-child interactions and socioemotional outcomes are the same for children who vary in their emotionality (Studies 1, 2, and 3). Collectively, the three studies in this dissertation examined the context and process of socioemotional development in the first three years of life using different observed measures of parent-child interactions (parental emotion socialization; responsive parenting; parent-child synchrony) and parent-reported and observational measures of socioemotional outcomes.

Dissertation Overview

This dissertation consists of three related empirical studies that examined direct associations between parent-child interactions and young children's socioemotional functioning in ethnically diverse families. These studies also explored mediation through toddlers' regulatory skills and parent-child synchrony and moderation by child temperament as additional sources of variability in early socioemotional competence. All studies were secondary analyses of data collected from ethnically diverse mothers, fathers, and children participating in a randomized control trial of a parenting intervention (Baby Books 2; Cabrera & Reich, 2017).

Empirical Study 1 (Alonso et al., revise and resubmit under review^a) examined main and interaction effects of mothers' and fathers' emotion socialization behaviors at 18 and 24 months

on social competence at 24 and 30 months and tested whether these associations were moderated by child emotionality. In Empirical Study 2 (Alonso et al., under review^b), we examined how maternal and paternal responsive parenting were directly associated with children's socioemotional functioning (socioemotional competence and executive function) at age 3 and whether these associations were mediated by effortful control¹, a regulatory skill, at 24 months. We also explored how direct paths from responsive parenting to socioemotional functioning varied for children with low and high emotionality. Empirical Study 3 (Alonso et al., in preparation) examined how mother- and father-child synchrony at 18 months were directly associated with toddlers' self-regulation at 24 months and indirectly associated via dyadic synchrony at 24 months. We tested whether the magnitude of direct associations between dyadic synchrony and self-regulation behaviors differed as a function of emotionality. Finally, we conducted an exploratory analysis to examine whether participation in a parenting intervention had impacts on dyadic synchrony and toddlers' self-regulation.

In the following sections, I first review the theoretical frameworks that informed the research questions for Studies 1, 2, and 3. Then, I present a brief review of three key areas of research relevant to this dissertation: mothers' and fathers' emotion socialization and children's social competence (Study 1); responsive parenting and children's effortful control and socioemotional functioning (Study 2); and parent-child synchrony, child emotionality, and children's self-regulation (Study 3). I conclude with an overview of the empirical studies.

Theoretical Frameworks

Three theoretical frameworks motivated the research questions addressed in this dissertation. The first is relational developmental systems theory, an integrative model that

¹ Effortful control is a multi-component self-regulation skill that involves inhibiting a dominant response to execute a non-dominant, but relevant response (Kochanska et al., 2000).

situates the child in interdependent, dynamic systems that exist at multiple levels (Overton, 2013). Due to the interconnectedness of these systems, developmental outcomes are the result of interactions between the child and these systems as well as interactions between systems. As children's developmental outcomes depend on the quality of these systems, this framework can be used to understand the processes involved in positive adaptation. As one of the most proximal systems, parents directly affect their children's socioemotional development, with parent-child interactions characterized by responsiveness, warmth, and reciprocity promoting the acquisition of positive socioemotional skills.

The second theoretical framework is Eisenberg and colleagues' (1998) heuristic model of the socialization of emotion that parents' emotion socialization behaviors (ESB) are related to children's socioemotional outcomes and this relation is moderated by child characteristics, such as temperament. Our decision to use this model to frame Study 1, which examined longitudinal associations between parents' ESBs and social competence, was twofold. First, this model makes specific hypotheses about how the *types* of ESBs are differentially related to socioemotional outcomes. When parents provide more supportive ESBs (e.g., validating the child's feelings) and fewer non-supportive ESBs (e.g., minimizing the emotion) to their children's emotions, their children display greater socioemotional functioning. Second, this model hypothesizes that the influence of ESBs on child outcomes may be different for children who vary in their temperamental characteristics, although no specific hypotheses as to how are provided.

The final theoretical framework is the developmental cascades model that development is a complex process consisting of changes within and across developmental domains, with earlier skills setting the foundation for later, more advanced skills (Masten & Cicchetti, 2010). Developmental cascades are also the product of the early caregiving environment, such that

responsive and sensitive parenting can lead to cumulative, positive developmental outcomes (Masten, 2016). Thus, this model is well suited for examining mediational paths through which maternal and paternal supportive parenting behaviors are related to later socioemotional functioning via children's early regulatory skills – the focus of Study 2.

Although distinct, these frameworks overlap in the postulation that parenting has direct effects on child outcomes. They also contextualize parent-child interactions and developmental outcomes by identifying mechanisms (mediators and moderators) of the associations between the two. Across the three studies, we examined relations among child emotionality, parent-child interactions (parental emotion socialization; responsive parenting; dyadic synchrony), and child outcomes (socioemotional competence; executive function; self-regulation). We explored the moderating effect of child emotionality based on studies suggesting that the effects of parenting on children might depend on specific characteristics of the child, including temperament (Gallagher, 2002; Sanson et al., 2018). We focused on parent-child interactions as these represent one of the most proximal systems to the child (Bronfenbrenner & Morris, 2006). In the general discussion, I use these theoretical frameworks to situate the studies' findings and discuss how they further our understanding of the context and process of socioemotional development.

Mothers' and Fathers' Emotion Socialization and Children's Social Competence

Parents' emotion socialization behaviors (ESB) – parenting behaviors that help children to identify emotions in themselves and others, label them, and regulate them appropriately – are important predictors of young children's socioemotional competencies (Denham, 2019; Eisenberg et al., 1998; Morris et al., 2007). There are several types of emotion socialization behaviors (e.g., modeling; discussion of emotion), but the most studied is parental responses to children's negative emotions. Researchers typically categorize parents' responses as either

supportive or non-supportive (Denham et al., 2007). Supportive responses include emotion coaching (e.g., labeling emotions), validating emotions, and fostering problem-solving skills to address emotion-eliciting situations. Non-supportive responses are those that discourage the expression of an emotion – these include minimizing (e.g., “don’t be a crybaby”), dismissing (e.g., “you have nothing to be sad about”), or punishment (e.g., spanking the child for crying).

Studies with primarily White middle-class families consistently show that supportive responses are associated with more positive socioemotional outcomes, such as greater emotion regulation and social competence. These types of responses decrease children’s negative emotional arousal, enabling them to modulate their emotions and behaviors in social interactions (Baker et al., 2011; Gerhardt et al., 2020; Spinrad et al., 2007). In contrast, non-supportive responses are associated with lower social competence, less emotion knowledge, and greater emotion dysregulation because they typically increase negative emotional arousal and limit the child’s understanding of emotions (Jones et al., 2002; Ornaghi et al., 2019; Shewark & Blandon, 2015). Thus, the ways that parents respond to their children’s emotions lead to individual differences in children’s socioemotional outcomes.

There are, however, some gaps in the emotion socialization literature (Zinsser et al., 2021). First, most studies focus on ESB and their associations with child outcomes in preschool age or beyond. It is unclear whether the nature of parents’ ESB are the same with toddlers and whether supportive responses, such as emotion coaching, are also beneficial for children who are preverbal, particularly in toddlerhood when socioemotional skills begin to develop (Brownell & Kopp, 2007). Second, emotion socialization behaviors have been primarily studied with White mothers and children (Baker et al., 2011). Fewer studies have included fathers but among those that have, fathers’ ESB appear to be uniquely associated with children’s socioemotional

outcomes. In a naturalistic study with predominantly White families and their preschoolers, mothers were found to provide more emotion coaching than fathers, but only fathers' emotion coaching was longitudinally associated with preschoolers' positive emotion expression, after controlling for mothers' emotion coaching and children's emotional reactivity (Gerhardt et al., 2020). The exclusion of fathers in ESB studies results in missed opportunities to examine the joint contribution (interaction effects) of mothers' and fathers' ESB to social competence.

Finally, researchers typically use self-report measures of parental ESB which can lead to issues with under-and over-reporting. Comparatively, observational measures provide a more objective assessment of ESB. The first empirical paper addressed these gaps by examining main and interaction effects between mothers' and fathers' observed responses to their toddlers' emotions at 18 and 24 months on mother-reported social competence at 24 and 30 months in a sample of ethnically diverse families. We also addressed theoretical and empirical gaps in our understanding of how child temperament moderates associations between mothers' and fathers' ESB and social competence (Jones et al., 2002).

Responsive Parenting and Children's Effortful Control and Socioemotional Functioning

Extensive research shows that the quality of parenting, typically measured through global ratings of responsiveness and warmth, are significant predictors of developmental outcomes, including self-regulation and socioemotional functioning (Cabrera et al., 2007; Landry et al., 2006; Spinrad et al., 2007). When parents are consistently warm and responsive to their children's needs, children feel secure and in control of their behaviors and emotions. These positive parenting behaviors promote effortful control, a regulatory skill that involves focusing or shifting attention and inhibiting or sustaining behaviors in line with situational demands or goals (Feldman & Olson, 2021; Kochanska et al., 2000; Neppl et al., 2020; Spinrad et al., 2007).

Subsequently, greater effortful control skills enable children to function well across social contexts and interact positively with others.

According to the developmental cascades model (Masten & Cicchetti, 2010), links between parenting and socioemotional functioning are partially mediated through children's earlier skills (e.g., effortful control). Several studies have established direct associations between responsive parenting and socioemotional functioning (Jeon & Nepl, 2019; Merz et al., 2017; Owen et al., 2013; Rispoli et al., 2013; Rodrigues et al., 2021; Spinrad et al., 2007). However, research testing developmental cascades from effortful control to socioemotional functioning has produced mixed results. Some studies with ethnically diverse preschool and middle childhood samples find cascading effects from regulatory abilities to later socioemotional skills (Blair et al., 2015; Schmitt et al., 2021) but others do not (Bandon et al., 2010).

Findings from studies testing cascades from responsive parenting to children's socioemotional functioning via effortful control have also been inconsistent. For example, effortful control at 18 months did not significantly mediate associations between mothers' observed supportiveness (e.g., sensitivity) at 18 months and adult-reported social competence at 30 months in a sample of primarily White families (Spinrad et al., 2007). However, another study with predominantly White mothers and their children found that observed authoritative parenting (e.g., high warmth) at 42 months was associated with more adult-reported sympathy at age 6 via greater effortful control at 54 months (Taylor et al., 2015).

The study of cascades from parenting to socioemotional functioning through effortful control has some limitations. First, studies of developmental cascades originating early in development (infancy and toddlerhood) are few. Studying these cascades in the first years of life is important as self-regulation skills acquired during early childhood have implications for well-

being and functioning across development (Calkins, 2007). Second, research on developmental cascades has been limited to the effects of maternal behaviors, despite a growing body of literature on how fathers' parenting uniquely contributes to their children's socioemotional outcomes (Feldman & Olson, 2021; Jeon & Neppl, 2019; Rodrigues et al., 2021). Third, whether these cascades are similar for children who vary in emotionality is still unclear, although meta-analyses and empirical studies have found interaction effects between temperament and parenting in predicting socioemotional functioning (Kiff et al., 2011; Kochanska & Kim, 2013; Rochette & Bernier, 2016; Slagt et al., 2016; Song et al., 2018; Stright et al., 2008).

To address these gaps, we focused on developmental cascades in the first three years of life when effortful control and socioemotional functioning are still developing and are most malleable (Brownell & Kopp, 2007; Kochanska et al., 2000). Study 2 examined longitudinal associations between responsive parenting at 9 months and socioemotional functioning (socioemotional competence and executive function) at age 3 via effortful control at 24 months in a sample of ethnically diverse mothers, fathers, and their children. This study also explored whether direct associations varied as a function of child emotionality.

Parent-Child Dyadic Synchrony, Child Emotionality, and Toddlers' Self-Regulation

A robust body of literature has shown that high-quality parent-child relationships are strong predictors of positive developmental outcomes (Wright et al., 2013). Although there are various ways to assess the quality of parent-child relationships, dyadic measures, such as dyadic synchrony, capture how both the parent and child contribute to predictable patterns of behavioral (e.g., mutual responsiveness) and emotional (e.g., shared positive affect) exchanges (Harrist & Waugh, 2002). The co-regulation of emotions and behaviors characteristic of high dyadic synchrony involves flexibility and adaptability, two important features of self-regulation

(Feldman, 2007). Research with primarily White mothers and children indicate that dyadic synchrony scaffolds the development of self-regulation (Davis et al., 2017; Scholtes et al., 2021; Suveg et al., 2016). Although limited, similar associations have been observed in ethnically diverse families (Li-Grining, 2007; Raikes et al., 2007) and with father-child dyads (Kim & Kochanska, 2012; Kochanska et al., 2008; Lindsey et al., 2009).

Along with environmental influences, child temperament also shapes self-regulation. Emotionality can make self-regulation difficult by increasing children's reactivity in frustration-eliciting situations (Kiss et al., 2014). Beyond direct effects, emotionality also influences the development of self-regulation through interaction effects with dyadic synchrony. There is increasing empirical support for the differential susceptibility hypothesis that high emotionally reactive children are more susceptible to positive parent-child relationships (Belsky et al., 2007). For instance, in White families, observed mother-child synchrony at 15 months was positively associated with toddlers' self-regulation at 25 months, but only for those with high emotionality (Kim & Kochanska, 2012), suggesting that children with greater emotionality reap more benefits from high dyadic synchrony. In a cross-sectional study of Israeli-Jewish families, for highly reactive infants, mother-child synchrony was negatively associated with disengagement (e.g., neutral affect), a less effective regulatory strategy, whereas for low reactive infants, mother-child synchrony was positively associated with greater social regulation (e.g., positive affect; Pratt et al., 2015). Although the findings did not support the differential susceptibility hypothesis, they do suggest that children with greater emotionality can develop strong self-regulation skills in the context of mutually attuned parent-child interactions.

Study 3 built on the existing literature in four ways. First, we examined these associations in an ethnically diverse sample of mothers, fathers, and children and using a longitudinal design

as there are few longitudinal studies on dyadic synchrony (Birk et al., 2022). We focused on these associations in second year of life as toddlerhood is an important developmental period for the foundation of self-regulation (Calkins, 2007). Second, we included mother- and father-child synchrony in the same conceptual model as the exclusion of fathers in prior research may have led to an overestimation of the promotive effects of mother-child synchrony. Third, our mediation analyses enabled us to test the relative influence of earlier and concurrent dyadic synchrony on toddlers' self-regulation while modeling stability in dyadic synchrony across the second year of life. Finally, given the malleability of self-regulation during early childhood, it is necessary to examine how existing parenting interventions can promote self-regulation using parent-child interactions as the mechanism for change (Morawska et al., 2019). Study 3 examined how mother- and father-child synchrony at 18 months were associated with self-regulation at 24 months directly and indirectly through dyadic synchrony at 24 months and whether direct associations between dyadic synchrony and self-regulation varied by child emotionality. We also explored whether participation in a parenting intervention had impacts on dyadic synchrony and self-regulation and could further account for differences in self-regulation outcomes in our sample.

Present Empirical Studies

In Study 1, (Alonso et al., revise and resubmit under review^a), we examined main and interaction effects between mothers' and fathers' emotion socialization behaviors (ESB) to their toddlers' emotions at 18 and 24 months on toddlers' social competence at 24 and 30 months. We also examined child emotionality as a moderator of these associations. Fathers who provided more non-supportive ESBs to negative emotions at 18 months had toddlers with greater social competence at 30 months. More maternal non-supportive ESBs to negative emotions at 24

months were associated with lower social competence at 30 months only for toddlers with high emotionality. There was a positive association between fathers' emotion coaching of negative emotions at 18 months and 30-month social competence when mothers did not provide any emotion coaching. These findings illustrate the importance of examining the unique and joint contributions of mothers' and fathers' ESBs to social competence and exploring whether these associations differ as a function of child temperament.

Study 2 (Alonso et al., under review^b) examined direct associations between mothers' and fathers' responsive parenting at 9 months and children's socioemotional functioning (social emotional competence and executive function) at age 3 and indirect associations via toddlers' effortful control at 24 months. We also explored whether the direct paths from responsive parenting to socioemotional functioning were different for children with low and high emotionality. Mothers', but not fathers', responsive parenting at 9 months was associated with more socioemotional competence at age 3. Neither maternal nor paternal responsive parenting at 9 months were significantly associated with executive function at age 3. Effortful control at 24 months was not a significant mediator between maternal or paternal responsive parenting and socioemotional functioning. Finally, direct associations did not significantly differ for children with low and high emotionality. These findings highlight how maternal responsive parenting in the first year of life is important for later socioemotional competence.

In Study 3 (Alonso et al., in preparation), we examined how mother- and father-child synchrony at 18 months were associated with toddlers' self-regulation at 24 months. We also investigated dyadic synchrony at 24 months as a mediator and child emotionality as a moderator of these associations. Lastly, we explored intervention effects on dyadic synchrony and self-regulation. Father-child synchrony at 24 months fully mediated associations between father-child

synchrony at 18 months and self-regulation performance at 24 months. The strength of direct associations between dyadic synchrony and self-regulation behaviors were not different for children with high emotionality.

Finally, participation in the Baby Books 2 (BB2) parenting intervention had positive effects on mother- and father-child synchrony at 24 months, but not on dyadic synchrony at 18 months or self-regulation. However, the effects of BB2 on self-regulation performance were fully mediated by father-child synchrony at 24 months. The findings indicate promotive effects of father-child synchrony at 18 months for self-regulation and that these effects are not dependent on children's emotionality. Lastly, our significant intervention effects highlight the potential of parenting interventions for promoting mutually attuned parent-child relationships in the second year of life.

Conclusion

Guided by relational developmental systems theory, the heuristic model of emotion socialization, and the developmental cascades model, the studies in this dissertation furthered our theoretical and empirical understanding of how different aspects of early parent-child interactions influence children's socioemotional functioning. They advanced the research on this topic by going beyond the study of main effects to investigate moderation effects - namely how these processes may work differently for children who differ in their temperament – and mediation effects through children's regulatory skills and parent-child synchrony.

As mothers' and fathers' parenting behaviors were associated with socioemotional outcomes in distinct ways, the findings highlight the importance of including mothers *and* fathers in developmental studies to obtain a more accurate picture of how children are socialized to get along with others and regulate their emotions and behaviors. More importantly, these studies

contribute to a growing body of literature documenting within-group variability in parenting behaviors and children's socioemotional outcomes in ethnic minority families who have generally been underrepresented in developmental research. Collectively, they build on the science of normative socioemotional development by highlighting the many ways that ethnic minority parents promote their children's socioemotional skills in early childhood.

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**Paper included in this dissertation*

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Mothers' and fathers' emotion socialization: Longitudinal relations with toddlers' social competence.

* Alonso, A., Cabrera, N. J., Spinrad, T. L., & Reich, S. M. (under review^b). Cascading effects from maternal and paternal responsive parenting to children's socioemotional competence and executive function.

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Mothers' and Fathers' Emotion Socialization:
Longitudinal Relations with Toddlers' Social Competence

Angelica Alonso¹, Natasha J. Cabrera¹, Marina A. Kerlow¹, & Stephanie M. Reich²

¹University of Maryland, College Park; ²University of California, Irvine

Author Note

Angelica Alonso, Natasha J. Cabrera, and Marina A. Kerlow, Department of Human Development and Quantitative Methodology, University of Maryland, College Park. Stephanie M. Reich, School of Education, University of California, Irvine.

Correspondence concerning this article should be addressed to Angelica Alonso, Department of Human Development and Quantitative Methodology, University of Maryland, College Park, 3304 Benjamin Building, College Park, MD 20742. Email: aalonso1@umd.edu

Abstract

We examined longitudinal direct associations between mothers' and fathers' emotion socialization behaviors (ESB) at 18 and 24 months and toddlers' social competence (SC) at 24 and 30 months in a sample of ethnically diverse families ($n = 128$) participating in a parenting intervention study. We also investigated interaction effects between mothers' and fathers' ESBs and between each parent's ESBs and child emotionality. We coded parents' ESBs to their toddlers' positive and negative emotions during no-toy play and a clean-up task. Mothers reported on their toddlers' social competence and emotionality. Using multiple linear regression modeling, we report three findings. First, mothers and fathers most frequent ESBs were emotion coaching and ignoring to positive and negative emotions, respectively, but emotion coaching of positive emotions by either parent was not associated with children's SC. Second, mothers' and fathers' ESBs to negative emotions, however, were associated with children's SC, but these associations varied by parent gender, child emotionality, and the other parent's ESBs. Third, fathers' non-supportive ESBs to negative emotions at 18 months were directly and positively associated with greater SC at 30 months, but their emotion coaching was significantly and positively related to children's SC only when mothers did not provide any emotion coaching. The association between mothers' non-supportive ESBs to negative emotions at 24 months and 30-month SC was negative only for children high in emotionality. These findings show that both mothers' and fathers' ESBs shape their children's social behaviors in different ways, which needs to be considered when developing programs for children.

Keywords: emotion socialization, mothers, fathers, social competence, toddlerhood.

Mothers' and Fathers' Emotion Socialization: Longitudinal Relations with Toddlers' Social Competence

The development of emotional competence (i.e., recognizing, expressing, understanding, and regulating emotions) during early childhood is a foundational milestone that supports school readiness, including social competence, the ability to engage in positive social interactions with others (Cillessen & Bellmore, 2014; Denham, Warren, et al., 2010; Eisenberg et al., 2005; Eisenberg et al., 2010; Hemmeter et al., 2006; Zeman et al., 2006). Emotionally competent children understand the emotions of others, respond appropriately, and regulate their own emotions and behaviors, enabling them to initiate and maintain positive relationships (Eisenberg et al., 2010). In contrast, children who struggle to understand and modulate their own emotions are more likely to act impulsively, respond in reactive ways, express negative affect more frequently, and withdraw from social interactions (Eisenberg et al., 2010).

Parents and other caregivers foster emotional competence skills by using emotion-related socialization behaviors such as responding to, discussing, and modeling emotions (Denham, 2023; Denham et al., 2019; Eisenberg et al., 1998; Morris et al., 2007). These behaviors reflect sensitivity towards and acceptance of children's emotions and a desire to promote competence in expressing, understanding, and regulating emotions. The importance of supportive and nurturing parenting has prompted researchers to examine parenting practices in early childhood, especially those related to emotional socialization, as predictors of the development of socioemotional competence skills (Morris et al., 2007; Spinrad et al., 2007).

Though research on parents' emotion socialization behaviors (ESB) is increasing, studies of ESBs predominantly focus on middle-class, European American mothers' influences on preschool or older children's emotional competence skills (Morelen & Thomassin, 2013; Raval

& Walker, 2019; Zinsser et al., 2021). Research conducted over the last few decades indicate the importance of considering these normative processes in families from ethnically diverse backgrounds who may have different emotion socialization practices that reflect different emotion-related norms, values, and beliefs (e.g., how and when emotions are expressed; Morelen & Thomassin, 2013; Raval & Walker, 2019; Takada & Dan-Glauser, 2024). Emerging research has shown that it is also important to consider fathers' influences on children's development (Cabrera et al., 2017; Leidy et al., 2013; Schoppe-Sullivan & Fagan, 2020). However, few studies explore the ESBs of fathers. Further, relatively fewer studies of parenting consider the fact that mothers' *and* fathers' parenting behaviors change over time, depending on multiple factors including normative developmental changes (age) in both parents and children, and children's temperament (Chaplin et al., 2010; Murphy et al., 2017; Spinrad et al., 2004; Tang & Sinanan, 2015).

Toddlerhood is a unique developmental period during which children's emotion-related and social skills are just emerging (Brownell & Kopp, 2007). The strongest influence on children's socioemotional skills is parenting behaviors. Parents who help their children label and manage emotions are more likely to have children who are better able to manage them than parents who do not (Morris et al., 2007). Framed within Eisenberg and colleagues' (1998) heuristic model of the socialization of emotion and Cox and Paley's (1997) family systems theory, we used data from Baby Books 2, an ongoing NIH-based intervention that provides child development information to ethnically diverse, low-income, first-time parents, and ask: (1) How are mothers' and fathers' emotion socialization behaviors (ESB) at 18 and 24 months associated with toddlers' social competence at 24 and 30 months? (2) How is the association between mothers' and fathers' ESBs and children's social competence moderated by child temperament?

and (3) How is the association between the ESBs of one parent and children's social competence moderated by the ESBs of the other parent?

Theoretical Background

Eisenberg and colleagues' (1998) heuristic model of the socialization of emotion suggests that highly supportive environments, characterized by emotion talk (e.g., discussing causes of emotions) and supportive responses to children's emotions, foster toddlers' abilities to understand, express, and regulate emotions. Support for this comes from studies that have found significant direct associations between emotion socialization strategies (e.g., supportive responses such as emotion coaching) and toddlers' socioemotional functioning (e.g., empathy; Brophy-Herb et al., 2011; Spinrad et al., 2007).

Not all ESBs are related to children's social adjustment. Studies have shown that mothers' supportive responses, such as comforting the child or helping the child to solve the problem that produced the emotion, and emotion coaching (e.g., labeling emotions) are the most effective ways to socialize children because these validate children's feelings and encourage them to express that emotion in positive ways (Denham et al., 2007). Research with White and African American families found that mothers' supportive responses were positively and concurrently associated with preschoolers' emotion regulation (Garner, 2006; Mirabile et al., 2018). Black primary caregivers who engage in emotion coaching (i.e., teaching about emotions) have preschoolers who show better social competence, emotion regulation, and school readiness, controlling for adversity (Yule et al., 2020).

In contrast, parents' non-supportive responses (e.g., minimizing the emotion; punishing child) that discourage emotional expression and convey to the child that expressing a particular emotion is unacceptable, limit children's understanding and regulation of emotions (Denham et

al., 2007). Non-supportive responses often result in greater negative emotional arousal for children and impede children from learning adaptive ways of regulating emotions, which is necessary for effective social interactions (Eisenberg et al., 1996). Non-supportive responses are negatively and concurrently associated with teacher reports of school-age children's social competence, toddlers' emotional knowledge, and parent-reported emotion regulation (Jones et al., 2002; Ornaghi et al., 2019; Perry et al., 2020; Scott & Hakim-Larson, 2021; Shewark & Blandon, 2015).

A meta-analysis of 24 studies on parents' (primarily mothers) emotion socialization practices indicated that associations between mothers' responses to their preschoolers' emotions and emotion regulation were significant, but effect sizes were generally small, and the researchers did not analyze results by children's type of emotion (Zinsser et al., 2021). Lastly, a cross-cultural study of mothers' and fathers' emotion socialization across six different Western countries, including the U.S., found that compared to parents who reported high levels of emotion coaching, parents who reported high levels of emotion dismissing responses (e.g., minimizing) also reported lower emotional competence (i.e., greater expression of negative affect) in their 4- to 6-year-old children (Frogley et al., 2023). Together, these findings suggest that the ways that parents respond to their children's emotions can account for some of the individual differences in children's socioemotional outcomes.

The current study is also guided by family systems theory that individuals in a family are interdependent and influence each other's behaviors (Cox & Paley, 1997). As such, child development is best understood by examining how family members influence each other and how their behaviors interact with one another. This theory also postulates that the behaviors of one family member affect the behaviors and functioning of other family members (i.e., spillover

effects). We therefore expect that the emotion socialization behaviors of one parent will influence the emotion socialization behaviors of the other parent (i.e., moderation or spillover effects) and this will have implications for how each parent's ESBs are associated with child outcomes (Malin et al., 2016).

Fathers' and Mothers' Emotion Socialization

Much of our knowledge regarding parents' emotion socialization has been primarily based on studies with mothers (Baker et al., 2011; Zinsser et al., 2021). These studies find that in early childhood, although there is variability in how mothers respond to their children's emotions (Arikan & Kumru, 2023), supportive ESBs are more frequent than non-supportive ESBs (Chaplin et al., 2010; Hooper et al., 2018; Nelson et al., 2012; Nelson et al., 2013). Relatively fewer studies of emotion socialization behaviors have included fathers in their samples, despite research suggesting that fathers are important socializers who directly affect children's developmental outcomes (Cabrera, 2016; Sperling & Repetti, 2018). Among studies that have included fathers, they predominantly examine the emotion socialization behaviors of fathers of preschoolers or school-age children.

When studies include both parents, they often involve comparisons between mothers' and fathers' emotion socialization behaviors, with mixed findings. In a naturalistic study comparing predominantly White mothers and fathers, mothers engaged in more emotion coaching (i.e., labeling and showing acceptance of the child's emotions and teaching emotion-regulation skills) with their preschoolers than fathers (Gerhardt et al., 2020). A study with predominantly White mothers and fathers of 8-year-olds found no significant differences between mothers and fathers in rates of emotion coaching during a parent-child emotion discourse task (Baker et al., 2011). However, in another study with younger children from White, upper-middle class families,

mothers reported providing more supportive responses (relative to non-supportive responses) to their preschoolers' emotions compared to fathers, but these differences were not observed during parent-child interactions (Denham et al., 2010).

It is important to highlight that ethnically diverse fathers are underrepresented in the emotion socialization literature, so the role that fathers' emotion socialization plays in predicting ethnically diverse children's socioemotional functioning is unclear. Descriptive studies with ethnically diverse families have found that African American mothers and fathers report similar levels of supportive responses to their school-age children's negative emotions (Brown et al., 2015). Similarly, Mexican mothers and fathers report comparable levels of emotion coaching and minimizing reactions in response to their kindergarteners' negative emotions, but compared to fathers, mothers display more supportiveness and emotion coaching when discussing emotions with their kindergartners (Gamble et al., 2007). More studies with ethnically diverse fathers are needed that go beyond just describing their emotion socialization practices. In this study, we address this gap by examining associations between mothers' and fathers' emotion socialization and children's social competence in toddlerhood.

Mother's and Fathers' Emotion Socialization and Children's Socioemotional Functioning

Research studies of mothers and their children find concurrent and longitudinal associations between mothers' ESBs and children's social adjustment (e.g., empathy; Ornaghi et al., 2020). In one of the few longitudinal studies of White middle-class mothers of toddlers, maternal supportiveness (a composite of self-reported supportive responses to emotions and observed sensitivity and warmth) at 18 months was positively associated with ratings of toddlers' social competence (e.g., empathy) at 30 months (Spinrad et al., 2007). Cross-sectional studies have found that providing more supportive responses to their toddlers' and preschool children's

negative emotions is associated with high levels of social competence with primarily middle-class and low-income White mothers (Brophy-Herb et al., 2011; Mirabile et al., 2018).

When studies include both parents, the findings are different. In one study with a sample of predominantly White families, mothers' self-reported responses to their preschoolers' emotions were not significantly related to preschoolers' emotion regulation, but fathers' self-reported non-supportive responses to negative emotions were concurrently associated with lower levels of emotion regulation (Shewark & Blandon, 2015). Gerhardt and colleagues (2020) found that mothers provided more emotion coaching than fathers, but only fathers' emotion coaching was significantly associated with their preschoolers' positive expression (e.g., smiling) concurrently and longitudinally, after controlling for mothers' emotion coaching and children's emotional reactivity (Gerhardt et al., 2020). They speculated that perhaps fathers' emotion coaching was more cognitively challenging than mothers' or that mothers may have been overly involved with their children, which could interfere with their ability to independently regulate their emotions. Such parent gender differential effects have been observed in other domains of development such as language (Malin et al., 2014) and math (Cabrera et al., 2020).

Moderators

Developmental scientists are interested in the context of socialization and child development, namely identifying individual- or family-level factors that moderate associations between parenting behaviors and children's outcomes. Consistent with a family systems theory, we consider the joint contribution of mothers' and fathers' emotion socialization behaviors on toddlers' social competence – namely, how the effects of one parent's emotion socialization behaviors on toddlers' social development may depend on the emotion socialization behaviors of the other parent. Further, children influence parents and their responses through their individual

characteristics; in particular, children's temperamental levels of emotional intensity could affect parents' ESBs. Thus, we consider how emotionality, a dimension of temperament characterized by high-intensity negative emotional responses (e.g., crying easily), interacts with mothers' and fathers' emotion socialization to influence toddlers' social competence (Rothbart et al., 2011).

Studies providing support for these interaction effects are limited. To our knowledge, only two studies by the same group of researchers have examined interaction effects between mothers' and fathers' ESBs to their children's negative emotions in early childhood. The first with a sample of primarily White families of kindergarteners found that fathers' self-reported supportive responses to negative emotions were associated with greater emotion false-belief understanding (i.e., understanding that our emotions are related to our beliefs) only when mothers reported low or moderate level of supportive responses to negative emotions (McElwain et al., 2007). However, when fathers' responses were treated as the moderator, mothers' supportive responses were negatively associated with emotion false-belief understanding if fathers reported high levels of supportive responses. Moreover, when both parents reported high levels of supportive responses, kindergarteners had lower mixed-emotion understanding (i.e., understanding that an individual can experience two conflicting emotions simultaneously). Interestingly, there were no significant interaction effects between mothers' and fathers' non-supportive ESBs.

In the second study with a different sample of primarily White families, McElwain and colleagues (2007) found that when mothers and fathers reported high levels of supportive responses to negative emotions, preschool boys displayed greater conflict intensity in a sharing task with a friend. However, mothers' supportive responses were negatively associated with boys' conflict only when fathers reported low levels of supportive responses (McElwain et al.,

2007). Together, these studies provide support for interaction effects between mothers' and fathers' responses, particularly their supportive responses, and suggest that preschoolers' and kindergarteners' socioemotional functioning may be strengthened when mothers' and fathers' ESBs differ. This may be because differences between mothers' and fathers' ESBs may help children to develop a more nuanced understanding and awareness of emotion than if children are exposed to only one type of ESB (i.e., only supportive ESBs or only non-supportive ESBs; McElwain et al., 2007). However, interaction effects between mothers' and fathers' ESBs in toddlerhood have not been studied; in the current study, we address this gap.

Because children are actively engaged in their own development, we also expect that children will influence parenting behaviors through temperament (Putnam et al., 2002). Children's temperament refers to biologically based differences in how individuals typically respond to stimuli and changes in their environment (Rothbart et al., 2011). One dimension of temperament is emotionality, or the tendency to experience and express negative emotions. Limited support for interaction effects between ESBs and child temperament come from two studies. In an ethnically diverse sample of low-to-middle-class mothers and their grade-school children, there was a negative concurrent relation between adult-reported negative emotionality and teacher-reported social competence, only when mothers reported average or high levels of emotion-focused responding (e.g., comforting; Jones et al., 2002). A second study with primarily White families found that for boys with high negative emotionality, mothers' and fathers' self-reported punitive reactions to their preschoolers' negative emotions were positively associated with parent-reported internalizing behaviors (e.g., withdrawn behaviors) six months later (Engle & McElwain, 2011).

Collectively, these two studies suggest that the relations between parental ESBs and socioemotional functioning may depend on child temperament. Therefore, we build on the existing literature by examining whether interaction effects between parents' emotion socialization behaviors and child temperament are present earlier in development (i.e., toddlerhood). We focus specifically on negative emotionality to account for individual differences in how children express negative emotions, which may have subsequent implications for how parents respond to their children's negative emotions.

The Current Study

The current study addresses the following research questions: (1) Are mothers' and fathers' ESBs to their toddlers' emotions at 18 and 24 months associated with toddlers' social competence at 24 and 30 months? (main effects) (2) Is the association between mothers' and fathers' ESBs and children's social competence moderated by children's emotionality? (moderation effects) and (3) Is the association between one parent's ESBs and children's social competence moderated by the other parent's responses to emotions and toddlers' social competence? (moderation effects). Based on Eisenberg and colleagues' (1998) heuristic model, we expected that mothers and fathers who provided more supportive ESBs (e.g., emotion coaching) to their toddlers' emotions at 18 months would have toddlers with higher social competence at 24 and 30 months than parents who provided fewer supportive ESBs. We also expected that more non-supportive ESBs (e.g., minimizing) would be associated with less social competence. We also test the following moderation hypotheses: (1) the positive association between mothers' supportive ESBs and toddlers' social competence would be stronger when fathers also provide high levels of supportive ESBs than when fathers provide low levels of supportive ESBs (cumulative advantage hypothesis); (2) the negative association between

mothers' non-supportive ESBs and toddlers' social competence would be stronger when fathers also provide high levels of non-supportive ESBs (dual risk hypothesis) and weaker when parents provide supportive ESBs (compensatory hypothesis); (3) Given the limited research on how child temperament moderates the relations between ESBs and toddlers' socioemotional functioning, we do not offer any a priori hypotheses, but rather conduct exploratory analyses.

Method

Participants

The current study is a secondary analysis of data from the Baby Books 2 (BB2), a longitudinal randomized control trial of a parenting intervention that aims to improve first-time parents' knowledge of child development. In BB2, parents were given Spanish-English bilingual "baby books" embedded with anticipatory guidance messages relevant to each developmental stage (i.e., 9, 12, 15, 18, and 24 months; Cabrera & Reich, 2017). The books contain information about parenting practices, child development, coparenting, and injury prevention.

Families were recruited from WIC centers, health care clinics, community centers, and public spaces in the Washington, DC metropolitan area and Orange County, California. In order to be eligible for the study, parents had to be (1) first-time parents of an infant younger than 9 months, (2) living together, (3) over the age of 18, (4) making less than \$70,000-75,000 per year, and (5) literate at a first-grade reading level in English or Spanish. At the baseline home visit (when the child was 9 months), examiners obtained informed consent from both parents and families were randomized to one of four conditions: mom-group (received books designed for mothers), dad-group (received books designed for fathers), both-group (received both types of intervention books) or control (received commercially available books).

The BB2 study enrolled 210 families (n = 420 parents) consisting of mothers, fathers, and their 9-month-old infants. Due to social distancing policies during the COVID-19 pandemic, the analytic sample includes a subset of 128 families in which at least one parent had observational data. We note that previous studies have found significant associations between parents' emotion socialization behaviors and children's socioemotional outcomes with smaller samples, ranging from 49 to 119 families (e.g., Baker et al., 2011; Brophy-Herb et al., 2011; Chaplin et al., 2010; Gerhardt et al., 2020; McElwain et al., 2007; Mirabile et al., 2018).

Sample sizes vary across models due to missing data (e.g., missing parent interview data at 24 or 30 months) or because the child did not display positive or negative emotions during the parent-child interaction tasks (i.e., the child's affect was neutral and thus, there were no parental ESBs to observe). Families who had observational data at 18 or 24 months did not differ from those who did not in terms of parent education, study condition assignment, or child gender. Demographic information (means and standard deviations) for the analytic sample is presented in Table 1.

Table 1

Sample Demographics

Measure	Full Sample		Mothers		Fathers	
	(n=128)		(n = 128)		(n = 128)	
	M(SD)/%	Range/n	M(SD)/%	Range/n	M(SD)/%	Range/n
<i>Child gender</i>						
Boy	49%	63				
Girl	51%	65				

<i>Parents' age at baseline visit</i>		27.81 (5.52)	18 – 42	29.75 (6.38)	18 – 52
<i>Parents' education</i>					
	High school or less	27%	35	43%	55
	Some college	32%	41	29%	37
	Two-year degree or more	41%	52	28%	36
<i>Parents' ethnicity</i>					
	Hispanic or Latino	66%	85	63%	81
	Black or African American	15%	19	14%	18
	White	9%	11	9%	12
	Other	10%	13	14%	17
<i>Condition</i>					
	Treatment	71%	91		
	Control	29%	37		
<i>Emotionality</i>	11.07 (3.82)	5 – 25			
<i>Social competence (12 months)</i>	15.37 (3.44)	5 – 22			
<i>Social competence (24 months)</i>	17.37 (3.30)	5 – 22			

<i>Social competence (30 months)</i>	17.30 (2.91)	8 – 22
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Procedure

As part of their participation in BB2, families completed a series of home visits, phone calls, and online surveys at 9, 12, 15, 18, 21, 24, and 30 month after the child’s birth and were compensated for each wave completed. The present study uses data from the 12-, 18-, 24-, and 30-month waves. Data were collected within 5 days before or after the target age (i.e., 10-day window) with phone call surveys when the child was 12 months, and home visits when the child was 18, 24, and 30 months. At each wave, mothers and fathers completed separate interviews in their preferred language about their parenting practices and their children’s behaviors. During the home visits, mothers and fathers also completed four semi-structured parent-child interaction tasks separately. All procedures and measures followed relevant laws and institutional guidelines and were approved by the two university Institutional Review Boards (approval #714055-41) on September 2, 2015.

Measures

Social competence was reported by both mothers and fathers at 24 and 30 months using the English or Spanish version of the Brief Infant-Toddler Social Emotional Assessment (BITSEA; Briggs-Gowan & Carter, 2006). The BITSEA is a 42-item standardized norm referenced measure for young children between the ages of 12 and 36 months that assesses their socio-emotional competencies (11 items; e.g., “tries to help when someone is hurt”) and problem behaviors (31 items; e.g., “often gets very upset”). Parents indicate how true each statement is reflective of their child (0 = “not true”, 1 = “somewhat true”, or 2 = “very true”).

The BITSEA has been used extensively in research and validated with ethnically diverse children, including Black and Latine children, and has been shown to have good test-retest reliability (Briggs-Gowan et al., 2004; Briggs-Gowan & Carter, 2006). The BITSEA has also been shown to be highly correlated with other standardized developmental measures, such as the Social Emotional subscale of the Ages and Stages Questionnaires (Briggs-Gowan & Carter, 2006). For this study, the 11 items of the competence subscale were used with higher summed scores on the competence subscale indicating greater social competence. Given that mothers' and fathers' report of their toddlers' social competence were significantly correlated (24 months: $r = .21, p < .05$; 30 months: $r = .26, p < .05$) but there was more missing data from fathers, we used only mothers' report of social competence in all analyses.

Parents' emotion socialization behaviors (ESB) were observed at 18 and 24 months and coded from two videorecorded mother- and father-child interaction tasks. In the five-minute no-toy play task, parents were asked to play as they normally would with their toddler but without using any toys. For the clean-up task, parents and toddlers were asked to clean up a set of toys that they had been playing with; parent-child dyads were given a maximum of three minutes to complete this task. We chose to code ESBs to their toddlers' emotions during the no-toy and clean-up tasks because these are likely to evoke strong emotional responses from children and are commonly experienced in parent-day-to-day interactions with their children.

The coding system used in the current study (described below) assessed toddlers' affect (i.e., positive or negative) and parents' (verbal and non-verbal) ESBs to toddlers' emotions. The coding system of ESBs was developed by our team of researchers based on several existing coding systems and self-reported questionnaires that assess parents' ESBs (e.g., Chaplin et al., 2010; Fabes et al., 1990; Gerhardt et al., 2020; Lunkenheimer et al., 2020; Spinrad et al., 2004).

We also watched a selected random sample of video recordings from our dataset to ensure that the coding system included all possible ESBs observed in the recordings. Coders were trained until they reached a gold standard of 90% agreement with a master coder and inter-rater reliability was checked on 20% of the videos. The intraclass correlation was calculated to be .76, which is considered acceptable (Koo & Li, 2016). Parent-child interaction videos in Spanish were coded by English-Spanish bilingual coders. Trained coders coded each video in two passes: in the first pass, coders indicated the onset and offset of each emotion episode that the toddler displayed and its valence (i.e., positive or negative affect) and in the second pass, coders indicated which of six (verbal and nonverbal) ESBs the parent provided during the child's emotional display and up to 5 seconds after the emotional display ended (as per Cole et al., 2003).

The ESB coding system included a set of six ESBs. (1) *Supportive ESBs* were behaviors that validated the child's emotion (e.g., "aww poor baby"; comforting child) or encouraged the child to express the emotions (e.g., "it's okay to cry"); (2) *Didactic ESBs* involved teaching the child about emotions by labeling emotions (e.g., "you're happy") and teaching strategies for regulating emotions (e.g., "take a deep breath"); (3) *Distraction ESBs* included redirection of the child's attention away from the emotional experience (e.g., using a favorite toy to cheer child up); (4) *Minimizing ESBs* dismissed the child's emotion or criticized the child for exhibiting an unacceptable emotion (e.g., "it's not a big deal"; "you're such a crybaby"); (5) *Punishment ESBs* included punishing (e.g., spanking; taking toy away) or threatening to punish the child (e.g., "I won't take you to the park if you keep yelling") for expressing an emotion; and, (6) *Ignoring ESBs* consisted of the parent neither verbally nor nonverbally responding to the emotional

expression or providing a non-emotionally relevant comment (e.g., “okay, put the next toy in the bag” if the child is upset). The number of times each type of ESB was observed was summed.

To control for children’s emotional expressivity (per Chaplin et al., 2010), each type of parent ESB (e.g., emotion coaching) was divided by the number of child emotional displays (i.e., the total number of positive or negative emotions expressed during the interaction), providing a proportion of the type of parents’ ESB relative to the number of children’s emotional displays.

Based on previous conceptualizations (Gottman et al., 1996) and to reduce the number of parents’ ESBs, supportive and didactic ESBs were combined into *emotion coaching ESBs* and minimizing and punishment ESBs were combined into *non-supportive ESBs*. This approach resulted in 4 types of ESBs: emotion coaching, distraction, non-supportive, and ignoring (see analysis section for a description of how ESBs were used in analyses).

Child emotionality was assessed at 12 months via mother-report using the Emotionality Activity Sociability (EAS) Temperament Survey (Buss, 1991; Buss & Plomin, 1984). This measure assesses children’s emotionality (e.g., “child cries easily”), activity (e.g., “child is always on the go”), shyness (e.g., “child tends to be shy”), and sociability (e.g., “child likes to be with people”). For each statement, mothers indicated how much the statement was reflective of their child on a 5-point scale (1 = “not characteristic or typical of your child to 5 = “very characteristic or typical of your child”). The EAS Temperament Survey has been found to have good internal consistency and has demonstrated good stability over time (Bould et al., 2013). In the current study, we only used the 5-item Emotionality subscale as our focus was on moderation effects of negative emotionality. Higher scores on this subscale indicate higher negative emotionality (i.e., a greater tendency to show distress).

Covariates. Six control variables at the child (gender, earlier social competence), family (total number of parental responses, parent education), and study (intervention condition, site) levels were included in all analyses. At the child level, we controlled for child gender because research has shown that boys are rated lower in social competence than girls (Klein et al., 2018) and mothers and fathers respond to their children's emotions differently based on child gender (Brown et al., 2015; Chaplin et al., 2010; Denham, Bassett, et al., 2010). We also controlled for social competence at an earlier point from the outcome. That is, for models predicting social competence at 24 months, we controlled for the social competence score at 12 months. Mothers reported on their toddlers' social competence at 12 months using the same measure of social competence (BITSEA) used at 24 and 30 months (described above). For models predicting social competence at 30 months, we controlled for the social competence score at 24 months.

At the family level, we controlled for the total number of mothers' and fathers' ESBs to positive emotions and the total number of mothers' and fathers' ESBs to negative emotions in models to account for any differences in general responsivity to emotions. We also controlled for parental education because research has shown that parents with higher levels of education engage in more emotion-coaching compared to parents with less education (Baker et al., 2011). We took the highest educational attainment of the two parents (i.e., less than high school (HS); HS degree or equivalent; some college; two-year degree; four-year degree or more) and collapsed into three categories: HS degree or less; some college; and two-year degree or more. We then created two dummy variables with high school degree or less as the reference group.

At the study level, we controlled for intervention condition because parents in the intervention received an educational book that differentially exposed them to knowledge of child development, including emotion socialization behaviors (see McKee et al., 2021 for a more

detailed description). We also controlled for intervention site because there were sociodemographic differences between participants at the two sites that could have altered parents' behaviors. We created a binary variable for intervention condition, with 0 indicating the family was randomly assigned to the control group and 1 indicating the family was randomly assigned to one of the three treatment groups.

Analytical Plan and Preliminary Analyses

We used IBM SPSS Statistics (Version 29) for all analyses. Descriptive analyses of mothers' and fathers' ESBs to negative emotions at 18 and 24 months indicated skewness outside of acceptable bounds for most of the categories. Therefore, we performed a natural log transformation on all parents' ESBs to negative emotions and the log-transformed variables were used in regression analyses. Next, we conducted a series of ANOVAs to examine whether there were any differences in parental ESBs based on child gender.

We then conducted a series of OLS multiple regression models to examine main effects of mothers' and fathers' ESBs on toddlers' social competence, with separate models for parents' ESBs to positive emotions and ESBs to negative emotions. In all models, we included both mothers' and fathers' ESBs to examine the unique contribution of each, above and beyond the contribution of the other parent's ESBs. At both 18 and 24 months, mothers and fathers provided primarily emotion coaching (i.e., supportive, didactic) or ignored positive emotions. In our regression analysis of positive emotions, we included only emotion coaching and excluded ignoring due to collinearity concerns (18 months: $r_{\text{mother}} = -.96, p < .001$; $r_{\text{father}} = -.99, p < .001$; 24 months: $r_{\text{mother}} = -.78, p < .001$; $r_{\text{father}} = -.99, p < .001$). We also excluded non-supportive (i.e., minimize, punish) and distraction ESBs in our positive emotions models because they were

observed less than 5% of the time. Our models predicting to negative emotions included all four types of ESBs: emotion coaching, distraction, non-supportive, and ignoring.

Finally, to examine moderating effects, we included interaction terms between parental ESBs and negative emotionality and between mothers' and fathers' ESBs. We mean-centered all variables before creating interaction terms to reduce multicollinearity. To probe significant interactions, we used SPSS PROCESS version 4.1 macro (Hayes, 2022), which enabled us to test the significance of main effects at various values (e.g., at the mean and +/- 1 standard deviation; i.e., simple slopes analysis) of the moderator using 5000 bootstrap resamples. We only present the results for models that reached significance in the tables; however, all results are available upon request from the corresponding author.

Results

Descriptive Statistics and Bivariate Correlations

Descriptive statistics for all study variables appear in Tables 1 and 2 and bivariate correlations among all primary variables of interest are presented in Tables 3 and 4. For toddlers' positive emotions at 18 and 24 months, parents used ignoring and emotion coaching ESBs most frequently. Both parents provided similar rates of ignoring (18 months: $M_{\text{mother}} = .52$, $M_{\text{father}} = .51$; 24 months: $M_{\text{mother}} = .41$, $M_{\text{father}} = .45$) and emotion coaching (18 months: $M_{\text{mother}} = .46$, $M_{\text{father}} = .48$; 24 months: $M_{\text{mother}} = .51$, $M_{\text{father}} = .54$). The results of a one-way ANOVA indicated no significant mean differences between mothers' and fathers' ignoring and emotion coaching ESBs to positive emotions at 18 months ($F(1,208) = .12$, $p = .73$; $F(1,208) = .21$, $p = .65$, respectively) or at 24 months ($F(1,141) = .65$, $p = .42$; $F(1,141) = .26$, $p = .61$, respectively).

For children's negative emotions at 18 and 24 months, the most common ESB across parents was ignoring (18 months: $M_{\text{mother}} = .57$, $M_{\text{father}} = .63$; 24 months: $M_{\text{mother}} = .39$, $M_{\text{father}} =$

.38). A one-way ANOVA indicated there were no significant differences between mothers' and fathers' ignoring at 18 months ($F(1,224) = 1.81, p = .18$) or 24 months ($F(1,160) = .03, p = .86$). At 24 months, parents also provided non-supportive ESBs (i.e., minimizing and ignoring) to negative emotions ($M_{\text{mother}} = .28, M_{\text{father}} = .27$) and distraction ($M_{\text{mother}} = .21, M_{\text{father}} = .20$). Moreover, there were no significant differences between mothers' and fathers' non-supportive ESBs and between mothers' and fathers' distraction at 24 months as determined by a one-way ANOVA ($F(1,160) = .02, p = .78; F(1,160) = .06, p = .81$, respectively).

Correlation analyses indicated moderate to strong cross-age stability in social competence assessed six months (12 to 18 months: $r = .44, p < .001$; 24 to 30 months: $r = .65, p < .001$) and 12 months apart (12 to 23 months: $r = .44, p < .001$). Cross-age stability was weaker but still significant when social competence was assessed 18 months apart (12 to 30 months: $r = .29, p < .001$). However, there were no significant correlations between mothers' ESBs at 18 and 24 months or between fathers' responses at 18 and 24 months (Supplementary Tables 1 and 2, respectively). Additionally, there were no significant correlations between mothers' and fathers' ESBs at 18 months or between mothers' and fathers' ESBs at 24 months (Tables 3 and 4, respectively).

At 18 months, fathers' distraction of negative emotions was negatively and significantly correlated with 24- and 30-month social competence ($r = -.21, p < .05; r = -.21, p < .05$, respectively). In contrast, at 24 months, fathers' distraction of negative emotions was positively associated with social competence at 30 months ($r = .37, p < .01$). And, at 24 months, fathers' ignoring of negative emotions was negatively correlated with 30-month social competence ($r = -.26, p < .05$).

Table 2

Frequency of Mothers' and Fathers' Emotion Socialization Behaviors (ESB) to Positive and Negative Emotions at 18 and 24 Months

	18 months				24 months			
	Mothers (n=110)		Fathers (n=100)		Mothers (n=75)		Fathers (n=64)	
	M/SD	Range	M/SD	Range	M/SD	Range	M/SD	Range
<i>ESB (positive emotions)</i>								
Emotion coaching	.46 (.31)	0 – 1	.48 (.30)	0 – 1	.51 (.29)	0 – 1	.54 (.30)	0 – 1
Non-supportive	.01 (.08)	0 – .8	.01 (.03)	0 – .2	.03 (.12)	0 – 1	.004 (.02)	0 – .8
Distraction	Not observed	N/A	.004 (.03)	0 – .2	.05 (.15)	0 – 1	.01 (.04)	0 – .33
Ignoring	.52 (.31)	0 – 1	.51 (.30)	0 – 1	.41 (.28)	0 – 1	.45 (.30)	0 – 1
<i>Total Number of Responses</i>	8.22 (5.58)	1 – 27	8.44 (5.29)	1 – 25	9.56 (5.60)	1 – 26	8.19 (4.98)	1 – 19
	Mothers (n=115)		Fathers (n=111)		Mothers (n=87)		Fathers (n=69)	
	M/SD	Range	M/SD	Range	M/SD	Range	M/SD	Range
	M/SD	Range	M/SD	Range	M/SD	Range	M/SD	Range
<i>ESB (negative emotions)</i>								
Emotion coaching	.11 (.17)	0 – 1	.09 (.16)	0 – 1	.12 (.19)	0 – 1	.14 (.24)	0 – 1

Non-supportive	.19 (.26)	0 – 1	.15 (.22)	0 – 1	.28 (.30)	0 – 1	.27 (.31)	0 – 1
Distraction	.11 (.19)	0 – 1	.13 (.22)	0 – 1	.21 (.26)	0 – 1	.20 (.28)	0 – 1
Ignoring	.57 (.32)	0 – 1	.63 (.33)	0 – 1	.39 (.33)	0 – 1	.38 (.36)	0 – 1
<i>Total Number of Responses</i>	6.37 (4.27)	1 – 20	6.33 (4.91)	1 – 20	6.68 (5.64)	1 – 28	5.75 (4.13)	1 – 15

Note. The means represent proportions (i.e., number of a specific type of ESB divided by the total number of child emotion episodes). The sample sizes differ for 18- and 24-month ESBs to positive and negative emotions because some children did not display either positive or negative emotions during the tasks (i.e., child showed neutral affect) and thus, it was not possible to observe ESBs.

Table 3

Correlations with 18-Month Emotion Socialization Behaviors

	1.	2.	3.	4.	5.	6.	7.	8.
1. M emotion coaching (positive emotions)	--							
2. M non-supportive (positive emotions)	-.11	--						
3. M distraction (positive emotions)	--	--	--					
4. M ignoring (positive emotions)	-.96**	-.15	--	--				
5. F emotion coaching (positive emotions)	.002	-.14	--	.03	--			
6. F non-supportive (positive emotions)	.08	-.05	--	-.07	-.01	--		
7. F distraction (positive emotions)	.04	-.04	--	-.03	.03	-.05	--	
8. F ignoring (positive emotions)	.00	.16	--	-.04	-.99**	-.09	-.11	--
9. M emotion coaching (negative emotions)	.25*	-.07	--	-.21*	-.001	.04	.03	-.01
10. M non-supportive (negative emotions)	.15	.24*	--	-.21*	-.06	-.11	-.09	.08
11. M distraction (negative emotions)	.05	-.03	--	-.03	-.04	.13	.20	.01
12. M ignoring (negative emotions)	-.29**	-.12	--	.30**	.07	.004	-.06	-.06
13. F emotion coaching (negative emotions)	.02	-.05	--	-.02	.02	.04	-.11	-.01
14. F non-supportive (negative emotions)	.15	-.09	--	-.11	.15	-.03	.09	-.17
15. F distraction (negative emotions)	.07	-.08	--	-.03	.26*	.04	.20	-.30**
16. F ignoring (negative emotions)	-.15	.15	--	.10	-.28**	-.02	-.14	.31**
17. Emotionality	.08	-.09	--	-.06	-.14	.04	.17	.11
18. 24-month social competence	-.05	-.05	--	.06	-.002	.08	.002	.01
19. 30-month social competence	-.03	.01	--	.02	.05	.12	-.09	-.02

Note. Because maternal distraction (positive emotions) was not observed, correlations could not be calculated. M = mother; F = father. *p <

9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.
--										
-.16	--									
-.03	-.16	--								
-.39**	-.64**	-.43**	--							
-.01	-.02	.14	-.06	--						
-.07	-.20	-.04	.21*	-.13	--					
.08	-.08	.02	.01	-.05	-.01	--				
-.01	.20	-.05	-.11	-.37**	-.58**	-.63**	--			
.02	-.09	.11	.01	.001	.18	.01	-.13	--		
.15	-.02	.03	-.10	-.05	-.04	-.21*	.18	-.19*	--	
.09	.16	-.10	-.13	-.003	.01	-.21*	.14	-.26**	.65**	--

Table 4

Correlations with 24-Month Emotion Socialization Behaviors

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. M emotion coaching (positive emotions)	--								
2. M non-supportive (positive emotions)	-.19	--							
3. M distraction (positive emotions)	-.31**	-.05	--						
4. M ignoring (positive emotions)	-.78**	-.23	-.19	--					
5. F emotion coaching (positive emotions)	-.02	-.21	-.04	.14	--				
6. F non-supportive (positive emotions)	-.21	-.05	-.09	.28*	-.10	--			
7. F distraction (positive emotions)	-.14	-.03	-.06	.18	-.02	-.04	--		
8. F ignoring (positive emotions)	.05	.22	.06	-.18	-.99**	.05	-.11	--	
9. M emotion coaching (negative emotions)	-.01	-.02	-.08	.05	-.11	-.05	.001	.11	--
10. M non-supportive (negative emotions)	.21	.19	-.07	-.28*	.02	-.10	-.08	.01	-.30**
11. M distraction (negative emotions)	.10	-.04	.40**	-.19	-.08	-.11	.06	.08	-.10
12. M ignoring (negative emotions)	-.26*	-.11	-.23	.37**	.09	.19	.02	-.12	-.22*
13. F emotion coaching (negative emotions)	-.14	-.02	.12	.11	-.05	.03	.31*	.01	-.06
14. F non-supportive (negative emotions)	.13	.14	-.05	-.24	.10	.13	-.11	-.08	-.04
15. F distraction (negative emotions)	.02	-.13	-.06	.08	-.03	-.01	-.10	.05	-.06
16. F ignoring (negative emotions)	-.02	.01	.003	.04	-.02	-.11	-.05	.02	.11
17. Emotionality	.05	-.09	-.002	.00	.13	.01	.01	-.12	-.04
18. 24-month social competence	.03	-.14	-.04	.06	.03	.07	.01	-.04	.08
19. 30-month social competence	-.03	-.01	.22	-.08	-.01	-.20	-.02	.03	-.02

Note. M = mother, F = father. *p < .05. **p < .01

10.	11.	12.	13.	14.	15.	16.	17.	18.	19.
--	--	--	--	--	--	--	--	--	--
-.27*	--	--	--	--	--	--	--	--	--
-.52**	-.50**	--	--	--	--	--	--	--	--
.22	-.14	-.04	--	--	--	--	--	--	--
.12	-.03	-.07	-.15	--	--	--	--	--	--
-.16	.01	.16	-.15	-.32**	--	--	--	--	--
-.12	.11	-.05	-.41**	-.50**	-.40**	--	--	--	--
-.05	.16	-.05	-.05	.07	-.07	.05	--	--	--
-.20	.05	.09	-.23	.09	.18	-.07	-.19*	--	--
-.06	-.03	.10	-.12	.06	.37**	-.26*	-.26**	.65**	--

To examine whether mothers' and fathers' ESBs varied by child gender, we conducted several one-way ANOVAs. For negative emotions: at 18 months, fathers of boys used more distraction ($F(1,109)=6.31, p=.013$) but ignored less often ($F(1,109)=5.56, p=.02$) whereas mothers of boys ignored more ($F(1,113)=4.17, p=.043$) compared to fathers and mothers of girls, respectively. At 24 months, fathers of boys used less distraction ($F(1,73)=6.31, p=.044$) compared to fathers of girls.

For positive emotions, at 18 months, there were no significant differences in parents' ESBs by child gender. At 24 months, mothers of boys provided more supportive ESBs ($F(1,73)=9.25, p=.003$) and ignored less often ($F(1,73)=6.05, p=.016$) compared to mothers of girls.

Main Effects

Parental ESBs to positive emotions and toddlers' social competence. Controlling for 12-month social competence and other covariates, the model testing whether mothers' and fathers' emotion coaching at 18 months were associated with social competence at 24 months was significant ($F(11, 61) = 2.84, p < .01$), but emotion coaching was not a significant predictor. Although the model with mothers' and fathers' emotion coaching at 18 months predicting to 30-month social competence was significant ($F(11, 58) = 5.67, p < .001$), emotion coaching was not significantly associated with social competence, controlling for 24-month social competence.

Controlling for 24-month social competence and other covariates, the model with mothers' and fathers' emotion coaching at 24 months predicting 30-month social competence was significant ($F(11, 35) = 5.24, p < .001$), but none of the predictors and only some of the covariates were significantly associated with social competence.

Parental ESB to negative emotions and toddlers' social competence. Controlling for social competence at 12 months and other covariates, the model with mothers' and fathers' ESBs at 18 months predicting 24-month social competence was significant ($F(17, 70) = 1.90, p < .05$), but none of the ESBs were significantly associated with social competence. The model testing whether mothers' and fathers' ESBs at 18 months were associated with 30-month social competence was significant ($F(17, 65) = 3.19, p < .001$) and explained 46% of the variance in social competence (Table 5).

Over and above the inclusion of 24-month social competence and other covariates, fathers who provided more non-supportive ESBs to negative emotions at 18 months had toddlers with greater mother-reported social competence at 30 months ($b = 1.06$, $t(65) = 2.06$, $p < .05$). Given the log-transformation of this variable, the coefficient indicates that when the proportion of paternal non-supportive ESBs doubles, social competence increases by 1.06 units. The model in which mothers' and fathers' ESBs at 24 months predicted to 30-month social competence reached significance ($F(17, 39) = 3.73$, $p < .001$), but none of the ESBs were significantly associated with social competence, over and above 24-month social competence.

Table 5

Multiple Regression Analyses Predicting Toddlers' 30-Month Social Competence

	Main Effects Model (18M Responses)		Parent x Emotionality Interaction Model (24M Responses)		Mother x Father Interaction Model (18M Responses)	
	<i>b</i> (<i>SE</i>)	β	<i>b</i> (<i>SE</i>)	β	<i>b</i> (<i>SE</i>)	β
Child gender	.39 (.63)	.07	1.92 (.83)*	.32*	1.00 (.65)	.17
Emotionality	-.12 (.08)	-.18	-.18 (.10)†	-.25†	-.12 (.07)	-.17
Some college	1.64 (.87)†	.27†	2.28 (1.21)	.36	2.14 (.87)*	.36*
Two-year degree or more	.55 (.82)	.09	.60 (1.04)	.10	1.04 (.83)	.18
Condition	.78 (.62)	.13	.61 (.91)	.09	1.02 (.61)†	.17†
Site	.41 (.58)	.07	-.34 (.68)	-.06	.24 (.58)	.04
Total M behaviors	.02 (.07)	.03	.04 (.08)	.08	.03 (.07)	.05
Total F behaviors	-.06 (.07)	-.10	.07 (.10)	.10	-.09 (.07)	-.16
Earlier social competence	.42 (.10)**	.43**	.46 (.14)**	.51**	.36 (.10)**	.37**
M EC	.23 (.54)	.05	.97 (.65)	.22	.26 (.54)	.06
F EC	.21 (.58)	.04	-1.85 (.68)*	-.46*	.92 (.60)	.19
M non- supportive	.63 (.58)	.17	-.14 (.70)	-.04	.20 (.62)	.05
F non-supportive	1.06 (.52)*	.27*	-.69 (.68)	-.21	1.17 (.51)*	.29*
M distraction	-.42 (.54)	-.10	-.56 (.57)	-.15	-.62 (.63)	-.14

F distraction	.46 (.59)	.11	.07 (.75)	.02	.79 (.58)	.19
M ignoring	-.31 (.71)	-.08	.04 (.58)	.01	-.50 (.91)	-.12
F ignoring	.45 (.71)	.11	-1.88 (.87)*	-.58*	1.08 (.72)	.27
M EC x Emo	--	--	-.33 (.18)†	-.28†	--	--
F EC x Emo	--	--	-.21 (.21)	-.17	--	--
M non-supportive x Emo	--	--	-.43 (.15)**	-.42**	--	--
F non-supportive x Emo	--	--	.35 (.18)†	.38†	--	--
M distraction x Emo	--	--	-.22 (.14)	-.27	--	--
F distraction x Emo	--	--	.19 (.19)	.23	--	--
M ignoring x Emo	--	--	-.17 (.14)	-.22	--	--
F ignoring x Emo	--	--	.16 (.21)	.20	--	--
MxF EC	--	--	--	--	-1.90 (.74)*	-.27*
MxF non-supportive	--	--	--	--	-1.15 (.67)†	-.20†
MxF distraction	--	--	--	--	-.95 (.70)	-.16
MxF ignoring	--	--	--	--	.41 (1.06)	.06
R^2	.46		.74		.53	
<i>Adjusted R²</i>	.31		.53		.37	

F for ΔR^2	3.19**	3.54**	3.27**
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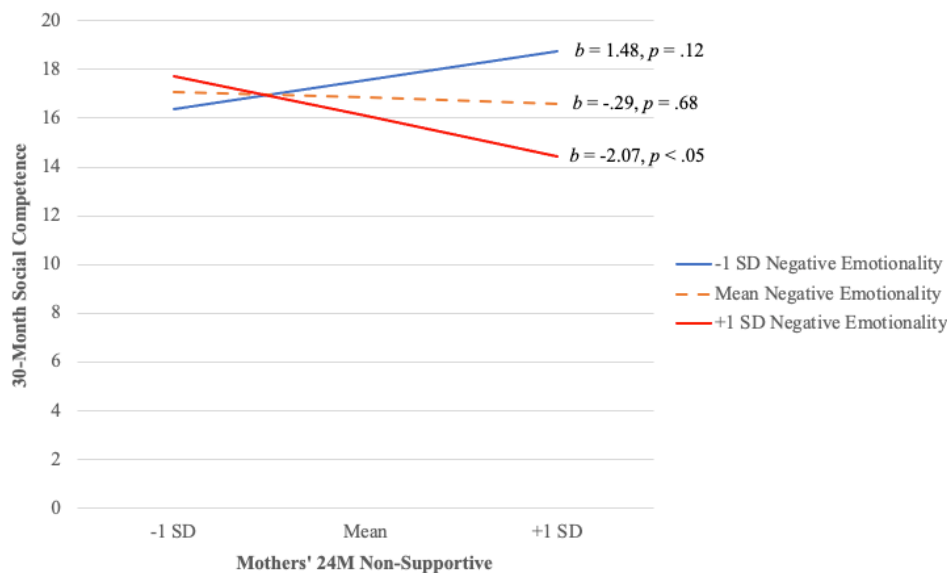
Note. Parameter estimates reflect the association between the proportion of a given ESB category (log-transformed) and the outcome. Child gender was dummy coded (0 = male, 1 = female). Condition was dummy coded (0 = control group, 1 = treatment groups). Site was dummy coded (1 = University of Maryland, 2 = University of California, Irvine). The reference group for highest parent education was high school degree or less. For models with 18-month ESBs, earlier social competence was measured at 12 months. For models with 24-month ESBs, earlier social competence was 24 months. M = mother; F = father; Emo = emotionality; EC = emotion coaching; 18M = 18 months; 24M = 24 months.

† $p < .10$, * $p < .05$, ** $p < .01$

Moderation Effects

Children's emotionality. A significant interaction between children's negative emotionality and mothers' non-supportive ESBs to negative emotions at 24 months emerged ($F(25, 31) = 3.54, p < .001$), with this model explaining 74% of variance (Table 5). A significant, negative association between mothers' non-supportive ESBs and 30-month social competence was only observed for toddlers with high negative emotionality, but not for toddlers with low or average negative emotionality (Figure 1a). All other models with interaction effects between negative emotionality and mothers' and fathers' ESBs either did not reach significance or the interaction effects were not significant.

a.



b.

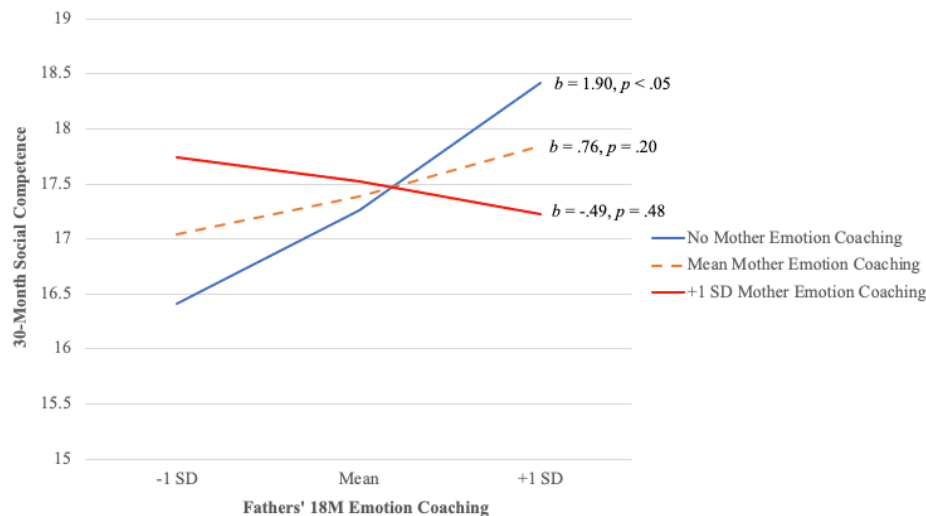


Figure 1. For all figures, the outcome is 30-month social competence. Figure 1a illustrates the interaction between mothers' non-supportive ESBs to negative emotions at 24 months and child negative emotionality. Figure 1b shows the interaction between mothers' and fathers' emotion coaching of negative emotions at 18 months.

Note. 18M = 18 months; 24M = 24 months; SD = standard deviation.

Joint effects of mothers' and fathers' ESBs. There was a significant interaction between mothers' and fathers' emotion-coaching of negative emotions at 18 months for the model predicting 30-month social competence ($F(21, 61) = 3.27, p < .001$), with this model explaining 53% of the variance in social competence (Table 5). PROCESS could not conduct simple slopes analysis for fathers' emotion coaching at one standard deviation below because that was lower than the minimum observed. Instead, it conducted simple slope analysis at the minimum value of fathers' emotion coaching (i.e., 0%), the mean, and one standard deviation above the mean. However, none of the simple slopes reached significance when fathers' emotion coaching was treated as the moderator.

We therefore conducted simple slopes analysis for the interaction treating mothers' emotion coaching as the moderator. Similar to the analysis with fathers' emotion coaching, PROCESS could not conduct simple slopes analysis for mothers' emotion coaching at one

standard deviation below because that was lower than the minimum observed. Instead, it conducted simple slope analysis at the minimum value of mothers' emotion coaching (i.e., 0%), the mean, and one standard deviation above the mean. A significant, positive association between fathers' emotion coaching to negative emotions and 30-month social competence was only observed for mothers who did not provide any emotion coaching (Figure 1b). All other models with interaction effects between mothers' and fathers' ESBs at 18 months and at 24 months either did not reach significance or the interaction effects were not significant.

Discussion

Parents' ability to help their children understand their emotions and act accordingly to achieve a social goal is central to children's ability to connect with others and establish and keep friendships. Yet, how mothers' and fathers' ESBs in response to their children's emotions relate to their social competence has not been extensively studied in ethnic minority families in toddlerhood. The current study addressed this gap in a sample of economically and ethnically diverse first-time parents and their toddlers, who are typically understudied in this area of research. There are several significant findings. First, mothers and fathers in our sample responded to their toddlers' emotions somewhat differently depending on whether toddlers displayed negative (e.g., sad) or positive emotions (e.g., happy). Mothers and fathers responded similarly and tended to mostly ignore their toddlers' negative emotions and mostly engage in emotion coaching (e.g., encouraging emotion expression) if toddlers expressed positive emotions. This consistency between parents' responses – this “united front” – has been observed previously in ethnic minority families (Brown et al., 2015; Gamble et al., 2007) and is beneficial for children (Ryan et al., 2006). Second, none of parents' ESBs to toddlers' positive emotions were significantly related to toddlers' social competence. Third, the association between fathers'

ESBs to negative emotions and toddlers' social competence was direct, but also moderated by mothers' ESBs. In particular, fathers who provided more non-supportive ESBs at 18 months had toddlers with greater social competence at 30 months. And, fathers' emotion coaching at 18 months promoted toddlers' social competence at 30 months only when mothers did not do any emotion coaching. Comparatively, mothers' ESBs to negative emotions at 24 months and toddlers' social competence at 30 months was significant but depended on the child's emotionality. This suggests that children's negative emotionality is more important for mothers' ESBs than it is for fathers. Mothers who either minimize their children's negative emotions or punish them for expressing negative emotions have toddlers who are observed to be less socially competent but only if they have high negative emotionality (e.g., cries easily). It seems that toddlers are less affected by non-supportive ESBs from fathers than they are by mothers' non-supportive ESBs, especially if they are highly emotional. Overall, mothers' and fathers use similar ESBs, but the impact on their children's social adjustment operates differently.

Parents' ESBs and Children's Social Competence

The first aim of our study was to examine longitudinal main effects of mothers' and fathers' ESBs at 18 and 24 months on toddlers' social competence at 24 and 30 months. Contrary to our hypothesis, we found that fathers who either minimized (e.g., "there's nothing to cry about") or punished (e.g., "we won't continue playing if you keep crying") their 18-month-old toddlers for expressing sadness or anger had toddlers with better social competence at 30 months, over and above social competence at 12 months and other covariates. These findings do not support the heuristic model of the socialization of emotion (Eisenberg et al., 1998) and are not in line with past research showing that children's social competence is greater when parents provide fewer non-supportive responses to emotions (Jones et al., 2002). But other studies

support our finding that fathers' somewhat "negative" behaviors are not detrimental to children as expected if mothers were to exhibit the same behavior. For example, a study of low-income Latine and African American families found that although the intensity of fathers' intrusiveness with their toddlers was greater than mothers' intensity, they displayed more positive affect during their intrusive episodes compared to mothers (Karberg et al., 2019). This same study found that mothers', but not fathers', intensity of intrusiveness was negatively associated with toddlers' sociability (e.g., interactive with peers and teachers). In our study, maternal non-supportive ESBs (but not fathers' non-supportive ESBs) were detrimental to toddlers' social competence, especially for highly emotional children. Future research with both mothers and fathers needs to replicate this study or consider the emotional context of parent-child interactions to further understand how context affects parents' emotion socialization.

Contrary to our expectations and the findings from other studies (Brophy-Herb et al., 2011; Spinrad et al., 2007; Yule et al., 2020), neither mothers' nor fathers' emotion coaching ESBs were significantly and positively associated with toddlers' social competence at 24 or 30 months. Our findings differ from those of previous studies. Two studies with primarily White families, one of which had a low-income sample, found significant associations between supportive responses (e.g., emotion coaching) and toddlers' social competencies (Brophy-Herb et al., 2011; Spinrad et al., 2007). Our sample differs from some of these studies in important ways. We included a sample of toddlers whereas previous studies have observed links with preschool-age children or older (Mirabile et al., 2018; Yule et al., 2020). Yet, child age may not be the whole story. Further research is necessary to sort out these findings.

Moderation Effects

The second aim of our study was to examine interaction effects between parental ESBs to positive and negative emotions and child negative emotionality. As expected, child negative emotionality was a significant moderator, but only for the association between mothers' non-supportive ESBs (i.e., punish or minimize) at 24- and 30-month social competence. These findings support the heuristic model of the socialization of emotion as well as the goodness-of-fit hypothesis (Chess & Thomas, 1991; Eisenberg et al., 1998). Children who are prone to experiencing negative emotions and distress may be more sensitive to mothers' non-supportive behaviors (Zahn-Waxler, 2010). Our finding is also consistent with previous research that children with difficult temperaments, including negative emotionality, might be more sensitive to "negative" parenting than children who are not (Slagt et al., 2016). Engle and McElwain (2011) found that when mothers and fathers reported more punitive (e.g., disciplining child) reactions to their preschoolers' negative emotions, their children had greater parent-reported internalizing symptoms, but only for boys with high negative emotionality. Children high in emotionality tend to have more negative outcomes than other children as they are more likely to be affected by less-than optimal conditions. The goodness-of fit hypothesis is a good explanation – positive developmental outcomes are less likely when a highly emotional child is exposed to maternal non-supportive ESBs (Chess & Thomas, 1991).

However, we did not observe this finding with fathers, suggesting that fathers' behaviors and their impact on children's development might be less sensitive to child characteristics or that toddlers might not be put off by fathers' non-supportive ESBs in a way that they are by mothers' behaviors. Other studies with similar samples have found that fathers display greater negativity (e.g., rejection) during parent-child interactions at 24 months with highly emotional children than mothers; however, this study did not include child outcomes (Padilla & Ryan, 2019).

We were also interested in testing whether parents' ESBs varied or were moderated by the ESBs of the other parent. We found support for family systems theory that the behavior of one partner in the system tends to spill over to the behavior of the other partner. In particular, our findings support a compensatory hypothesis that fathers' emotion coaching ESBs (e.g., labeling; validating the emotion) were positively related to toddlers' social competence at 30 months but only when mothers did not exhibit any emotion coaching. This is a difficult finding to interpret but it is generally consistent with past findings with White families that have shown a positive association between fathers' self-reported supportive ESBs (e.g., soothing child) and children's emotion understanding only when mothers reported low or moderate levels of supportive ESBs (McElwain et al., 2007). McElwain and colleagues hypothesized that children show a more nuanced understanding of emotions when they have parents who differ in how they respond to emotions. This is a hypothesis that should be tested in future studies, but it is equally plausible that children have unique dyadic interactions with their mothers and fathers, and we need to capture more aspects of these unique relationships to better understand why some potentially negative parenting behaviors are not detrimental for children when one parent engages in them versus the other.

Collectively, our findings illustrate the importance of measuring both mothers' and fathers' ESBs to obtain a well-rounded view of the parental emotion socialization practices toddlers are exposed to. When only one parent's (typically mothers') ESBs are measured, researchers may miss out on identifying important interaction effects (e.g., compensatory effects) or the unique ways in which mothers and fathers relate to their children. A more nuanced understanding of when and for whom these interaction effects emerge can inform the

development of interventions and parenting programs aimed at fostering social competence in ethnically diverse toddlers from low-income backgrounds.

Limitations

There are some limitations of the current study that should be kept in mind. The participating families were recruited from two specific geographical regions and thus, the findings are not generalizable to any specific group. Second, the measure of toddlers' social competence was based on mother-report rather than direct observation. It is possible that mothers over- or underestimate their toddlers' social skills. Future work could incorporate both parental report and observational measures of social competence, but observational measures are virtually nonexistent as few studies collect observational data from low-income ethnically diverse families. Third, we observed ESBs to toddlers' emotions during two tasks that lasted approximately eight minutes. Observational methods, as advantageous as they are, capture only a portion of time that parents spend socializing their children. It is also important to acknowledge that parents might be on their best behavior when observed by strangers. Future studies should incorporate both parent-report and naturalistic observational measures over longer periods of time to assess parents' emotion socialization. Finally, due to the nature of longitudinal studies and the COVID-19 pandemic social distancing policies, attrition reduced the sample size of our models which may have prevented us from detecting additional significant main and interaction effects.

Conclusions

Research on emotion socialization has frequently focused on ESBs to their children's emotions using families with preschool-age children or older. Notably, this literature has primarily consisted of White families and has relied on parent-report of emotion socialization

practices. Focusing on emotion socialization in the toddler years and using observational methods with a sample of ethnically diverse families is an important contribution to our understanding of the myriad ways in which children learn to regulate their emotions and interact with others.

Our findings show that toddlers in ethnically diverse families experience consistent parenting that for the most part is helpful in developing social skills. Although mothers and fathers engaged in similar ESBs, their impact on toddlers' social competence varied as a function of child emotionality and the other parents' ESBs, respectively. Fathers as well as mothers engage with children in unique ways that follow different paths and mechanisms. As we have argued elsewhere (Cabrera et al., 2020), mothers are not the same as fathers and fathers are not substitute for mothers. Each parent (regardless of sex) is important to their children's socioemotional development in unique ways.

Our findings also have implications for parenting programs. First, parenting programs should validate and recognize parents' strengths – as shown in our study, their high levels of supportive responses. But, programs also need to be aware that fathers' approach to socializing children is different from mothers and is not necessarily wrong. Second, programs need to include and engage both parents to better provide support for the family unit and promote children's socioemotional adjustment in the early years.

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Supplementary Table 1

Correlations with Variables of Interest (Mothers)

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. 18M emotion coaching (positive emotions)	--								
2. 18M non-supportive (positive emotions)	-.11	--							
3. 18M distraction (positive emotions) ^a	--	--	--						
4. 18M ignoring (positive emotions)	-.96**	-.15	--	--					
5. 18M emotion coaching (negative emotions)	.25*	-.07	--	-.21*	--				
6. 18M non-supportive (negative emotions)	.15	.24*	--	-.21*	-.16	--			
7. 18M distraction (negative emotions)	.05	-.03	--	-.03	-.03	-.16	--		
8. 18M ignoring (negative emotions)	-.29**	-.12	--	.30**	-.39**	-.64**	-.43**	--	
9. 24M emotion coaching (positive emotions)	.16	.21	--	-.22	-.09	.23	-.01	-.19	--
10. 24M non-supportive (positive emotions)	.07	-.04	--	-.07	-.10	.14	-.10	-.01	-.19
11. 24M distraction (positive emotions)	-.22	-.05	--	.24	.05	-.09	-.13	.14	-.31**
12. 24M ignoring (positive emotions)	-.10	-.16	--	.14	.09	-.21	.09	.11	-.78**
13. 24M emotion coaching (negative emotions)	.13	-.12	--	-.09	.11	.00	.02	-.04	-.01
14. 24M non-supportive (negative emotions)	.05	.15	--	-.09	.26*	.17	-.11	-.22	.21
15. 24M distraction (negative emotions)	-.10	-.09	--	.07	-.19	-.24	.15	.23	.10
16. 24M ignoring (negative emotions)	-.05	.003	--	.08	-.16	.01	-.01	.07	-.26*
17. Emotionality	.08	-.09	--	-.06	.02	-.09	.11	.01	.05
18. 24-month social competence	-.05	-.05	--	.06	.15	-.02	.03	-.10	.03
19. 30-month social competence	-.03	.01	--	.02	.09	.16	-.10	-.13	-.03

Note. ^aDistraction to positive emotions was not observed at 18 months. 18M = 18 months; 24M = 24 months. *p < .05. **p < .01

10.	11.	12.	13.	14.	15.	16.	17.	18.	19.
--									
-.05	--								
-.23	-.19	--							
-.02	-.08	.05	--						
.19	-.07	-.28*	-.30**	--					
-.04	.40**	.19	-.10	.27*	--				
-.11	-.23	.37**	-.22*	-.52**	-.50**	--			
-.09	-.002	.00	-.04	-.05	.16	-.05	--		
-.14	-.04	.06	.08	-.20	.05	.09	-.19*	--	
-.01	.22	-.08	-.02	-.06	-.03	.09	-.26**	.65**	--

Supplementary Table 2

Correlations with Variables of Interest (Fathers)

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. 18M emotion coaching (positive emotions)	--								
2. 18M non-supportive (positive emotions)	-.01	--							
3. 18M distraction (positive emotions) ^a	.03	-.05	--						
4. 18M ignoring (positive emotions)	-.99**	-.09	-.11	--					
5. 18M emotion coaching (negative emotions)	.02	.04	-.11	-.01	--				
6. 18M non-supportive (negative emotions)	.15	-.03	.09	-.17	-.13	--			
7. 18M distraction (negative emotions)	.26*	.04	.20	-.30**	-.05	-.01	--		
8. 18M ignoring (negative emotions)	-.28**	-.02	-.14	.31**	-.37**	-.58**	-.63**	--	
9. 24M emotion coaching (positive emotions)	.09	.17	.24	-.14	-.12	-.03	-.03	.09	--
10. 24M non-supportive (positive emotions)	-.14	-.08	-.04	.15	.10	-.02	-.17	.05	-.10
11. 24M distraction (positive emotions)	-.23	-.05	-.03	.24	-.08	-.09	.03	.08	-.02
12. 24M ignoring (positive emotions)	-.04	-.15	-.23	.08	.13	.05	.04	-.12	-.99**
13. 24M emotion coaching (negative emotions)	-.13	-.11	-.002	.15	.04	-.13	-.01	.07	-.05
14. 24M non-supportive (negative emotions)	.02	.25	.08	-.05	.16	.12	-.16	-.02	.10
15. 24M distraction (negative emotions)	.07	-.15	-.05	-.05	-.30*	.03	-.08	.15	-.03
16. 24M ignoring (negative emotions)	.03	-.03	-.03	-.03	.06	-.05	.21	-.14	-.02
17. Emotionality	-.14	.04	.17	.11	.001	.18	.01	-.13	.13
18. 24-month social competence	-.002	.08	.002	.01	-.05	-.04	-.21*	.18	.03
19. 30-month social competence	.05	.12	-.09	-.02	-.003	.01	-.21*	.14	-.01

Note. 18M = 18 months; 24M = 24 months. *p < .05. **p < .01

10.	11.	12.	13.	14.	15.	16.	17.	18.	19.
--									
-.04	--								
.05	-.11	--							
.03	.31*	.01	--						
.13	-.11	-.08	-.15	--					
-.01	-.10	.05	-.15	-.32**	--				
-.11	-.05	.02	-.41**	-.50**	-.40**	--			
.01	.01	-.12	-.05	.07	-.07	.05	--		
.07	.01	-.04	-.23	.09	.18	-.07	-.19*	--	
-.20	-.02	.03	-.12	.06	.37**	-.26*	-.26*	.65*	--

Cascading Effects from Maternal and Paternal Responsive Parenting to Children's
Socioemotional Functioning

Angelica Alonso¹, Natasha J. Cabrera¹, Tracy L. Spinrad², & Stephanie M. Reich³

¹University of Maryland, College Park; ²Arizona State University; ³University of California,
Irvine

Author Note

Angelica Alonso and Natasha J. Cabrera, Department of Human Development and Quantitative Methodology, University of Maryland, College Park. Tracy L. Spinrad, T. Denny Sanford School of Social and Family Dynamics, Arizona State University. Stephanie M. Reich, School of Education, University of California, Irvine.

Correspondence concerning this article should be addressed to Angelica Alonso, Department of Human Development and Quantitative Methodology, University of Maryland, College Park, 3304 Benjamin Building, College Park, MD 20742. Email: aalonso1@umd.edu

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Abstract

We examined cascading effects from mothers' and fathers' responsive parenting at 9 months to children's socioemotional outcomes (social competence and executive function) at age 3 via children's effortful control at 24 months in a sample of ethnically diverse families and their infants participating in a parenting intervention. We also examined child emotionality as a moderator of these associations. We observed mother- and father-child interactions to assess responsive parenting (9 months), used maternal reports of children's emotionality (12 months), executive function problems (age 3), and socioemotional competence (age 3), and assessed effortful control with a snack delay task (24 months). Results from structural equation modeling indicated maternal responsive parenting, but not paternal interactive quality, at 9 months was positively associated with socioemotional competence at age 3. Neither maternal nor paternal responsive parenting were associated with executive function problems at age 3. Effortful control did not significantly mediate associations between mothers' or fathers' responsive parenting and child outcomes. Multigroup analyses indicated that these associations did not vary for children with low and high emotionality. Our findings provide support for the important role of early maternal responsive parenting in fostering later socioemotional competence.

Keywords: developmental cascades, mothers, fathers, effortful control, socioemotional functioning.

Cascading Effects from Maternal and Paternal Responsive Parenting to Children's Socioemotional Functioning

As children get older, they are exposed to more demanding social contexts (e.g., childcare; school) that require them to be socially competent, that is, effectively apply intrapersonal and interpersonal skills to their social interactions, including learning and playing with others. Socioemotional competence (SEC) consists of a set of skills that enable children to cooperate with others, read social cues, understand the emotions of others, express their own and regulate them in social interactions (Denham, 2019; Denham et al., 2006). The ability to function in social contexts is also influenced by executive function (EF), a multi-component, top-down self-regulation skill that consists of shifting and focusing attention (e.g., switching from playtime to reading time), holding and manipulating information for short periods of time (e.g., remembering directions), and inhibiting a dominant response to execute a subdominant response (e.g., stop playing to clean up; Blair & Ursache, 2011; Caporaso et al., 2019; Korucu et al., 2022; McClelland & Cameron, 2012; Zhou et al., 2012). The integration and coordination of these cognitive, social, and emotion-related skills enable children to learn, get along with others, and achieve their goals (Denham, 2006).

There is large variability in the development of children's intrapersonal and interpersonal skills, which is attributed to multiple factors including the early caregiving environment (e.g., parenting behaviors; National Academies of Sciences, Engineering, and Medicine, 2016; Taraban & Shaw, 2018). When parents consistently exhibit parenting that is warm, responsive, and sensitive to their children's cues (Landry et al., 2006), children are more likely to regulate their behaviors and engage in positive interactions. Variability in socioemotional competence and self-regulation is also linked to children's temperament (Ayoub et al., 2014; Eisenberg et al.,

2007; Sanson et al., 2011). Children with high emotionality – that is, those who have a temperamental disposition to display high-intensity negative emotional responses (e.g., crying) – can become easily distressed in situations such as waiting for a treat or resolving conflict with peers that require them to regulate their emotions (Rothbart & Bates, 2006; Rothbart et al., 2011).

However, the way responsive parenting relates to children's socioemotional competence and executive function has been investigated primarily with White mothers. Given variation in the sociocultural contexts (e.g., cultural values, beliefs, and practices) of ethnic minority families and an increasing knowledge that children's socioemotional outcomes are independently related to fathering behaviors (Cabrera, 2016; Weisner, 2002), there is a need to investigate how mothers and fathers in ethnically and socioeconomically diverse families uniquely support the development of their toddlers' socioemotional development.

Moreover, few studies have examined the mechanisms through which responsive parenting and socioemotional outcomes are related – in other words, mediators and moderators of these developmental processes. Because children's early effortful control sets the foundation for later socioemotional development as it enables children to regulate their emotions and reactivity by focusing or shifting attention and inhibiting or sustaining behaviors (Acar, 2018; Eisenberg et al., 2007; Kochanska et al., 2000; Putnam & Rothbart, 2006), it is a theoretically plausible mechanism through which responsive parenting early in development (e.g., infancy) is longitudinally associated with socioemotional outcomes later in development (e.g., preschool-age). Further, the extent to which responsive parenting benefits socioemotional competence and executive function may differ for low and highly emotionally reactive children.

The purpose of the current study is to examine direct and longitudinal relations between maternal and paternal responsive parenting at 9 months and children's socioemotional competence and executive function (EF) at 3 years. We also test whether these associations are mediated by children's effortful control at 24 months and explore emotionality as a moderator of these associations.

Theoretical Framework

Our research questions are guided by the developmental cascades model that recognizes that development is a complex, dynamic process consisting of changes within and across developmental domains. According to this model, having effective skills in one domain facilitates the acquisition of competencies in that same domain or another domain later in development and having poorer skills can have negative cascading effects (Masten & Cicchetti, 2010). Developmental cascades are best examined during developmental transition points (e.g., from infancy to toddlerhood) and using longitudinal designs (Masten & Cicchetti, 2010; Moilanen et al., 2010). Longitudinal studies with ethnically diverse preschool and middle childhood samples have found cascading effects from regulatory capacities (e.g., emotion regulation) early in development to socioemotional skills (e.g., cooperation) later in development (Blair et al., 2015; Schmitt et al., 2021).

The cascading model also recognizes that the early caregiving environment is an important contributor to developmental cascades (Masten, 2016). Sensitive and responsive caregiving can lead to cumulative, positive developmental outcomes over time (Masten & Cicchetti, 2010; Taylor et al., 2015). Responsive parenting, that is, parenting that is child-centered (e.g., following the child's interests), can promote strong regulatory skills (e.g., effortful control), which in turn can foster greater socioemotional competence and EF later in development. We

also examine moderation effects – that is, we test whether the magnitude of the association between early parenting and later socioemotional outcomes varies with children’s temperamental differences in emotionality.

Responsive Parenting and Children’s Socioemotional Competence, Executive Function, and Effortful Control

A robust body of research has consistently shown that parents’ responsiveness to their children’s signals and emotions (e.g., contingent responses to child’s vocalizations) is strongly related to children’s socioemotional competence, executive function, and effortful control. During parent-child interactions, parents model for children socially appropriate behaviors, including joint attention, turn-taking, cooperation, and reading social cues. Given that parent-child interactions are emotionally laden, they also afford opportunities for children to learn how to respond to others’ emotions while simultaneously regulating their own, which can facilitate positive relationships with others.

Longitudinal studies have found significant, positive relations between responsive parenting and socioemotional competence (e.g., getting along with others) in toddlerhood and early childhood. In a study with primarily White families, observed maternal responsive parenting (e.g., warmth) at 18 months was associated with greater adult-reported social competence (e.g., empathy) at 30 months (Spinrad et al., 2007). In a study with families in rural areas, observational measures of both mothers’ and fathers’ responsive parenting (e.g., validating the child’s verbalizations) during the preschool years was positively associated with parent-reported social competence (e.g., works well with others) at age 5 (Jeon & Neppl, 2019). Analyses with a nationally representative sample of mother-child dyads found that mothers who showed more responsiveness at 9 months had kindergartners with greater mother-reported social

competence (e.g., helps others; Rispoli et al., 2013). A recent meta-analysis found that paternal sensitivity in infancy and toddlerhood was related to better outcomes in emotion regulation in preschoolers (Rodrigues et al., 2021).

Studies have shown that maternal sensitivity is also related to children's executive function (EF; Valcan et al., 2018). In studies with ethnically diverse families, observed maternal sensitivity (i.e., child-oriented parenting) was concurrently and longitudinally associated with better observed EF in preschoolers (Blair et al., 2014; Merz et al., 2017; Owen et al., 2013). In another study with families from the Netherlands, low levels of observed maternal sensitivity (e.g., emotional support) was concurrently associated with greater problems with EF (i.e., emergent metacognition and inhibitory control) in preschoolers (Lucassen et al., 2015). And studies with ethnically diverse and White families in the U.S. have found that fathers' responsive parenting in the early years of life was concurrently and longitudinally related to greater observed EF at preschool age and during middle childhood, over and above the effect of mothers' parenting (Altenburger & Schoppe-Sullivan, 2021; Owen et al., 2013; Towe-Goodman et al., 2014). Most of these studies, however, have not examined these associations with toddlers and still as largely reliant on samples of White mothers and their children.

Longitudinal studies with primarily White families have found that parents who exhibit high levels of responsiveness have children with effortful control in the toddler and preschool years (Feldman & Olson, 2021; Neppl et al., 2020; Spinrad et al., 2007). In one study with low-income Latine and African American families, greater observed maternal responsiveness (e.g., warm acceptance) at preschool age was positively associated with effortful control (assessed as gains in delay inhibition) over a 6.5-month period (Merz et al., 2017).

Overall, there is relative consistent and strong evidence that early parental behaviors that are sensitive and responsive to children's needs and interests during parent-child interactions are concurrently and longitudinally related to various aspects of socioemotional development. However, this literature is limited in various ways. First, it has not systematically included ethnically diverse children who are reared in different sociocultural contexts that bring about variations in how parenting and socioemotional outcomes are related. Second, it has mostly focused on older children and paid less attention to toddlers who are rapidly developing social skills and whose regulatory skills are most malleable during this period (Eisenberg et al., 2011). And third, it has not systematically included fathers despite being one of the most proximal influences on child development (Cabrera, 2016). Moreover, empirical evidence indicates that fathers have unique influences on children's socioemotional outcomes, over and above the effect of mothers (Feldman & Olson, 2021; Leidy et al., 2013; Owen et al., 2013). The current study addresses these gaps by examining cascading effects of early maternal and paternal responsive parenting on later socioemotional competence and EF in a sample of ethnically and socioeconomically diverse families.

Cascading Effects of Early Parenting Through Effortful Control

Consistent with the developmental cascades model, children who are well regulated are able to act in socially appropriate ways (Eisenberg et al., 2003; Masten & Cicchetti, 2010). A recent meta-analysis found that children who had greater self-regulation at preschool age had greater social competence during the early school years (Robson et al., 2020). Several studies with White and ethnically diverse preschoolers and kindergarteners have found that effortful control was positively associated with social competence, concurrently and longitudinally (Dennis et al., 2007; Lengua et al., 2015; Rhoades et al., 2009; Valiente et al., 2011). Moreover,

given conceptual overlap between effortful control and executive function due to similar underlying features, it is expected that earlier effortful control is associated with EF later in development (Lin et al., 2019; Schmidt et al., 2022).

Theoretically, it is also expected that early positive parenting sets off a cascade of effects by promoting the development of skills early in development, such as effortful control, which then support the development of later skills, such as socioemotional competence and EF (Eisenberg et al., 1998; Masten & Cicchetti, 2010). Several studies have provided evidence for these positive cascades through effortful control. In a sample of predominantly White mothers and their children, observed warm and sensitive parenting at 42 months was associated with more effortful control (a composite of adult-report and observation) at 54 months, which subsequently was associated with more adult-reported sympathy at age 6 or 7 years (Taylor et al., 2015). Analyses with a nationally representative dataset indicated that the positive association between observed maternal sensitivity in the first three years and teacher-reported social skills (e.g., cooperation) in kindergarten was partially mediated by effortful control (i.e., delay of gratification) at 54 months (Razza & Raymond, 2013).

Similarly, Mintz and colleagues (2011) found that the effect of observed maternal sensitivity, averaged from 6 to 36 months, on social competence (observed and teacher-reported) in first grade was partially mediated by mother-reported effortful control at 54 months. A study with younger children also found evidence for mediation. In a sample of primarily White families, effortful control at 18 months mediated associations between mothers' supportiveness (observed sensitivity and warmth and mother-reported responses to negative emotions) at 18 months and adult-reported social competence at 30 months (Spinrad et al., 2007). However, the evidence that effortful control mediates the association between responsive parenting and EF is

scarce. A study with Australian families found that maternal warmth at age 4 was concurrently associated with greater attention regulation (a component of effortful control), which subsequently was associated with greater EF in adolescence (Berthelsen et al., 2017).

Given most of these studies were conducted with mothers, more research that includes fathers is warranted. Moreover, we could not identify any studies that have tested these associations with toddlers in ethnically diverse families. In the current study, we examine cascading effects between mothers' and fathers' responsive parenting and children's socioemotional competence and executive function via early effortful control during the first three years of life.

Child Emotionality as a Moderator

An important goal of developmental science is to understand the context of development. Research suggests that parenting may have different effects on child outcomes depending on the child's temperament (i.e., moderation effects). Although emotionality,² an aspect of temperament, can interfere with the development of regulatory processes and socioemotional competence in toddlers and preschoolers (Liew et al., 2004; Raikes et al., 2007; Rodriguez et al., 2005; Rothbart & Rueda, 2005; Sanson et al., 2011; Song et al., 2018), not all highly emotionally reactive children exhibit poor developmental outcomes. The differential susceptibility hypothesis proposes that highly emotionally reactive children benefit the most from positive environmental supports (e.g., responsive parenting) but are also most susceptible to low-quality parenting (Belsky, 2013). Emotionally reactive children who get easily distressed may exhibit strong regulatory capacities and socioemotional competence when their parents are highly sensitive and

² We use the terms emotionality and emotional reactivity interchangeably.

warm, are attuned to their cues, needs, and emotions, and scaffold their use of adaptive regulatory skills in emotion-eliciting situations.

Several studies have found that emotionally reactive children have better social competence and executive function in early childhood when their mothers are highly responsive and warm (Razza et al., 2012; Rochette & Bernier, 2016; Roisman et al., 2012; Song et al., 2018). A study of predominantly White families found that mothers' sensitive parenting from 6 months to first grade was associated with greater teacher-reported social skills in first grade. However, this association was greater for children with mother-reported difficult temperaments (e.g., negative mood) compared to children with less difficult temperaments (Stright et al., 2008).

One meta-analysis of studies with children ages 0 to 18 years found that when temperament was assessed before age 1, maternal warmth was more strongly associated with greater social competence (e.g., prosocial behaviors) for children with high emotionality than with low emotionality (Slagt et al., 2016). Finally, a study of Canadian families found that greater maternal positive affect (e.g., praises child), a component of responsive parenting, at age 1 was associated with greater EF at age 3 only for children with high mother-reported emotionality (Rochette & Bernier, 2016). Based on these findings, we explore whether the association between maternal and paternal responsive parenting is more strongly related to children's socioemotional competence and EF for children with high emotionality than for children with low emotionality. Examining for whom these effects are strongest can deepen our understanding of individual differences in children's socioemotional outcomes.

The Present Study

The present study addresses three research questions: (1) Are mothers' and fathers' responsive parenting (responsiveness, warmth, and positive affect) at 9 months uniquely directly

associated with children's socioemotional competence and executive function at age 3? (2) Does children's effortful control at 24 months mediate longitudinal associations between maternal and paternal responsive parenting and socioemotional competence and EF? (3) Are the associations between mothers' and fathers' responsive parenting and socioemotional competence and EF moderated by children's emotionality? Informed by the developmental cascades model, we hypothesized that high maternal and paternal responsive parenting would be positively associated with better socioemotional competence and EF (main effects) and that these associations would be mediated by effortful control (mediation effects). Based on the differential susceptibility model, we hypothesized that maternal and paternal responsive parenting would be more strongly related to children's socioemotional competence and EF for highly reactive children than for low reactive children (moderation effects).

Method

Participants

Our sample of 210 families (420 parents) come from Baby Books 2, a longitudinal randomized control trial (RCT) of a parenting intervention that aimed to improve parents' knowledge of child development. As part of the intervention, parents were given Spanish-English bilingual "baby books" that were embedded with anticipatory guidance messages relevant to each developmental stage (i.e., 9, 12, 15, 18, and 24 months; Cabrera & Reich, 2017). Families were recruited from WIC centers, health care clinics, and community centers in a large Northeast city and a large West Coast city. To be eligible for the study, parents had to be first-time parents of an infant younger than 9 months, cohabiting, over the age of 18, making less than \$70,000 per year, and literate at a first-grade reading level in English or Spanish. At the 9-month baseline home visit, examiners obtained informed consent from parents, and families were

randomized to one of four conditions following data collection: mother-book (i.e., the family received books designed for mothers), father-book (i.e., received books designed for fathers), both-books (i.e., received both types of intervention books), or control (i.e., families were given commercially available books that did not contain anticipatory guidance information).

Since the 24-month home visit overlapped with social distancing policies of the COVID-19 pandemic, observations of snack delay were limited to 103 families. At age 3, 126 parents completed the socioemotional competence questionnaire, and 136 parents completed the executive function questionnaire. Families with missing data on these measures did not significantly differ from families with data in terms of study condition, maternal and paternal nativity status, child gender, or maternal and paternal education. In the present study, we handled missing data using full information maximum likelihood as this is the recommended estimation method for yielding unbiased coefficient estimates (Enders & Bandalos, 2001).

Procedures

Families completed a series of home visits, phone calls, and online surveys at 9, 12, 15, 18, 21, 24, 30, and 38 to 46 months after the child's birth. The present study uses data from the 9-month, 12-month, 18-month, 24-month, and 3-year (i.e., 38 to 46 months) waves: home visits at 9, 18, and 24 months and phone call surveys at 12 months and 3 years. Mothers and fathers completed questionnaires about their parenting practices and their children's behaviors in their preferred language. During home visits, mothers and fathers completed semi-structured parent-child interaction tasks separately and children were directly assessed on their language (all home visits), self-regulation (24- and 30-month visit), and mathematics skills (24- and 30-month visit). Families were compensated for each wave completed. All procedures and measures were

approved by the institutional review boards of the University of Maryland, College Park and the University of California, Irvine (Approval #714055-41).

Measures

Mothers' and fathers' responsive parenting. We assessed responsive parenting from videotaped semi-structured toy and no-toy play interactions between each parent and their child at 9 months. In the 10-minute toy-play task, parent-child dyads were given two bags of developmentally appropriate toys (e.g., shape sorter; plastic food) and were asked to play as they normally would. In the 5-minute no-toy play task, parents were asked to play with their child as they normally would without using any toys. Trained research assistants coded mother- and father-child interactions using the Qualitative Ratings for Parent-Child Interaction Coding System (Cox & Crnic, 2003). This coding system was adapted from rating scales used in the NICHD Study of Early Child Care and Youth Development (NICHD ECCRN, 1999), which included a diverse sample of families.

The Qualitative Ratings for Parent-Child Interaction Coding System consists of seven 5-point global rating scales. In the current study, we only used three of these scales for the responsive parenting latent variable. Responsiveness (e.g., contingent vocalizations) was defined as the extent to which the parent responded to the child's needs, interests, signals, and emotional expressions. Warmth captured the parent's positive feelings toward the child (e.g., physical affection). Positive affect (e.g., enthusiastic tone of voice) was defined as the amount of energy, excitement, and interest the parent exhibited. Each construct was rated on a scale from 1 ("not at all characteristic") to 5 ("highly characteristic"). The ratings for each construct were averaged across the two tasks as the ratings were significantly correlated, with correlations ranging from .66 to .68 for mother-child interactions and .65 to .70 for father-child interactions. If only one of

the tasks was completed, the ratings for the single available task were used in analyses. To reduce coding drift and assess reliability, twenty percent of videos were double-coded, and the ratings were checked against those of a master coder. For each video, the rating needed to be within one point of the master coder's rating to be considered reliable (e.g., if a master coder gave a rating of 3, ratings of 4 or 2 were acceptable).

Effortful control. During the 24-month home visit, examiners administered a snack delay task with four trials of varying wait times (10-, 20-, 30-, and 15-seconds; Kochanska et al., 2000, 2001). Examiners placed a clear, plastic cup over a goldfish cracker on a plate and instructed children to wait to eat the snack until told so. For each trial, coders scored the child's ability to wait, with scores ranging between 0 and 3 (0 = ate the snack before time was up; 1 = waited to eat the snack but touched the snack while waiting; 2 = waited to eat the snack but touched the cup; 3 = waited to eat the snack and never touched the cup or snack). Each video was double-coded, with 100% agreement between coders. An effortful control latent variable was created using the scores of each trial as indicators. Some children (n=9) did not complete all trials for various reasons (e.g., child became extremely upset; examiner error). The snack delay task has been shown to be a reliable measure of effortful control among young ethnic minority children (McCabe et al., 2004; Smith-Donald et al., 2007).

Executive function (EF). When children were between 38 and 46 months of age, parents (93% mothers, 7% fathers) reported on how often their child exhibited problems with EF in everyday settings during the past 6 months using the Behavior Rating Inventory of Executive Function – Preschool Version (BRIEF-P; Gioia et al., 2002). The BRIEF-P captures executive dysfunction in young children ages 2 years to 5 years and 11 months and is considered an

ecologically valid measure of EF as the items tap the application of EF skills in “everyday problem-solving situations” (Lucassen et al., 2015; Toplak et al., 2013).

The BRIEF-P consists of 63 items and five scales: *Inhibit* (16 items; ability to stop behavior; $\alpha = .88$), *Shift* (10 items; ability to switch between activities; $\alpha = .78$), *Emotional Control* (10 items; ability to modulate emotions; $\alpha = .87$), *Working Memory* (17 items; ability to remember information needed to complete an activity; $\alpha = .87$), and *Plan/Organize* (10 items; ability to set goals; $\alpha = .81$). For each item, possible responses include 1 = “never”, 2 = “sometimes”, and 3 = “often.” Higher total scores indicate greater problems with executive function. The five scales were used as indicators of the executive function latent variable.

The BRIEF-P has been translated and adapted to multiple languages, including Spanish, and has been validated with ethnic minority children (Goldstein & Naglieri, 2014; McCoy et al., 2011). The BRIEF-P also exhibits adequate to very high test-retest reliability and good construct validity based on correlations with other behavioral rating scales that tap similar constructs (Sherman & Brooks, 2010).

Socioemotional competence. When children were between 38 and 46 months of age, parents (94% mothers, 6% fathers) reported on their children’s socioemotional competence using the Developmental Profile 4 (DP-4) Parent/Caregiver Checklist, a strongly reliable and valid caregiver-reported measure of children and adolescents’ (up to age 21) functioning in five developmental areas (Alpern, 2020a). The DP-4 has five scales: *Physical* (37 items; e.g., stack three small objects), *Adaptive Behavior* (41 items; e.g., dress him/herself), *Social-Emotional* (36 items; e.g., likes to play with other children), *Cognitive* (42 items; e.g., correctly counts up to six objects), and *Communication* (34 items; using words or sign language to express a want or need). Parents indicate whether their child has exhibited each behavior (yes/no). The DP-4 Parent

Checklist Score Report provides raw scores, standard scores, and percentile rank for each scale. We used the standard scores of the Social-Emotional scale. Higher scores on this scale indicate greater socioemotional competence. The standardization sample for the DP-4 included Black/African American (15.4%) and Hispanic (27.6%) families. These percentages were slightly higher than the percentage of Black/African Americans (13.9%) and Hispanics (23.5%) in the U.S. according to Census data (Alpern, 2020b).

Child emotionality. During the 12-month phone interview, mothers reported on their child’s temperament using the Emotionality Activity Sociability (EAS) Temperament Survey (Buss & Plomin, 1984; Buss, 1991). This measure has four scales: *Emotionality* (e.g., “child cries easily”), *Activity* (e.g., “child is always on the go”), *Shyness* (e.g., “child tends to be shy”), and *Sociability* (e.g., “child likes to be with people”). Parents indicated the extent to which each statement was reflective of their child on a 5-point scale (1 = “not characteristic or typical of your child to 5 = “very characteristic or typical of your child”). The EAS Temperament Survey has been found to have good internal consistency and stability (Bould et al., 2013), although to our knowledge this measure has not been validated in ethnic minority families. We used the 5-item Emotionality scale, with higher scores indicating greater negative emotionality ($\alpha = .68$).

Covariates

We included four control variables – child gender, intervention condition, parent education, and parent nativity status – in all analyses. We controlled for child gender because some studies have found gender differences in effortful control, social competence, and executive function at these young ages (Carlson & Moses, 2001; Klein et al., 2018; Kochanska et al., 2000; Li-Grining, 2007; Mileva-Seitz et al., 2015). Controlling for intervention condition³

³ There were no effects of the intervention on effortful control, executive function, or socioemotional competence.

allowed us to account for any mean differences in effortful control, socioemotional competence, and executive function that could be attributed to participation in the intervention. We transformed the study condition variable into a binary variable by combining the three intervention conditions; the control condition served as the reference group.

We controlled for parent education given that it is a stronger correlate of child outcomes compared to other measures of socioeconomic status (Davis-Kean et al., 2021). To reduce the number of variables, we took the highest education level of the two parents and recoded the five education categories (less than high school; high school degree or equivalent; some college; two-year degree; four-year degree or more) into three categories: high school degree or less; some college; and two-year degree or more. High school degree or less served as the reference group. Finally, we controlled for mothers' and fathers' nativity status (e.g., U.S. born versus born outside of the U.S.) given that prior research has found significant differences in children's effortful control based on parental nativity status (Palacios & Bohlmann, 2020).

Analytical Plan

We used IBM SPSS Statistics (Version 29) for descriptive analyses and IBM SPSS AMOS (Version 29) to conduct measurement models, structural equation models, and multigroup analyses. Given that the factor loading for socioemotional competence was below .50 when grouped with the EF scales, we examined socioemotional competence and executive function as separate outcomes in the model. In the measurement and structural models, AMOS fixed the factor loading of one of the indicators to one. All control variables covaried with the exogenous variables and had direct paths to mediating and endogenous factors. However, we did not covary study condition and 9-month responsive parenting because the 9-month visit was conducted prior to randomization into study groups. Therefore, we did not expect there to be a

relation between study condition and the responsive parenting latent variables. We included covariances between mothers' and fathers' responsive parenting and between socioemotional competence and executive function. Figure 1 shows our hypothesized model.

To test our first and second research questions about main and mediation effects, respectively, we carried out SEM models using full information maximum likelihood estimation to account for missing data (Enders & Bandalos, 2001). We included maternal and paternal responsive parenting in the same model to examine unique effects of each parent's parenting behaviors, over and above the contribution of the other parent. To address our third research question about moderation effects, we conducted multigroup analyses by creating low and high emotionality groups using a mean split.⁴ Results indicated that the measurement weights (i.e., factor loadings) for responsive parenting, effortful control, and EF were not significantly different between the two groups ($\chi^2(14) = 21.07, p = .10$), suggesting measurement equivalence. To assess model fit, we used the χ^2 fit statistic, comparative fit index (CFI), and root-mean-square error of approximation (RMSEA). Non-significant χ^2 values, CFI values greater than or equal to .95, and RMSEA values less than or equal to .06 are considered good fit (Hu & Bentler, 1999). However, CFI and RMSEA values were primarily used to gauge model fit because sample size affects χ^2 values (Brown, 2006).

Results

Descriptives

Table 1 presents the sample demographics and means and standard deviations for all study variables. Table 2 shows correlations among the primary variables of interest. Correlation tables with all variables (i.e., including covariates) are available upon request.

⁴ We also conducted multigroup analyses using a stricter cutoff of 1 standard deviation above the mean to differentiate high and low emotionality, but results did not differ.

Measurement Model

The measurement model had acceptable fit, $\chi^2(172) = 274.55, p < .001$, CFI = .93, RMSEA = .05. All loadings for the responsive parenting, effortful control, and executive function latent variables were significant and in the expected direction (Table 3).

Structural Models (Direct and Indirect Effects)

The structural model had acceptable fit, $\chi^2(174) = 275.54, p < .001$, CFI = .93, RMSEA = .05. Mothers' responsive parenting at 9 months was significantly associated with greater socioemotional competence at age 3 ($b = 10.68, SE = 4.88, p < .05$), but fathers' responsive parenting was not ($b = -.55, SE = 4.76, p = .92$). Neither mothers' ($b = -.86, SE = .86, p = .32$) nor fathers' ($b = -1.34, SE = .85, p = .12$) responsive parenting at 9 months were significantly associated with EF difficulties at age 3.

There were no significant associations between maternal ($b = .07, SE = .16, p = .68$) or paternal ($b = -.04, SE = .16, p = .78$) responsive parenting at 9 months and effortful control at 24 months. There were also no significant associations between effortful control at 24 months and socioemotional competence ($b = 4.82, SE = 4.30, p = .26$) or EF difficulties ($b = -.16, SE = .79, p = .84$) at age 3. The non-significant paths from the parenting variables to effortful control and from effortful control to the child outcomes at age 3 suggest that there are no significant indirect effects from maternal or paternal responsive parenting and socioemotional competence or EF via effortful control. Figure 2 presents the model with structural weight estimates (standardized and unstandardized) and standard errors for the paths among the primary variables of interest. Table 4 shows the structural weights (from covariates to child outcomes), covariances, and correlations.

Multigroup Analyses

We conducted multigroup analyses to determine whether the structural weights of the structural model differed between children with low and high emotionality. We tested a model in which all structural weight estimates were constrained to be equal across groups; the means, intercepts, variances, and covariances were allowed to be freely estimated. Nested model comparisons indicated that compared to a model with all paths unconstrained, constraining all path estimates to be equal across the low and high emotionality groups significantly decreased the model fit ($\chi^2(56) = 90.25, p < .01$), suggesting that at least for one of the paths, the estimates differed significantly between the two groups. We proceeded to test each path of interest individually. However, none of the paths among the primary variables of interest (responsive parenting, executive function, and socioemotional competence) were significantly different between low and high emotionality children, suggesting that the associations between responsive parenting and socioemotional competence and EF did not vary by children's emotionality.

Discussion

The purpose of the current study was to advance our understanding of how early maternal and paternal parenting among ethnically diverse parents might have cascading effects on their children's later socioemotional skills, which are critical for learning and academic success. To this end, we examined whether mothers' and fathers' responsive parenting (responsiveness, warmth, and positive affect) at 9 months were directly associated with social competence (e.g., cooperation; awareness of others' feelings) and executive function (e.g., emotional control; planning) at age 3 and indirectly associated via toddlers' effortful control at 24 months. To understand how children contribute to their own development, we also explored whether these associations varied by children's emotionality. Overall, we found that maternal, but not paternal, responsive parenting at 9 months predicted toddlers' socioemotional competence at age 3.

However, neither mothers' nor fathers' responsive parenting were significantly associated with EF at age 3. We found no evidence that these associations were mediated by effortful control or that they varied by children's emotionality.

Responsive Parenting and Children's Socioemotional Outcomes

Consistent with our hypothesis and empirical evidence (Rispoli et al., 2013; Spinrad et al., 2007), we found that mothers who showed more responsiveness, that is, exhibited warmth, sensitivity, and contingent, appropriate responses to their child's verbalizations, emotions, and behaviors, with their infants at 9 months had children with greater mother-reported socioemotional competence (e.g., awareness of others' feelings) at age 3, controlling for parent education and fathers' responsive parenting. This finding shows that ethnically and socioeconomically diverse mothers, like majority and affluent mothers, engage with their toddlers in high enough quality parenting in the first year to make a difference for later socioemotional competence. Highly sensitive mothers model positive social interactions, leading children to display these same positive behaviors in interactions with others.

However, contrary to past findings with older children (Jeon & Neppl, 2019; Rodrigues et al., 2021), we did not find support for our hypothesis that father sensitivity during infancy would be linked to socioemotional competence at 3 years of age. There could be several explanations for our null finding. It is possible that in our sample of first-time parents, mothers spent more time with children than fathers, thus providing more opportunities for sensitive and warm interactions. Second, in our study, fathers were slightly less sensitive than mothers, which could be a contributing factor and should be tested in future research.

Contrary to past studies (Altenburger & Schoppe-Sullivan, 2021; Blair et al., 2014; Lucassen et al., 2015; Merz et al., 2017; Owen et al., 2013; Towe-Goodman et al., 2014), we did

not find evidence that highly responsive mothers and fathers had children with fewer EF problems at age 3. Most of these prior studies assessed mothers' and fathers' parenting during toddlerhood and the preschool years; thus, it is possible the quality of parenting from 9 to 24 months is more variable than from 24 months onwards. It is also possible that there is more instability in early parenting in ethnically and socioeconomically diverse samples (due to contextual factors such as financial stress and discrimination) than there is in White educated families. This may explain why Altenburger and Schoppe-Sullivan (2021) found that greater observed paternal responsiveness at 9 months was associated with greater executive function at 7.5 years with a sample of educated, White families.

Alternatively, mothers and fathers may foster EF skills through specific parenting behaviors, such as autonomy support or scaffolding, not included in this study (Bernier et al., 2010; Hughes & Devine, 2019). Finally, differences in findings could also be attributed to the EF measures used; with one exception, all studies used standardized EF tasks. In contrast, in our study, we used the BRIEF-P, a parent report of EF. Although Lucassen and colleagues (2015) used the BRIEF-P and found a negative association between maternal sensitivity and EF difficulties, maternal sensitivity was assessed at the same timepoint as EF. Thus, this negative association might be child-driven – namely, children with greater EF difficulties elicited less sensitive parenting from mothers. This is a hypothesis that should be tested in future studies. It is also important to highlight that Lucassen et al. (2015) examined each dimension of EF separately whereas we used a latent variable to represent EF. In fact, Table 2 shows significant correlations between maternal and paternal sensitivity and inhibition as well as between maternal and paternal sensitivity and working memory. Our use of latent variables likely obscured associations between different aspects of responsive parenting and different dimensions of EF.

Given limited research on the longitudinal effects of the quality of mothers' and fathers' early parenting on socioemotional development in ethnically diverse families, more research in this area can shed light on what parenting behaviors contribute most to socioemotional outcomes and during which developmental periods.

Cascading Effects Through Children's Effortful Control

Contrary to our hypotheses, effortful control at 24 months did not significantly mediate associations between maternal or paternal responsive parenting at 9 months and socioemotional outcomes at age 3. However, others have observed cascading effects in samples of older children (Berthelsen et al., 2017; Razza & Raymond, 2013; Taylor et al., 2015). Developmental cascades from effortful control to executive function and socioemotional competence may emerge once these skills show more stability. Studies indicate that effortful control improves significantly between 22 and 33 months (Kochanska et al., 2000). Assessing effortful control at 24 months may be too early to detect cascading effects in our sample. Thus, we expect to observe cascading effects in our sample when the children are older. An alternative explanation for our null findings may be due to lack of variability in performance on the snack delay task, our measure of effortful control. The majority of toddlers (i.e., between 63 and 79%) were able to wait for the snack, although some of them touched the snack or cup. Such high performance at a young age might also implicate cultural differences in parenting practices (e.g., use of indirect commands; involving children in everyday routines) and behavioral expectations of children (e.g., meeting the expectations of others; Kuhns & Cabrera, 2020; Zucker & Howes, 2009). Future studies should include a battery of effortful control tasks rather than just using one task as we did in our study.

We were also limited in our ability to detect cascading effects as we measured each child outcome on only one occasion. Scholars argue that stronger evidence of developmental cascades can be obtained through multiple measurements of skills over time (Masten & Cicchetti, 2010). Other advantages of assessing these skills at multiple timepoints include the ability to control for stability in these skills, which provides a stronger test of mediation (Spinrad et al., 2007), and examining direct and bidirectional effects between parenting and child outcomes (Tiberio et al., 2016). Future studies would benefit from measuring effortful control (before and after it exhibits stability), socioemotional competence, and EF at multiple ages. Although we did not find support for developmental cascades through effortful control, we argue that there is great value in further studying the progression of child outcomes across domains in light of parenting behaviors and developmental competencies, as it can inform the timing of interventions to promote positive, and prevent negative, cascades (Masten & Cicchetti, 2010). Moreover, future work is necessary to identify the mechanisms that link early responsive parenting with later socioemotional competence and EF.

The Moderating Role of Child Emotionality

Based on the differential susceptibility hypothesis, we tested whether associations between responsive parenting and socioemotional outcomes were stronger for high emotionality children. Multigroup analyses indicated that there were no significant interaction effects between mothers' or fathers' responsive parenting and temperament in predicting executive function or socioemotional competence. That is, we did not find support for the differential susceptibility hypothesis that children with difficult temperaments benefit more from sensitive and responsive parenting compared to those with less difficult temperaments at this point in development. Rather, the evidence suggests that the positive association between mothers' responsive

parenting and socioemotional competence was the same for both low and high emotionality children. In other words, high levels of maternal responsive parenting were beneficial for both groups of children.

Prior research has found that high emotionality children develop greater socioemotional competence and EF when they experience high levels of maternal responsive parenting (Razza et al., 2012; Rochette & Bernier, 2016; Roisman et al., 2012; Song et al., 2018). In fact, some of these studies assessed maternal sensitivity in infancy as we did in the current study. It is possible that we did not have sufficient power to detect a significant interaction effect as there was attrition across the waves of data collection. It is also possible that previous studies might have overestimated maternal effects as they did not include fathers as we did. We also need to consider that the EAS Temperament Survey (a parent report measure) has not been validated in ethnic minority families and thus, may not be a good measure in this population. Further research on this topic, including validation of parent report measures of temperament in ethnically diverse families, is needed as temperament is a clear driver of the quality of parent-child relationships (Kiff et al., 2011).

Our study is one of few to examine interaction effects between temperament and fathers' quality of parenting, as the literature on these interaction effects are based on primarily maternal parenting (Slagt et al., 2016). Emotionality did not significantly moderate associations between fathers' responsive parenting and socioemotional outcomes. Highly reactive children may show greater susceptibility to other paternal parenting behaviors – whether they be global (e.g., intrusiveness) or specific (e.g., scaffolding) – not assessed in the current study. However, more longitudinal research that includes both mothers and fathers is needed before drawing

conclusions about the ways in which fathers' parenting and children's temperament interactively shape socioemotional competence and executive function.

Limitations

Although we found partial support for our hypotheses, our study has some limitations that we should note. First, effortful control was assessed through one standardized task due to constraints on the length of home visits. Future studies should use multiple methods of assessing effortful control, including observational methods and adult-report. As we only assessed effortful control at one time point, we were unable to test stability in effortful control as well as bidirectional effects between responsive parenting and effortful control. Future work could investigate how transactional effects also contribute to positive developmental cascades. Second, executive function, socioemotional competence, and emotionality were based only on mother-report, which could introduce reporter bias. Finally, due to the nature of longitudinal studies, attrition reduced the sample size across waves. The COVID-19 pandemic also disrupted families' participation in the study, leading to further attrition, which may have prevented us from detecting additional significant effects.

Conclusions

Using a sample of ethnically diverse mothers, fathers, and children, the current study found that there is a large variability in the observed quality of parenting behaviors with infants in ethnically and socioeconomically diverse families. Many of the infants in our sample experienced high quality interactions with their mothers and fathers that were characterized by warmth, responsiveness, and sensitivity, a hallmark of parenting that has vast benefits for children's development. Moreover, mothers who exhibited high levels of responsive parenting during infancy had toddlers with better socioemotional competence at age 3 compared to

mothers low in responsive parenting. These positive parenting behaviors need to be supported and strengthened as children get older and the stress of financial strain and other stressors take a toll on parenting.

It is critically important to invest in these families early on in development through prevention and intervention programs as it is likely to pay high dividends. It is also vital to continue to include both parents in research and practice. We are learning how, when, and for whom fathering behaviors matter. This body of research is especially important with ethnically and socioeconomically diverse populations who are more likely to experience socioeconomic stressors than others. Although fathers' responsive parenting was not significantly associated with children's socioemotional competence or executive function, engaging both mothers and fathers in parenting programs would be fruitful in helping young children develop strong socioemotional skills prior to school entry by exposing them to consistent, sensitive, and responsive caregiving.

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Appendix

Table 1

Sample Demographics

Measure	Mothers		Fathers	
	M(SD)/%	Range/n	M(SD)/%	Range/n
<i>Child Gender</i>				
Boy	48%	101		
Girl	52%	109		
<i>Parents' Education</i>				
High school or less			31%	65
Some college			49%	104
Two-year degree or more			27%	56
			38%	80
			24%	50
<i>Household income</i>	\$39,400 (\$21,600)	\$1000 - \$126,000		
<i>Parents' Ethnicity</i>				
Hispanic or Latino			68%	142
Black or African American			68%	142
White			13%	27
Other			13%	27
			7%	14
			8%	17
			12%	24
<i>Native-born</i>			49%	103
			44%	92
<i>Study Condition</i>				

Intervention	75%	158				
Control	25%	52				
<i>Emotionality</i>	11.07 (3.82)	5 – 25				
<i>Responsive Parenting (9 months)</i>						
Responsiveness			3.40 (.68)	2 – 5	3.17 (.67)	1.5 – 5
Warmth			3.60 (.67)	2 – 5	3.33 (.73)	1 – 5
Positive affect			3.07 (.79)	1.5 – 5	2.59 (.82)	1 – 5
<i>Effortful Control</i>						
Trial 1	2.04 (1.22)	0 – 3				
Trial 2	1.78 (1.37)	0 – 3				
Trial 3	1.66 (1.38)	0 – 3				
Trial 4	1.85 (1.33)	0 – 3				
<i>Socioemotional Competence</i>						
<i>Executive Function</i>						
Inhibit	24.37 (5.68)	16 – 41				
Shift	14.58 (3.35)	10 – 25				
Emotional Control	14.70 (3.82)	10 – 28				
Working Memory	24.13 (5.32)	17 – 47				
Plan/Organize	15.35 (3.50)	10 – 28				

Table 2

Pearson Correlations with Variables of Interest

Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Maternal responsiveness (9M)									
2. Maternal warmth (9M)	.73**								
3. Maternal positive affect (9M)	.55**	.69**							
4. Paternal responsiveness (9M)	.18**	.19**	.15*						
5. Paternal warmth (9M)	.18*	.20**	.18*	.76**					
6. Paternal positive affect (9M)	.15*	.22**	.28**	.62**	.69**				
7. Snack delay trial 1 score (24M)	.01	.08	.03	.08	-.10	-.09			
8. Snack delay trial 2 score (24M)	-.03	.05	-.03	.04	-.07	-.01	.62**		
9. Snack delay trial 3 score (24M)	.06	.04	-.06	-.01	-.12	-.04	.57**	.79**	
10. Snack delay trial 4 score (24M)	.10	.12	-.004	.08	-.01	.09	.44**	.63**	.74**
11. Socioemotional competence (3Y)	.10	.16	.17	.05	-.01	.09	-.01	.07	.13
12. Problems with inhibit (3Y)	-.19*	-.08	-.02	-.25**	-.10	-.06	-.14	-.05	-.11
13. Problems with shift (3Y)	-.15	-.03	-.10	-.08	-.02	.04	.05	.15	.20
14. Problems with emotional control (3Y)	-.16	-.004	-.04	-.12	-.08	-.09	.00	.16	.04
15. Problems with working memory (3Y)	-.19*	-.12	.003	-.20*	-.16	-.07	-.12	-.05	-.08
16. Problems with planning/organizing (3Y)	-.13	-.06	.02	-.12	-.08	-.03	-.01	.04	.03

Note. 9M = 9 months; 24M = 24 months; 3Y = 3 years. *p < .05, **p < .01.

	10.	11.	12.	13.	14.	15.	16.
.16							
.03		-.41**					
.27*		-.17	.53**				
.18		-.23*	.73**	.55**			
.07		-.34**	.73**	.50**	.65**		
.12		-.35**	.70**	.48**	.57**	.83**	

Table 3

Standardized and Unstandardized Loadings of Latent Variables

Variable	Measurement Model	
	Unstandardized (SE)	Standardized
<i>Mothers' responsive parenting (9M)</i>		
Responsiveness	1.00	.76
Warmth	1.26 (.11)	.97
Positive affect	1.09 (.10)	.71
<i>Fathers' responsive parenting (9M)</i>		
Responsiveness	1.00	.82
Warmth	1.23 (.09)	.92
Positive affect	1.12 (.10)	.75
<i>Effortful control (24M)</i>		
Trial 1 score	1.00	.63
Trial 2 score	1.53 (.22)	.86
Trial 3 score	1.66 (.23)	.93
Trial 4 score	1.34 (.21)	.77
<i>Executive function (3Y)</i>		
Inhibit	1.00	.84
Shift	.42 (.06)	.59
Emotional control	.60 (.06)	.75
Working memory	1.02 (.08)	.91
Plan/organize	.63 (.05)	.86

Note. $\chi^2(172) = 274.55$, $p < .001$, comparative fit index (CFI) = .93, root-mean-square error of approximation (RMSEA) = .05.
 9M = 9 months; 24M = 24 months; 3Y = 3 years.

Table 4
Parameter Estimates for Full Model in Figure 2

<i>Path estimates from covariates to child outcomes</i>	Structural Model	
	<i>B (SE)</i>	<i>β</i>
Female → Effortful control (24M)	.31 (.16)†	.20†
Female → Executive function (3Y)	-1.01 (.89)	-.11
Female → Socioemotional competence (3Y)	-.52 (4.95)	-.01
Some college → Effortful control (24M)	-.05 (.21)	-.03
Some college → Executive function (3Y)	-.86 (1.14)	-.08
Some college → Socioemotional competence (3Y)	2.09 (6.41)	.04
Two-year degree or more → Effortful control (24M)	-.15 (.20)	-.10
Two-year degree or more → Executive function (3Y)	-.74 (1.05)	-.08
Two-year degree or more → Socioemotional competence (3Y)	4.17 (5.92)	.08
Intervention condition → Effortful control (24M)	-.09 (.18)	-.05
Intervention condition → Executive function (3Y)	-.01 (.95)	-.001
Intervention condition → Socioemotional competence (3Y)	-4.24 (5.35)	-.07
Emotionality → Effortful control (24M)	.03 (.02)	.14
Emotionality → Executive function (3Y)	.27 (.12)*	.22*
Emotionality → Socioemotional competence (3Y)	-1.21 (.64)†	-.18†
Mother native born → Effortful control (24M)	.42 (.19)*	.28*
Mother native born → Executive function (3Y)	-.83 (1.01)	-.09
Mother native born → Socioemotional competence (3Y)	3.47 (5.62)	.07
Father native born → Effortful control (24M)	-.40 (.18)*	-.26*
Father native born → Executive function (3Y)	.40 (1.00)	.04

Father native born → Socioemotional competence (3Y)	2.03 (5.61)	.04
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<i>Covariances/Correlations</i>	Covariance (SE)	Correlation
Female ↔ Maternal responsive parenting (9M)	.01 (.02)	.04
Female ↔ Paternal responsive parenting (9M)	-.04 (.02)*	-.15*
Female ↔ Emotionality	-.32 (.14)*	-.17*
Female ↔ Condition	-.03 (.02)†	-.12†
Female ↔ Some college	.02 (.02)	.10
Female ↔ Two-year degree or more	-.02 (.02)	-.06
Female ↔ Mother native born	-.02 (.02)	-.07
Female ↔ Father native born	-.01 (.02)	-.05
Emotionality ↔ Maternal responsive parenting (9M)	.31 (.15)*	.16*
Emotionality ↔ Paternal responsive parenting (9M)	-.11 (.16)	-.05
Emotionality ↔ Condition	-.03 (.12)	-.02
Emotionality ↔ Some college	-.11 (.13)	-.06
Emotionality ↔ Two-year degree or more	-.03 (.14)	-.02
Emotionality ↔ Mother native born	-.08 (.14)	-.04
Emotionality ↔ Father native born	.12 (.14)	.07
Some college ↔ Maternal responsive parenting (9M)	-.03 (.02)	-.11
Some college ↔ Paternal responsive parenting (9M)	-.01 (.02)	-.04
Some college ↔ Condition	-.01 (.01)	-.05
Some college ↔ Two-year degree or more	-.14 (.02)**	-.63**
Some college ↔ Mother native born	.02 (.02)	.10

Some college $\leftrightarrow$ Father native born	.01 (.02)	.04
Two-year degree or more $\leftrightarrow$ Maternal responsive parenting (9M)	.03 (.02)	.10
Two-year degree or more $\leftrightarrow$ Paternal responsive parenting (9M)	.00 (.02)	.00
Two-year degree or more $\leftrightarrow$ Condition	.01 (.02)	.03
Two-year degree or more $\leftrightarrow$ Mother native born	.002 (.02)	.01
Two-year degree or more $\leftrightarrow$ Father native born	.02 (.02)	.07
Condition $\leftrightarrow$ Mother native born	.03 (.02)*	.15*
Condition $\leftrightarrow$ Father native born	.02 (.02)	.11
Mother native born $\leftrightarrow$ Maternal responsive parenting (9M)	-.03 (.02)†	-.12†
Mother native born $\leftrightarrow$ Paternal responsive parenting (9M)	-.04 (.02)*	-.15*
Father native born $\leftrightarrow$ Maternal responsive parenting (9M)	-.01 (.02)	-.05
Father native born $\leftrightarrow$ Paternal responsive parenting (9M)	-.05 (.02)*	-.17*
Mother native born $\leftrightarrow$ Father native born	.12 (.02)**	.50**

Note. Child gender was dummy coded (0 = male, 1 = female). Intervention condition was dummy coded (0 = control group, 1 = treatment groups). Nativity status was dummy coded (0 = foreign-born, 1 = native born). The reference group for highest parent education was high school degree or less. 9M = 9 months; 24M = 24 months; 3Y = 3 years.

† $p < .10$, * $p < .05$, ** $p < .01$.

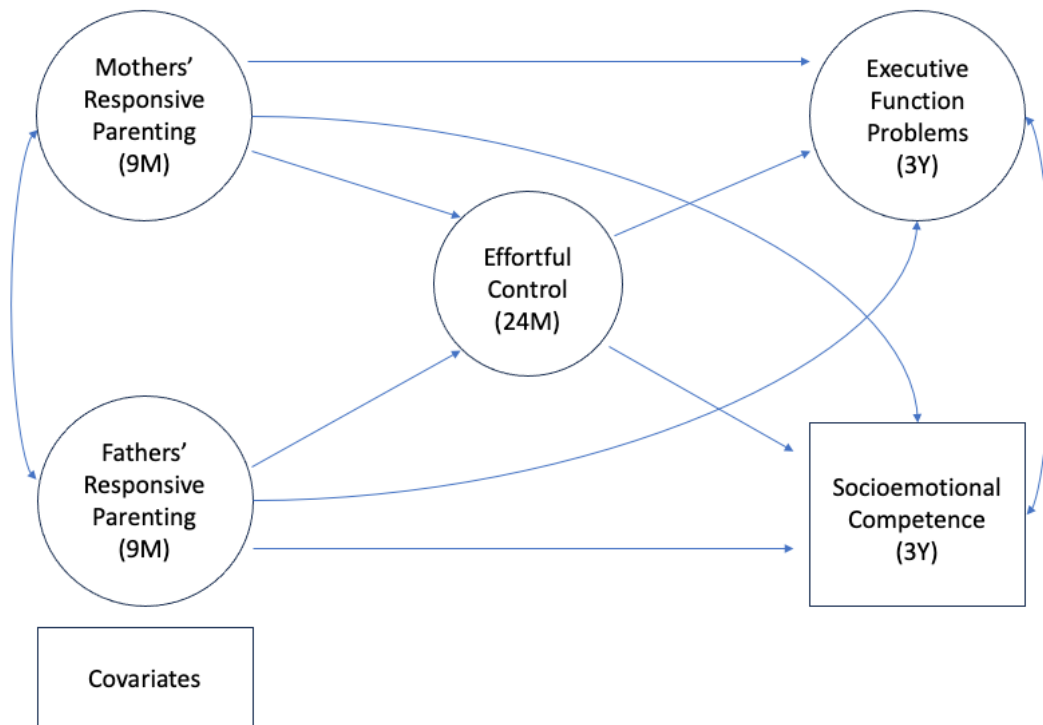


Figure 1. 9M = 9 months; 24M = 24 months; 3Y = 3 years.

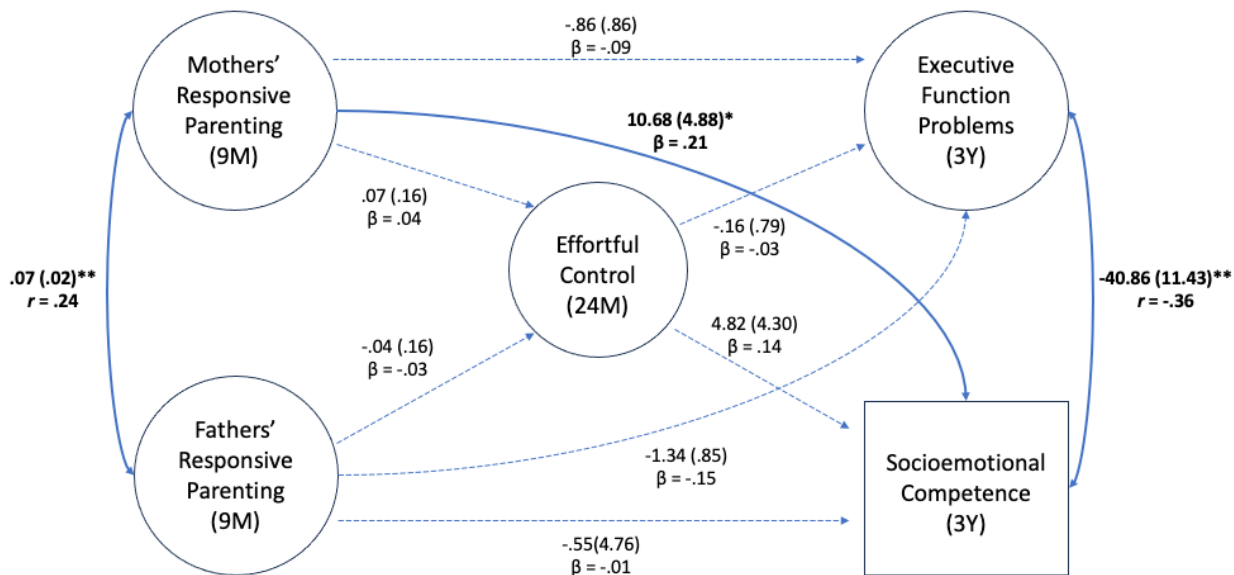


Figure 2. Figure 2 shows the structural weight estimates for the structural model: $\chi^2 (174) = 275.54$, $p < .001$, comparative fit index (CFI) = .93, root-mean-square error of approximation (RMSEA) = .05. Top numbers are unstandardized estimates and standard errors, and bottom numbers are standardized estimates. Bold lines indicate significant paths and dashed lines represent non-significant paths. 9M = 9 months; 24M = 24 months; 3Y = 3 years. $*p < .05$, $**p < .01$.

Longitudinal Associations between Mother- and Father-Child Dyadic Synchrony and Toddlers'
Self-Regulation

Angelica Alonso¹, Natasha J. Cabrera¹, Tracy L. Spinrad², & Stephanie M. Reich³

¹University of Maryland, College Park; ²Arizona State University; ³University of California,

Irvine

Author Note

Angelica Alonso and Natasha J. Cabrera, Department of Human Development and Quantitative Methodology, University of Maryland, College Park. Tracy L. Spinrad, T. Denny Sanford School of Social and Family Dynamics, Arizona State University. Stephanie M. Reich, School of Education, University of California, Irvine. Correspondence concerning this article should be addressed to Angelica Alonso, Department of Human Development and Quantitative Methodology, University of Maryland, College Park, 3304 Benjamin Building, College Park, MD 20742. Email: aalonso1@umd.edu

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Abstract

Using a sample of ethnically diverse mothers, fathers, and children participating in a parenting intervention, we examined direct associations between parent-child synchrony at 18 months and toddlers' self-regulation (SR) at 24 months and whether dyadic synchrony at 24 months and child emotionality mediated and moderated these associations, respectively. We also explored whether the intervention had impacts on dyadic synchrony and toddlers' SR. At 18 and 24 months, we coded mother- and father-child synchrony from two semi-structured play interactions. Mothers reported on their children's emotionality at 12 months. At 24 months, we coded toddlers' ability to wait during a snack delay task. Analyses with structural equation modeling indicated that father-child synchrony was associated with greater SR via greater dyadic synchrony at 24 months. Multigroup analyses indicated that associations between dyadic synchrony and SR were not significantly different for children with low and high emotionality. Finally, families in the treatment conditions exhibited greater mother- and father-child synchrony at 24 months than families in the control group, with father-child synchrony mediating associations between participation in the intervention and SR. These findings highlight how father-child synchrony promotes toddlers' SR and the potential for increasing parent-child synchrony through parenting interventions.

Keywords: dyadic synchrony, mothers, fathers, self-regulation, toddlerhood.

The first years of life set the foundation for self-regulation (SR), or the ability to modulate thoughts, behaviors, and emotions in a goal-directed manner, and individual differences in SR are observed as early as preschool age (Kochanska & Knaack, 2003; Kochanska et al., 2000). An important predictor of SR is the quality of parent-child interactions, particularly dyadic synchrony (Davis et al., 2017). Studies with predominantly White middle-class families show that when children and parents are emotionally and behaviorally attuned to one another as social partners (i.e., high dyadic synchrony), children exhibit better SR than when dyadic synchrony is low (Kochanska et al., 2008; Lindsey et al., 2009). To achieve and maintain synchrony, dyads engage in co-regulation, that is, they adapt to one another's needs and are flexible in responding to each other's emotions and behaviors (Davis et al., 2017; Harrist & Waugh, 2002). This process of being in synchrony facilitates the development of SR.

Despite the importance of dyadic interactions for children's SR skills, there are noted limitations in the research on this topic. First, few studies have focused on ethnically diverse families, and even fewer have included fathers, who uniquely contribute to their children's development (Cabrera, 2016). It is important to focus on ethnically diverse families as there may be sociocultural factors that impact the quality of parent-child relationships and child outcomes (Vélez-Agosto et al., 2017). Second, although interaction effects between parenting behaviors and child temperament account for variation in SR (Kiss et al., 2014), there is virtually no research examining whether the effect of dyadic synchrony on SR varies by children's level of emotionality, the disposition to experience and express negative emotions. Third, there is little longitudinal research on dyadic synchrony and its stability across time (Birk et al., 2022) as well as on the mechanisms that might explain its development including whether synchrony at a later point in time mediates links between dyadic synchrony at earlier points in time and SR. Fourth,

SR is most malleable during the first years of life, yet there are few interventions that target the quality of parent-child interactions to promote SR (Morawska et al., 2019) and those that do rarely include both parents, use diverse measures of SR (e.g., cortisol reactivity, emotion regulation strategies, self-soothing ability) and target a wide range of components (e.g., coparenting relationship) and populations (e.g., foster care parents; parents of premature babies), making it difficult to compare the findings across studies (Sanders & Mazzucchelli, 2013).

We addressed these gaps by examining direct associations between mother- and father-child synchrony at 18 months and toddlers' SR at 24 months and indirect associations through dyadic synchrony at 24 months in an ethnically and socioeconomically diverse sample of families and their children who participated in a randomized controlled parenting intervention. Mediation analyses enabled us to examine the stability of dyadic synchrony in toddlerhood and how early and later dyadic synchrony are differentially associated with toddlers' SR. Consistent with the differential susceptibility hypothesis, we explored whether the associations between dyadic synchrony and SR differed for children with low vs. high emotionality. Lastly, we examined whether the parenting intervention had direct effects on dyadic synchrony and toddlers' SR. As infancy and toddlerhood are important periods for the emergence and development of SR (Calkins, 2007), they are also key developmental periods for assessing the effects of parenting interventions implemented in first two years of life on children's SR later in development.

Theoretical Frameworks

The current study is guided by the relational developmental systems (RDS) framework, an integrative model that draws from ecological, family systems, dynamic systems, and developmental systems theories (Masten, 2018; Overton, 2013). According to this model,

children are embedded in dynamic systems that exist at multiple levels (e.g., home; neighborhoods). The interconnected and interdependent nature of these systems results in bidirectional and multidirectional effects among the systems (Overton, 2013). Thus, children's development is the product of the interactions between the child and these dynamic systems (i.e., parent-child). As one of the most proximal systems to the child, high-quality parent-child relationships play a critical role in helping young children learn to regulate their emotions and behaviors (MacPhee et al., 2015; Masten & Cicchetti, 2016). We also draw from the differential susceptibility hypothesis that highly emotionally reactive children can exhibit positive developmental outcomes in the context of positive environmental supports, including mutually attuned parent-child interactions.

In the present study, we used these frameworks to examine different relations between the individual (child's emotionality) and parent-child systems (mother-child and father-child). That is, we examined associations between dyadic synchrony and toddlers' SR; moderating effects of child emotionality; and, mediating effects of later dyadic synchrony. We also examined how participation in a randomized controlled parenting intervention starting when infants were 9 months had an impact on dyadic synchrony and children's SR.

Parent-Child Dyadic Synchrony and Children's Self-Regulation

High-quality parent-child relationships are one of the strongest predictors of child outcomes, including SR (Wright et al., 2013). An indicator of the quality of the parent-child interaction is the degree to which the parent and child mutually regulate their behaviors and emotions (i.e., dyadic synchrony; Harrist & Waugh, 2002). Highly synchronous dyads exhibit greater attunement, reciprocity, enjoyment, and shared positive emotions in their interactions. Achieving and maintaining synchrony requires coregulation, adaptability, and flexibility in

responding to a partner's emotions and behaviors, which subsequently promotes the development of self-regulation (Kopp, 1982).

Studies have shown a strong and consistent association between mother-child interactions and children's SR skills. Longitudinal studies with primarily ethnic minority mothers have found that mother-child dyadic synchrony in toddlerhood was associated with observed SR during direct child assessments and SR performance on delay tasks at preschool age, controlling for sociodemographic characteristics (Li-Grining, 2007; Raikes et al., 2007). Similarly, cross-sectional studies with White and Black families found mother-child dyadic synchrony was associated with greater mother-reported and observed SR (e.g., attentional focus) in preschoolers (Scholtes et al., 2021; Suveg et al., 2015).

Studies with fathers report less consistent findings. A meta-analysis of cross-sectional and longitudinal studies indicated significant, positive associations between mother- and father-child synchrony and SR in families with children between 0 and 10 years (Davis et al., 2017). In White families, father-child dyadic synchrony in the first two years of life was directly associated with greater SR during the preschool years (Kochanska et al., 2008; Lindsey et al., 2009). But, another study that controlled for mother-child synchrony found that father-child synchrony at 15 months was not significantly related to performance on a battery of SR tasks at 25 months (Kim & Kochanska, 2012). Based on this review, we included mother- and father-child synchrony in the same conceptual model to examine the unique influences of each parent-child relationship on the development of SR over and above the contribution of the other parent-child relationship.

Children's Emotionality as a Moderator of Links between Dyadic Synchrony and SR

The impact that parenting has on children's development depends on multiple contextual factors, the most important of which is child temperament (Kiss et al., 2014). Children with high levels of emotionality are more vulnerable to SR difficulties and tend to react more negatively in frustration-eliciting tasks such as snack delay (Kiss et al., 2014; Liew et al., 2004; Raikes et al., 2007; Rodriguez et al., 2005). According to the differential susceptibility hypothesis, it is expected that dyadic interactions characterized by mutual attunement and responsiveness are more strongly related to better SR for high reactive children than low reactive children (Belsky, 2013; Razza et al., 2012; Song et al., 2018). In highly synchronous dyads, the joint regulation of behaviors and emotions may model self-regulatory strategies that high emotionality children can use when encountered with situations that elicit frustration.

A study with White middle-class families found mother-child synchrony at 15 months was associated with greater performance on a battery of SR tasks at 25 months for toddlers with high emotionality, but not for those with low emotionality (Kim & Kochanska, 2012). However, this study found no significant interactions with father-child synchrony, despite similar mean levels of mother- and father-child synchrony and modest correlations between the two. The researchers hypothesized that for highly reactive children, the low-intensity and nurturing interaction style of mothers may be more beneficial for SR than the high-intensity and playful interactional style of fathers.

In a cross-sectional study with Israeli-Jewish families, higher mother-child synchrony was associated with greater infant social regulation (e.g., positive affect; gazing to mother) during a stress-inducing task for infants with low reactivity (Pratt et al., 2015). For infants high in reactivity, mother-child synchrony was associated with less infant disengagement (e.g., neutral affect; gaze-shifting), an indicator of withdrawal. Although this study did not support the

differential susceptibility hypothesis that high emotionality children benefit more from positive environmental supports, the findings suggest that more synchronous interactions may reduce the likelihood of highly reactive infants engaging in less effective regulatory behaviors. Based on this review, we examine whether the associations between mother- and father-child synchrony and toddlers' SR differ by children's emotionality.

Parenting Intervention Effects on Parent-Child Interactions and Self-Regulation

Parenting interventions targeting young children's developmental outcomes rarely include fathers and according to a review by Morawska et al., (2019), most interventions focused on SR target very specific populations (e.g., foster care children; infants born premature). Moreover, most interventions to date are conducted with older children (3 years and older; Pandey et al., 2018). We found only one intervention, Family Foundations, that focused on both mothers and fathers, but participating families were primarily White families, and the goal was to improve the coparenting relationship (Feinberg et al., 2009). The Family Foundations intervention had positive effects on observed maternal and paternal sensitivity and positive affect, and on observed infant self-soothing, an indicator of SR.

The evidence to support the effects of parenting interventions on parent-child interactions and SR is mixed. Caughy and colleagues (2004) tested the Healthy Steps (HS) for Young Children Program, a universal intervention targeting new parents that consisted of providing information on child development, temperament, and goodness-of-fit between parenting and the child's needs through "teachable moments" during well-child visits and home visits. In their sample of ethnically diverse families, intervention effects on improved sensitivity, warmth, and nurturance with children were observed between 34 and 37 months, but not between 16 and 18

months. However, there were no intervention effects on children's non-compliance, a measure of SR.

In another home-visiting intervention (Getting Ready) to improve parent engagement (e.g., sensitivity, warmth, autonomy-support) in an ethnically diverse sample of families and their 3-year-olds, Sheridan et al. (2010) found no significant effects on teacher-reported self-control. In contrast, an evaluation study of the Family Check-Up, a brief, individually tailored, intervention aimed at promoting positive parenting practices (e.g., proactive parenting), with White and African American families, Chang and colleagues (2015) found that mothers in the treatment group showed improved proactive parenting (e.g., use of redirection) at 24 months, which in turn was positively associated with greater performance on several SR tasks at age 5.

Landry and colleagues (2017) conducted an evaluation of the Play and Learning Strategies (PALS), a home-based intervention aimed at improving mothers' responsive behaviors, with ethnically diverse families and their 4-year-olds. There were positive effects on mothers' parenting behaviors (e.g., praise; verbal scaffolding), children's SR performance on a gift delay task, and mother-reported effortful control. A recent meta-analysis found that parenting interventions implemented in the first three years of life had positive effects on both the quality of parent-child interactions (moderate effect size) and socioemotional development (small effect size; Jeong et al 2021). Moreover, when the parenting intervention targeted responsive caregiving, there were greater positive impacts on parent-child interactions. However, a limitation is that most studies in the meta-analysis only included caregiver reports of SR, as opposed to direct assessments of SR.

Overall, most of the interventions to date have not included young children (2 years or younger) or their fathers. The evidence is mixed as some studies did not find effects of parenting

interventions on children's SR. Based on this review, we examined whether participation in an educational intervention to improve mothers' and fathers' knowledge of child development improved dyadic synchrony and better SR.

Current Study

We addressed four research questions: 1) Are mother- and father-child synchrony at 18 months associated with SR at 24 months?; 2) Does parent-child synchrony at 24 months mediate the association between parent-child synchrony at 18 months and children's SR at 24 months? 3) Does child emotionality moderate associations between dyadic synchrony and SR?; and 4) Does participation in a parent intervention directly improve parent-child synchrony and toddlers' SR? We expected that greater mother- and father-child synchrony at 18 months would be associated with greater SR at 24 months and that high dyadic synchrony at 18 months would be associated with greater dyadic synchrony at 24 months, which in turn would be related to better SR. We also hypothesized that high dyadic synchrony would be more strongly associated with better SR for children high in emotionality compared to children low in emotionality. We also expected that parents who participated in an educational parent intervention would have better dyadic synchrony with their children and their children would have better SR compared to parents in the control group.

Method

Participants

Participating families were part of the Baby Books 2 (BB2) Project, a longitudinal randomized control trial (RCT) of a parenting intervention that aimed to improve parents' knowledge of child development (Cabrera & Reich, 2017). The BB2 intervention provided

families with English-Spanish bilingual “baby books” embedded with anticipatory guidance (AG) messages consistent with the American Pediatric Association’s Bright Future Guidelines (American Academy of Pediatrics, 2022). The books included information on how to promote children’s cognitive, language, math, and socioemotional development as well as safety practices to avoid child injuries. The messages also provided information about positive parenting practices and optimal coparenting relationships. The books targeting mothers and the books targeting fathers were identical in storyline and content but featured a father or mother as the main character. At the 9-month baseline home visit, examiners obtained informed consent from mothers and fathers. During this visit, families were randomized to one of four conditions: mother-only (only the mother received an intervention book), father-only (only the father received an intervention book), both (both parents received an intervention book), or control (received a commercially available book that did not contain AG information).

Research assistants recruited families from Women, Infants, and Children (WIC) centers, health care clinics, and community centers in the Washington, DC metropolitan area and Orange County, California. Parents were eligible for the RCT if they were first-time parents of an infant younger than 9 months, cohabiting, over the age of 18, making less than \$75,000 per year, and literate at a first-grade reading level in English or Spanish. The analytic sample for the current study consists of the 420 parents (210 families) who enrolled in the study. Table 1 presents means and standard deviations for all study variables. Table 2 shows correlations among all study variables.

Procedures

Families completed several home visits, phone calls, and online surveys as part of their participation in BB2. The current study uses data from the parent interview at 9 months (baseline

visit), a phone call survey at 12 months, and home visits at 18 and 24 months. At each wave, mothers and fathers answered questions about their parenting practices and their children's behaviors in their preferred language. During home visits, mothers and fathers completed semi-structured parent-child interaction tasks separately and children were directly assessed on their self-regulation skills. Families were compensated for each wave completed. All procedures and measures were approved by the institutional review boards of the two universities conducting the RCT study.

Measures

Dyadic synchrony. We assessed mother- and father-child dyadic synchrony from two videorecorded parent-child interaction tasks administered during the 18- and 24-month home visits. During the 10-minute toy-play task, parents played with their child as they normally would using two bags of developmentally appropriate toys (e.g., plastic food set; ball). In the 5-minute no-toy play task, parents played with their child as they normally would without using any toys. Using the Qualitative Ratings for Parent-Child Interaction coding system (Cox & Crnic, 2003), trained research assistants who were blind to the family's study condition coded for the prevalence and intensity of dyadic synchrony defined as high levels of reciprocal play (e.g., turn-taking), communication (e.g., shared eye gaze), and shared enjoyment. Ratings ranged from 1 (not at all characteristic) to 5 (highly characteristic); thus, higher ratings reflect greater synchrony. The ratings for the two tasks were averaged to create a single score. To reduce coding drift and assess reliability, twenty percent of videos were double-coded, and the ratings were checked against those of a master coder. For each video, the rating needed to be within one point of the master coder's rating to be considered reliable (e.g., if a master coder gave a rating of 4, ratings of 3 or 5 were acceptable). Although this particular coding system has not been validated

in ethnic minority families, similar coding systems that assess dyadic synchrony have been validated with Mexican American and African American families (Tamis-LeMonda et al., 2002).

Self-regulation. During the 24-month home visit, examiners administered a videorecorded snack delay task (Kochanska et al., 2000, 2001). The examiner placed a goldfish cracker on a plate and then a clear, plastic cup over the snack. Children were instructed to wait to eat the snack until the examiner said it was okay to eat. Examiners administered four trials of varying wait times (10-, 20-, 30-, and 15-seconds). Previous research has indicated that the snack delay task is a reliable measure of effortful control in ethnic minority children (McCabe et al., 2004; Smith-Donald et al., 2007). For each trial, examiners rated the child's performance on a scale of 0 to 3 (0 = ate the snack before time was up; 1 = waited to eat the snack but touched the snack while waiting; 2 = waited to eat the snack but touched the cup; 3 = waited to eat the snack and never touched the cup or snack). We created a self-regulation performance latent variable using the scores of each trial as indicators.

Emotionality. At 12 months, mothers reported on their infant's temperament using the Emotionality Activity Sociability (EAS) Temperament Survey (Buss, 1991; Buss & Plomin, 1984). This measure has four scales: *emotionality* (e.g., "child cries easily"), *activity* (e.g., "child is always on the go"), *shyness* (e.g., "child tends to be shy"), and *sociability* (e.g., "child likes to be with people"). For each item, mothers responded using a 5-point scale (1 = "not characteristic or typical of your child to 5 = "very characteristic or typical of your child"). In the current study, we used the 5-item Emotionality scale, with higher scores reflecting more negative emotionality. Children with scores above the mean were designated a value of 1 (high emotionality) and children with scores below the mean were designated a value of 0 (low emotionality). Although previous research indicates that the EAS Temperament Survey has good internal consistency and

good stability (Bould et al., 2013), this measure has not been validated in ethnic minority families.

Intervention condition. As described above, we randomly assigned families to one of four groups, with three of these groups receiving the BB2 intervention. We created a binary variable for intervention condition by combining the three intervention conditions; the control condition served as the reference group.

Covariates. We included four covariates in all analyses: child gender, child activity level, parent education, and parent nativity status. We controlled for child gender (with male as the reference group) because, although gender differences are not consistently observed, some studies have found gender differences in self-regulation among young children (Kochanska et al., 2000; Li-Grining, 2007). Since prior research has indicated activity level, a dimension of temperament, to be negatively correlated with the ability to wait (Hong et al., 2017), we included mother-report of activity level using the EAS Temperament Survey described above.

We controlled for parent education given that it is a stronger correlate of child outcomes compared to other measures of socioeconomic status (Davis-Kean et al., 2021). Parent education was assessed using one question that asked parents to indicate the highest degree they completed. The response options were less than high school; high school or equivalent; some college; two-year degree; and four-year degree or more. To reduce the number of variables in our models, we took the highest education level of the two parents and recoded the five education categories into three categories: high school degree or less; some college; and two-year degree or more. High school degree or less served as the reference group. We controlled for nativity status (foreign-born as reference group) because of differences in children's SR by parents' nativity status (Palacios & Bohlmann, 2020).

Analytical Plan

Due to social distancing policies during the COVID-19 pandemic and attrition, there was missing data for each wave after the baseline visit. To address the issue of missing data, we conducted five multiple imputations using the multiple imputation procedure in IBM SPSS (Version 29). We imputed missing data for our exogenous (18-month dyadic synchrony), mediator (24-month dyadic synchrony), endogenous (self-regulation), and moderator (emotionality) variables. We also imputed missing data for one of our covariates: activity level.

Using IBM SPSS AMOS (Version 29), we conducted structural equation models. To test the significance of indirect effects, we performed 500 bootstraps with bias-corrected 95% confidence intervals. We conducted multigroup analyses to examine whether paths from dyadic synchrony to SR varied for children with low and high emotionality. As our models were fully saturated, there were no fit indices to report. A confirmatory factor analysis for the SR performance latent variable indicated that the loadings were significant and in the expected direction, with standardized loadings ranging between .62 and .88.

In all models, we included both mother- and father-child synchrony to examine the unique contribution of each, over and above the contribution of the other parent-child relationship. For the models testing direct, indirect effects, and moderation effects, intervention condition was treated as a covariate to account for any mean differences in parent-child synchrony and toddlers' SR that could be attributed to participation in a parenting intervention. For the model testing intervention effects, intervention condition was treated as an exogenous variable.

All control variables covaried with each other and with the exogenous variables. We included direct paths from all covariates to dyadic synchrony at 24 months and SR performance.

Finally, we included covariances between mother- and father-child synchrony at 18 and 24 months. Figure 1 shows our hypothesized models.

Results

Direct Associations between 18-Month Dyadic Synchrony and Self-Regulation

For the model testing direct associations between mother- and father-child synchrony at 18 months and SR at 24 months, there were no significant associations between mother- or father-child synchrony and SR. Table 3 shows the unstandardized and standardized estimates for this model.

Mediating Effects of 24-Month Dyadic Synchrony

The results of the bootstrapping procedure indicated that father-synchrony at 24 months fully mediated associations between father-child synchrony at 18 months and SR performance ($b = .03$; 95% confidence interval [CI] = .01 to .09; $p < .05$). Greater father-child synchrony at 18 months was associated with greater father-child synchrony at 24 months, which subsequently was associated with greater SR performance. However, although mother-child synchrony at 18 months was positively associated with mother-child synchrony at 24 months, dyadic synchrony at 24 months did not mediate associations between dyadic synchrony at 18 months and SR ($b = -.01$; 95% confidence interval [CI] = -.04 to .01, $p = .27$). Table 3 shows the unstandardized and standardized estimates for paths among parent-child synchrony at 18 months, parent-child synchrony at 24 months, self-regulation, and covariates.

Multigroup Analyses

To examine whether the structural weights differed between children with low and high emotionality, we tested a model in which all structural weight estimates were constrained to be equal across groups while the means, intercepts, variances, and covariances were allowed to be

freely estimated. Nested model comparisons indicated that constraining the path coefficients to be equal across the low and high emotionality groups did not significantly decrease the model fit, suggesting that there are no significant differences between the groups ($\chi^2(36) = 44.88, p = .15$). Therefore, we did not test each path individually.

Intervention Effects on Dyadic Synchrony and Self-Regulation

To test whether participation in Baby Book 2 had effects on parent-child synchrony and SR, we treated study condition as an exogenous variable. Mothers and fathers who were in the treatment conditions exhibited greater synchrony with their children at 24 months compared to parents in the control group (mothers: $b = .20, SE = .09, p < .05$; fathers: $b = .26, SE = .09, p < .01$), but not at 18 months, suggesting a lagged effect. There were no significant direct effects of the intervention on toddlers' SR.

The results of bootstrapping indicated that father-child synchrony at 24 months fully mediated associations between study condition and SR performance at 24 months ($b = .06$; 95% confidence interval [CI] = .01 to .15; $p < .01$). Compared to father-child dyads in the control group, dyads in the treatment conditions had greater synchrony at 24 months, which in turn, was associated with greater SR performance. However, mother-child synchrony at 24 months did not mediate associations between study condition and SR performance ($b = -.02$; 95% confidence interval [CI] = -.06 to .02; $p = .29$). Table 4 shows the unstandardized and standardized estimates for paths among study condition, parent-child synchrony at 18 months, parent-child synchrony at 24 months, self-regulation, and covariates.

Discussion

The current study examined longitudinal associations between mother- and father-child synchrony at 18 months and toddlers' self-regulation (SR) at 24 months in a sample of ethnically

diverse mothers, fathers, and children. We also examined mediation effects through parent-child synchrony at 24 months and moderation effects by child emotionality. In addition, we explored whether participation in the parenting intervention, Baby Books 2, had impacts on parent-child synchrony and SR. Overall, we found evidence that the mechanism operating in the association between father-child synchrony at 18 months and SR performance (i.e., whether the child waited) was father-child synchrony at 24 months. However, mother-child synchrony at 18 months was not directly associated with SR at 24 months directly or indirectly via dyadic synchrony at 24 months. There was also no evidence that dyadic synchrony was better for children with low vs. high emotionality. Moreover, both parents participating in the intervention were observed to have better dyadic synchrony with their infants at 24 months and toddlers in the treatment groups had better SR performance at 24 months through greater father-child synchrony at 24 months.

Parent-Child Synchrony and Self-Regulation

Our first goal was to assess whether early dyadic synchrony was directly associated with toddlers' SR at 24 months. Contrary to our hypothesis and prior research (Davis et al., 2017; Kochanska et al., 2008; Li-Grining, 2007; Raikes et al., 2007), neither father-child nor mother-child synchrony at 18 months were directly associated with SR at 24 months. However, these previous studies, some of which had samples of ethnic minority families, found associations between dyadic synchrony in toddlerhood and SR assessed at preschool age. In contrast, we assessed both dyadic synchrony and SR during toddlerhood. As one of the few studies to examine these associations during the toddler years (for an exception, see Kim & Kochanska, 2012), more research is needed to determine whether our null findings are replicated, particularly in similar populations (Latines and African Americans). A notable contribution of the present

study is the inclusion of both mother- and father-child synchrony in the same conceptual model whereas previous research has either excluded fathers or examined maternal and paternal effects separately. As such, we may not have found promotive effects of mother-child synchrony on SR as we controlled for father-child synchrony.

Mediational Effects

A keen interest in this study was to understand the pathways through which dyadic synchrony early in infancy matters for SR in toddlerhood. Our hypothesis was partially supported. Fathers who were observed to have a high degree of synchrony with their toddlers at 18 months had toddlers who exhibited greater SR performance (i.e., successfully waiting) through greater synchronous interactions at 24 months. This finding suggests that the father-child relationship matters for self-regulation and contributes to a relatively small literature documenting the promotive effects of father-child synchrony (Davis et al., 2017; Kochanska et al., 2008).

In contrast, although mother-child interactions that were more likely to be synchronous at 18 months were also more likely to be synchronous at 24 months, greater dyadic synchrony at 24 months was not associated with SR and thus, was not a significant mediator. Although this finding contrasts with those of previous studies (Li-Grining, 2007; Suveg et al., 2015), it is important to note that the exclusion of fathers may have resulted in an overestimation of the promotive effects of mother-child synchrony. More research that includes mothers and fathers and controls for the influence of the other parent is necessary to better understand how each parent-child relationship contributes to SR.

We also found that mother- and father-child synchrony showed moderate stability over a six-month period, consistent with theoretical arguments that synchrony reflects predictable

patterns of emotional and behavioral exchanges (Harrist & Waugh, 2002). In other words, levels of synchrony were similar across the two timepoints in our sample. This is consistent with previous work documenting stability in mother- and father-child synchrony between infancy and early childhood, albeit in White and Israeli families (Feldman, 2015; Feldman et al., 2013; Kim et al., 2015). Support for this stability effect also increases our confidence in our measure of synchrony, suggesting that it is tapping the same construct at both timepoints.

Emotionality as a Moderator

We did not find support for our hypothesis that dyadic synchrony would benefit the SR of children with high emotionality more so than for children with low emotionality. Even though our finding is consistent with a previous study examining synchrony in parent-infant dyads (Pratt et al., 2015), it contrasts with another study that found that synchrony was positively associated with greater self-regulation only for toddlers with high emotionality in a sample of White middle-class families (Kim & Kochanska, 2012). One possible reason why our findings deviated from those of Kim and Kochanska could be due to the nature of the relation between dyadic synchrony and emotionality. It is possible that emotionality affects the extent to which parents and children are in sync, such that it is more challenging to achieve synchrony when children have high levels of emotionality. This possibility is supported by the fact that the correlations between emotionality and mother- and father-child synchrony at 18 months were both negative and significant (Table 2). Thus, it is important to consider direct associations between emotionality and dyadic synchrony, which future longitudinal studies could investigate.

Intervention Effects on Dyadic Synchrony and Self-Regulation

Finally, we explored intervention effects of Baby Books 2 (BB2), which provided parents with educational books, on dyadic synchrony and SR. Although participation in the BB2

intervention did not have significant direct effects on mother- or father-child synchrony at 18 months, it did have positive effects on mother- and father-child synchrony at 24 months (i.e., a lagged effect). Similar lagged effects have been observed for other interventions that provided mothers with information on child development and parenting (Caughy et al., 2004).

Developmental changes occurring around 24 months may explain this lagged effect. By 24 months, toddlers are more autonomous and have greater cognitive (e.g., language) and socioemotional (e.g., regulation) skills. Improvement in these skills changes the dynamics of the interaction, requiring parents to adapt to these developmental changes as well (Harrist & Waugh, 2002; Funamoto & Rinaldi, 2015). The intervention may have helped parents to adapt their behaviors in parent-child interactions in line with their toddlers' developmental changes.

Our findings indicate that providing educational books that contain information about positive parenting behaviors, such as providing sensitive and contingent responses, to one or both parents led to changes in the quality of parent-child interactions. There are several ways through which these changes may have occurred. For families in which only one parent received the books, positive spillover effects may have occurred through the targeted parent sharing the educational information with their partner or through the partner observing the target parent's positive parenting behaviors and applying these same behaviors in their own interactions with their child. For families in which both parents received the books, mothers' and fathers' behaviors may have been further reinforced by discussing the content of the books with each other. It is important to consider spillover effects on the child. As parents implemented what they learned into their own interactions with their child (e.g., increased sensitivity), the child's behaviors towards their parent likely changed as well – namely, by reciprocating these behaviors (e.g., responding to the parents' vocalizations). Over time, these positive back-and-forth

behavioral and emotional exchanges become engrained, resulting in predictable, positive patterns of dyadic interactions (i.e., high dyadic synchrony). Given that most research to date has examined negative spillover effects between mothers and fathers (McKee et al., 2021), studying positive spillover effects between the mother- and father-child relationships remains a fruitful area for future work.

Finally, the effects of the intervention on toddlers' SR were fully mediated by father-child synchrony at 24 months. Specifically, toddlers in the treatment conditions had greater SR via greater father-child synchrony at 24 months. This suggests that parenting interventions can use father-child interactions as a mechanism for promoting SR in young children. A recent review of interventions indicated that few interventions have targeted parent-child interactions to improve SR and even fewer are those that target both parents (Morawska et al., 2019). As BB2 had significant impacts on SR by promoting more synchronous interactions between fathers and toddlers, this finding highlights the value of involving and engaging fathers in parenting interventions.

Limitations

This study is not without its limitations. First, due to time constraints on home visits, we were unable to administer a battery of SR tasks. Future work would benefit from using multiple tasks to assess children's SR. Second, our mediation analyses involved two timepoints, but the ideal would have been three timepoints with SR assessed after 24 months. We administered the snack delay task at 30 months, but due to the COVID-19 pandemic, we only have data from 30% of the 210 children enrolled in the study. Assessing SR at multiple timepoints would enable researchers to examine developmental changes in children's SR. Finally, we assessed dyadic synchrony during two play interactions, which were generally characterized by positive dyadic

affect. Dyadic synchrony during tasks that elicit conflict (e.g., clean-up) offers researchers an opportunity to assess the extent to which the dyad exhibits flexibility and adaptability across contexts and whether dyadic synchrony during such contexts is more predictive of SR.

Conclusion

The present study was one of the first to examine associations between mother- and father-child dyadic synchrony and toddlers' self-regulation while controlling for the influence of the other parent-child relationship. Father-child synchrony at 18 months was indirectly associated with greater SR performance at 24 months through greater dyadic synchrony at 24 months, highlighting the unique contribution that the father-child relationship makes to toddlers' self-regulation. Finally, despite being a light intervention, Baby Books 2 had positive direct impacts on mother- and father-child synchrony at 24 months and indirect effects on toddlers' SR through father-child synchrony at 24 months. Collectively, these findings suggest that interventions that involve and engage mothers and fathers have the potential to promote more synchronous parent-child relationships and that father-child synchrony is one potential mechanism for fostering self-regulation in young ethnically diverse children.

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Appendix

Table 1

Sample Demographics and Descriptives of Study Variables

Measure	Mothers		Fathers	
	M(SD)/ %	Range/ n	M(SD)/ %	Range/ n
<i>Child gender</i>				
Boy	48%	101		
Girl	52%	109		
<i>Parents' education</i>				
High school or less			31%	65
Some college			49%	104
Two-year degree or more			31%	65
			27%	56
			38%	80
			24%	50
<i>Household income</i>	\$39,400 (\$21,600)	\$1000 - \$126,000		
<i>Parents' ethnicity</i>				
Hispanic or Latino			68%	142
Black or African American			68%	142
White			13%	27
Other			13%	27
			7%	14
			8%	17
			12%	27
			11%	24

<i>Native-born</i>			49%	103	44%	92
<i>Condition</i>						
Intervention	75%	158				
Control	25%	52				
<i>Child activity level^a</i>	21.00 (2.96)	9 – 25				
<i>Child emotionality^a</i>	11.16 (3.68)	5 – 25				
<i>Parent-child synchrony at 18 months^a</i>			3.23 (.77)	1.50 – 5.00	3.20 (.72)	1.00 – 5.00
<i>Parent-child synchrony at 24 months^a</i>			3.46 (.59)	1.50 – 5.00	3.33 (.63)	1.50 – 5.00
<i>Self-regulation (%/n Passed)^a</i>						
Trial 1	90%	189				
Trial 2	83%	175				
Trial 3	83%	174				
Trial 4	87%	182				

Note. ^aThese are variables that had missing data and the descriptive statistics presented are based on the imputed data.

Table 2

Correlations among Study Variables

Variable	1.	2.	3.	4.	8.	9.	10.	11.	12.
2. Mother-child synchrony (18M)									
2. Father-child synchrony (18M)	.29**								
3. Mother-child synchrony (24M)	.33**	.23**							
4. Father-child synchrony (24M)	.28**	.25**	.45**						
5. Emotionality	-.19**	-.15*	-.04	-.01					
6. Activity level	.04	.12	.12	.10	-.03				
7. Snack delay trial 1 score (24M)	.06	.02	-.01	.01	-.10	-.17*			
8. Snack delay trial 2 score (24M)	-.05	-.06	.03	.17*	.18**	-.15*	.56**		
9. Snack delay trial 3 score (24M)	-.03	-.09	-.11	.18*	.02	-.06	.50**	.73**	
10. Snack delay trial 4 score (24M)	.02	.01	.04	.09	.07	-.13	.40**	.59**	.66**
11. Some college	.13	.09	.05	-.02	-.07	.17*	.12	-.02	.05
12. Two-year degree or more	.01	.02	.05	.15*	-.04	-.05	-.15*	-.08	-.13
13. Female	.17*	.07	-.07	.08	-.14*	-.01	.16*	.19**	.16*
14. Study condition (binary)	.09	-.02	.21**	.20**	.004	-.04	-.18**	-.08	-.08
15. Mother native born	.05	.19**	.28**	.18**	-.04	.30**	.11	.07	.06
16. Father native born	.14*	.06	.21**	.02	.04	.24**	-.07	-.09	-.13

Note. 18M = 18 months; 24M = 24 months. *p < .05, **p < .01.

Table 3
Parameter Estimates for Full Model in Figure 1a

<i>Path estimates among primary variables of interest</i>	Figure 1a Model	
	<i>b (SE)</i>	<i>β</i>
M-C synchrony (18M) → M-C synchrony (24M)	.22 (.05)**	.29**
F-C synchrony (18M) → F-C synchrony (24M)	.13 (.06)*	.15*
M-C synchrony (18M) → F-C synchrony (24M)	.19 (.06)**	.23**
F-C synchrony (18M) → M-C synchrony (24M)	.10 (.05)†	.12†
M-C synchrony (18M) → SR performance	-.01 (.06)	-.01
F-C synchrony (18M) → SR performance	-.09 (.06)	-.12
M-C synchrony (24M) → SR performance	-.08 (.08)	-.09
F-C synchrony (24M) → SR performance	.22 (.07)**	.25**
<i>Path estimates from covariates to 24-month dyadic synchrony</i>	<i>b (SE)</i>	<i>β</i>
Female → M-C synchrony	-.11 (.07)	-.09
Female → F-C synchrony	.10 (.08)	.08
Some college → M-C synchrony	.04 (.10)	.03
Some college → F-C synchrony	.05 (.11)	.04
Two-year degree or more → M-C synchrony	.06 (.09)	.05
Two-year degree or more → F-C synchrony	.23 (.10)*	.18*
Emotionality → M-C synchrony	.01 (.01)	.03
Emotionality → F-C synchrony	.02 (.01)	.10
Activity level → M-C synchrony	.01 (.01)	.03
Activity level → F-C synchrony	.02 (.01)	.07
Study condition → M-C synchrony	.20 (.09)*	.15*
Study condition → F-C synchrony	.26 (.09)**	.18**

Mother nativity status → M-C synchrony	.22 (.09)*	.19*
Mother nativity status → F-C synchrony	.23 (.09)*	.18*
Father nativity status → M-C synchrony	.04 (.09)	.03
Father nativity status → F-C synchrony	-.21 (.09)*	-.16*
<i>Path estimates from covariates to self-regulation</i>	<i>b (SE)</i>	<i>β</i>
Female → SR performance	.20 (.08)*	.18*
Some college → SR performance	-.06 (.11)	-.05
Two-year degree or more → SR performance	-.16 (.10)	-.15
Emotionality → SR performance	.01 (.01)	.09
Activity level → SR performance	-.04 (.01)*	-.19*
Study condition → SR performance	-.18 (.09)†	-.14†
Mother native born → SR performance	.29 (.10)**	.26**
Father native born → SR performance	-.16 (.09)†	-.14†

Note. Child gender was dummy coded (0 = male, 1 = female). Intervention condition was dummy coded (0 = control group, 1 = treatment groups). Nativity status was dummy coded (0 = foreign-born, 1 = native born). The reference group for highest parent education was high school degree or less. M-C = mother-child; F-C = father-child; SR = self-regulation; 18M = 18 months; 24M = 24 months.

† $p < .10$, * $p < .05$, ** $p < .01$.

Table 4
Parameter Estimates for Full Model in Figure 1b

Figure 1b Model		
<i>Path estimates among primary variables of interest</i>	<i>b (SE)</i>	<i>β</i>
Study condition → M-C synchrony (18M)	.19 (.12)	.10
Study condition → F-C synchrony (18M)	-.05 (.11)	-.03
Study condition → M-C synchrony (24M)	.20 (.09)*	.15*
Study condition → F-C synchrony (24M)	.26 (.09)**	.18**
Study condition → SR performance	-.18 (.09)†	-.14†
M-C synchrony (18M) → M-C synchrony (24M)	.22 (.05)**	.29**
F-C synchrony (18M) → F-C synchrony (24M)	.13 (.06)*	.15*
M-C synchrony (18M) → F-C synchrony (24M)	.19 (.06)**	.23**
F-C synchrony (18M) → M-C synchrony (24M)	.10 (.05)†	.12†
M-C synchrony (18M) → SR performance	-.01 (.06)	-.01
F-C synchrony (18M) → SR performance	-.09 (.06)	-.12
M-C synchrony (24M) → SR performance	-.08 (.08)	-.09
F-C synchrony (24M) → SR performance	.22 (.07)**	.25**
<i>Path estimates from covariates to dyadic synchrony</i>	<i>b (SE)</i>	<i>β</i>
Female → M-C synchrony (18M)	.24 (.10)*	.15
Female → F-C synchrony (18M)	.08 (.10)	.06
Some college → M-C synchrony (18M)	.29 (.14)*	.17
Some college → F-C synchrony (18M)	.17 (.14)	.11
Two-year degree or more → M-C synchrony (18M)	.16 (.13)	.10
Two-year degree or more → F-C synchrony (18M)	.13 (.13)	.09
Emotionality → M-C synchrony (18M)	-.03 (.01)*	-.16

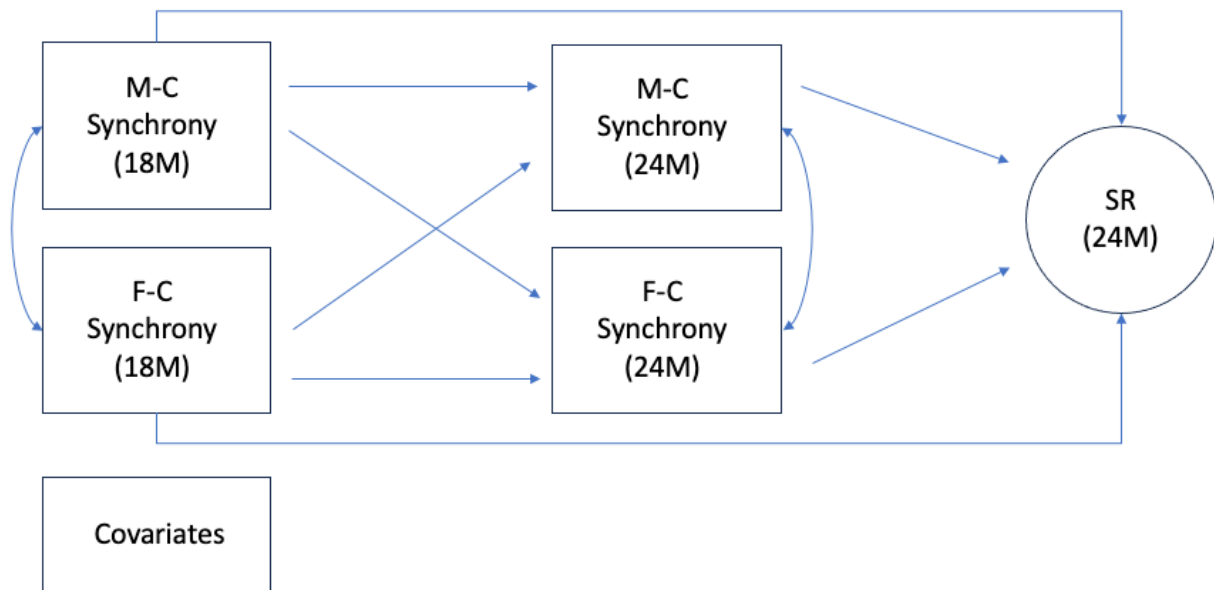
Emotionality → F-C synchrony (18M)	-.02 (.01)†	-.12
Activity level → M-C synchrony (18M)	-.002 (.02)	-.01
Activity level → F-C synchrony (18M)	.01 (.02)	.06
Mother nativity status → M-C synchrony (18M)	-.09 (.12)	-.06
Mother nativity status → F-C synchrony (18M)	.27 (.11)*	.19
Father nativity status → M-C synchrony (18M)	.25 (.12)*	.16
Father nativity status → F-C synchrony (18M)	-.07 (.11)	-.05
Female → M-C synchrony (24M)	-.11 (.07)	-.09
Female → F-C synchrony (24M)	.10 (.08)	.08
Some college → M-C synchrony (24M)	.04 (.10)	.03
Some college → F-C synchrony (24M)	.05 (.11)	.04
Two-year degree or more → M-C synchrony (24M)	.06 (.09)	.05
Two-year degree or more → F-C synchrony (24M)	.23 (.10)*	.18*
Emotionality → M-C synchrony (24M)	.01 (.01)	.03
Emotionality → F-C synchrony (24M)	.02 (.01)	.10
Activity level → M-C synchrony (24M)	.01 (.01)	.03
Activity level → F-C synchrony (24M)	.02 (.01)	.07
Mother nativity status → M-C synchrony (24M)	.22 (.09)*	.19*
Mother nativity status → F-C synchrony (24M)	.23 (.09)*	.18*
Father nativity status → M-C synchrony (24M)	.04 (.09)	.03
Father nativity status → F-C synchrony (24M)	-.21 (.09)*	-.16*
<i>Path estimates from covariates to self-regulation</i>	<i>b (SE)</i>	<i>β</i>
Female → SR performance	.20 (.08)*	.18*
Some college → SR performance	-.06 (.11)	-.05

Two-year degree or more → SR performance	-.16 (.10)	-.15
Emotionality → SR performance	.01 (.01)	.09
Activity level → SR performance	-.04 (.01)*	-.19*
Mother native born → SR performance	.29 (.10)**	.26**
Father native born → SR performance	-.16 (.09)†	-.14†

Note. Child gender was dummy coded (0 = male, 1 = female). Intervention condition was dummy coded (0 = control group, 1 = treatment groups). Nativity status was dummy coded (0 = foreign-born, 1 = native born). The reference group for highest parent education was high school degree or less. M-C = mother-child; F-C = father-child; SR = self-regulation; 18M = 18 months; 24M = 24 months.

† $p < .10$, * $p < .05$, ** $p < .01$.

a.



b.

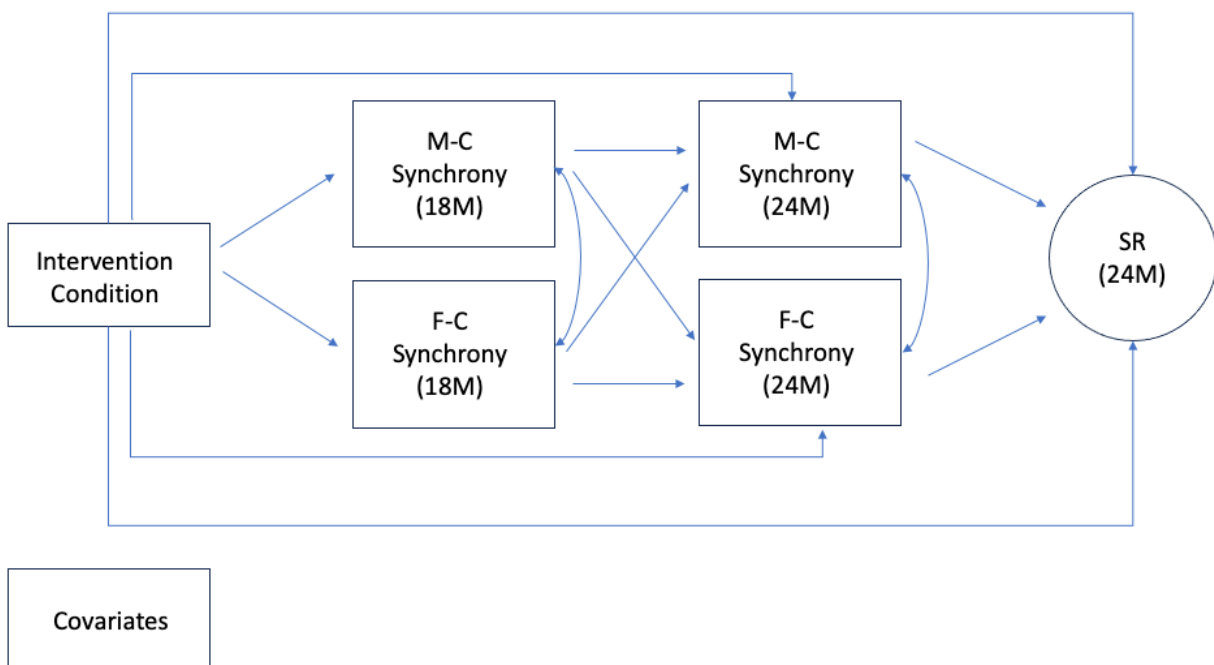


Figure 1. Figure 1a shows the model testing direct, indirect, and moderation effects with intervention condition as a covariate. Figure 1b displays the model testing intervention effects. M-C = mother-child; F-C = father-child; SR = self-regulation. 18M = 18 months; 24M = 24 months.

General Discussion

Collectively, the three studies that comprise my dissertation provide longitudinal empirical support for the importance of mother- and father-child interactions for toddlers' socioemotional functioning in ethnically and economically diverse families. The studies examined longitudinal associations between mothers' and fathers' emotion socialization and toddlers' social competence (Alonso et al., revise and resubmit under review^a), cascading effects from maternal and paternal supportive parenting to socioemotional functioning (Alonso et al., under review^b), and longitudinal associations between mother- and father-child synchrony and toddlers' self-regulation (Alonso et al., in preparation). These studies examined different aspects of parent-child interactions and the mechanisms (moderators and mediators) that explain these associations; included both parents and used observational and longitudinal data; and used a sample of ethnically and economically diverse families and their young children. First, I discuss the theoretical and empirical implications of my studies. Next, I discuss the implications for parenting programs and interventions. Then, I describe the contributions my studies make to the literature. Next, I discuss limitations and future directions. Finally, I end with some concluding thoughts.

Theoretical and Empirical Implications

The first study on mothers' and fathers' emotion socialization (Alonso et al., revise and resubmit under review^a) examined the early processes that set ethnic minority children on a positive trajectory of social competence by looking at emotion socialization behaviors (ESB), which promote emotional competence, a core component of socioemotional functioning. Through an integration of the heuristic model of the socialization of emotion (Eisenberg et al., 1998) and a family systems perspective (Cox & Paley, 1997), I examined longitudinal

associations between mothers' and fathers' ESBs and toddlers' social competence, the moderating effect of child emotionality on these associations, and interaction effects between mothers' and fathers' ESBs. I report three findings. First, I found that fathers' non-supportive ESBs to negative emotions (e.g., sadness) at 18 months were positively associated with social competence at 30 months. Although this finding is contrary to theory and previous research (Eisenberg et al., 1998), it suggests that toddlers are not as affected by fathers' minimizing statements or punishment. The emotional context of fathers' non-supportive ESBs may explain this finding. For example, toddlers' social competence may not be negatively impacted when fathers show neutral or positive affect when engaging in non-supportive ESBs compared to when fathers display negative affect (e.g., anger) while providing non-supportive ESBs.

Second, the association between fathers' ESBs and toddlers' social competence depended on mothers' ESBs. Fathers' emotion coaching of negative emotions at 18 months was positively associated with social competence at 30 months only when mothers did not provide any emotion coaching, suggesting a potential compensatory effect in which toddlers can develop strong social competence if they have one parent who is supportive of their expression of emotions. This is an important finding that points to the importance of taking a family systems approach to understand how both parents matter for children's development. This is a better way to understand development than just focusing on one parent, as is the case in most of the prior ESB research (McElwain et al., 2007).

Third, I found some evidence that temperament is a significant contextual moderator of how maternal ESBs and social competence are related. Mothers' non-supportive ESBs (e.g., minimizing) to negative emotions at 24 months were associated with lower social competence at 30 months only for toddlers with high emotionality. Our finding that highly reactive toddlers

were particularly susceptible to mothers' non-supportive ESBs is consistent with a vast literature documenting how parenting behaviors are associated with developmental outcomes differently depending on the child's temperament (Belsky et al., 2007; Engle & McElwain, 2011; Kiff et al., 2011). The significance of this finding is that it highlights the view that parenting does not occur in a vacuum, but rather, is shaped in important ways by children's dispositions.

Informed by the developmental cascades model (Masten & Cicchetti, 2010) and research linking regulatory skills with higher socioemotional competence in older children (Blair et al., 2015; Schmitt et al., 2021), the next study (Alonso et al., under review^b) examined cascading effects from maternal and paternal responsive parenting at 9 months to socioemotional functioning (i.e., executive function and socioemotional competence) at age 3 through effortful control at 24 months. We also examined child emotionality as a moderator of associations between responsive parenting and socioemotional functioning.

There were several important findings. First, at 24 months, two thirds of toddlers passed the snack delay task, an acceptable indicator of young children's effortful control (Kochanska et al., 2000). However, effortful control did not significantly mediate associations between responsive parenting and socioemotional functioning. Our finding is inconsistent with studies with older children that have found support for developmental cascades through effortful control. I explained this null finding by hypothesizing that developmental cascades might be observed later in development when effortful control is more stable, starting around 33 months of age. Nonetheless, more longitudinal research is needed to determine if this is the case.

Second, I found support for promotive (direct) effects of mothers' responsive parenting at 9 months to socioemotional competence at age 3, consistent with previous research (Rispoli et al., 2013; Spinrad et al., 2007). However, there was no support for direct effects of paternal

responsive parenting as others have found (Altenburger & Schoppe-Sullivan, 2021; Jeon & Neppl, 2019). However, given that studies on the influence of fathers' responsive parenting on socioemotional competence has been limited to White fathers, more research is warranted to better understand what paternal behaviors promote ethnic minority children's socioemotional skills and when they are most influential. For example, previous research with ethnic minority fathers has shown that fathers shape their children's socioemotional functioning through specific parenting behaviors, such as regulatory language (e.g., indirect commands; Malin et al., 2014).

Third, contrary to the differential susceptibility hypothesis and prior work (Razza et al., 2012; Rochette & Bernier, 2016; Slagt et al., 2016), maternal responsive parenting was beneficial for both low and high reactive children in our sample of ethnically diverse families. Sociocultural factors, such as differing beliefs about child temperament, may account for this null finding (Chen, 2018). Moreover, previous research has found that low-income ethnically diverse mothers' responsive parenting behaviors are less affected by children's negative emotionality compared to fathers (Padilla & Ryan, 2019). Alternatively, interaction effects between child emotionality and parenting may emerge when parenting is assessed after infancy. Starting in the second year of life, parents communicate behavioral expectations to their toddlers (Brownell & Kopp, 2007). As such, mothers of highly reactive children may be more likely to adjust their quality of parenting to help their toddlers develop desirable characteristics. Additional longitudinal research can help us better understand how emotionality and responsive parenting are related in early childhood.

Finally, in the last study (Alonso et al., in preparation), I used relational developmental systems theory (RDS) to test another dimension of parent-child interactions, dyadic synchrony, as a potential mechanism linking earlier parent-child relationships with later self-regulation. I

focused on dyadic synchrony as this construct better captures the transactional nature of parent-child interactions and is theorized to be linked to greater SR (Harrist & Waugh, 2002).

Furthermore, I examined emotionality as a moderator of associations between mother- and father-child synchrony and toddlers' SR. Lastly, I explored whether participation in a parenting intervention could improve dyadic synchrony and SR. There were various important findings.

Consistent with RDS theory that the parent-child system has direct effects on developmental outcomes (Overton, 2013), toddlers who exhibited high synchrony with their fathers at 18 months had greater SR at 24 months through greater synchrony at 24 months. This study is one of few documenting positive associations between father-child synchrony and SR, over and above the contribution of mother-child synchrony (Davis et al., 2017; Kochanska et al., 2008). However, contrary to theory (Harrist & Waugh, 2002), mother-child synchrony at 18 and 24 months were not associated with SR. Our null finding might be highlighting a limitation of prior research on dyadic synchrony – the exclusion of fathers may have resulted in an overestimation of the promotive effects of mother-child synchrony. This unexpected finding warrants more empirical attention to determine how mother- and father-child synchrony contribute to SR in toddlerhood, as most studies have assessed SR later in development.

There was also no support for the differential susceptibility hypothesis that associations between mother- and father-child synchrony and SR would be stronger for high emotionality children. Since research testing the differential susceptibility hypothesis with parent-child synchrony and SR is limited and inconsistent (Kim & Kochanska, 2012; Pratt et al., 2015), this remains a fruitful area for future work. Additional research could help shed light on how dyadic synchrony and emotionality are related (e.g., direct or interaction effects) in the first years of life.

Finally, although there were no impacts of the Baby Books 2 (BB2) parenting intervention, which provided first-time parents with educational information, on dyadic synchrony at 18 months, there were positive effects on both mother- and father-child synchrony at 24 months. This lagged effect may be due to the nature of dyadic synchrony at 24 months, which may look qualitatively different as toddlers' growing socioemotional and language skills alter the nature of behavioral and emotional exchanges (Harrist & Waugh, 2002; Funamoto & Rinaldi, 2015). As longitudinal studies of dyadic synchrony are scarce (Birk et al., 2022), there is a need to examine how these predictable patterns of dyadic interactions change over the course of early childhood. Furthermore, the effects of BB2 on toddlers' SR performance was fully mediated by greater father-child synchrony at 24 months, suggesting that parenting interventions can have positive impacts on SR using father-child interactions as the mechanism for change (Morawska et al., 2019). This is important contribution to the field as few interventions have targeted the quality of parent-child interactions to promote SR and even rarer is the engagement of both mothers and fathers in interventions (Feinberg et al., 2009; Morawska et al., 2019).

In sum, consistent with theory and prior work, I found that different aspects of parent-child interactions – emotion socialization, responsive parenting, and dyadic synchrony – shape young children's socioemotional functioning. However, the moderating effect of temperament was inconsistent, with significant moderating effects found for specific parenting behaviors (emotion socialization), but not global measures of parent-child interactions (responsive parenting; dyadic synchrony). In terms of mechanisms connecting early parent-child interactions with later socioemotional functioning, the evidence indicated that although toddlers' regulatory skills were not a significant mediator, later father-child synchrony at 24 months was, providing further support for the importance of the parent-child system for socioemotional outcomes.

Contributions to the Literature

These studies make several contributions to the field. First, our knowledge of normative socioemotional development has been based on primarily White middle-class mothers and their children which has left a gap in our understanding of the multiple ways in which development can unfold in various cultural contexts (Keller, 2020). The empirical studies in my dissertation answer the call in the field for more within-group studies (Kuchirko & Tamis-LeMonda, 2019) and advance our understanding of how diverse contexts support the normative socioemotional development of non-White children, in particular Latine and African American children. My three studies provide insights about the conditions and processes under which ethnic minority children develop optimal socioemotional skills.

Second, I capitalized on the longitudinal data available to test theoretically-informed moderators (emotionality) and mediators (children's regulatory skills; parent-child synchrony) of associations between parent-child interactions and socioemotional functioning in ethnically and socioeconomically diverse families. Understanding for whom these associations are strongest and the mechanisms through which early parent-child interactions shape socioemotional development is necessary for understanding why individual differences emerge early in development.

Third, my three studies use data collected with fathers, which is a more ecologically valid way to study Latine children as most of them live in two-parent families (Karberg et al., 2017). Our inclusion of fathers, and particularly ethnic minority fathers, is in line with a growing body of research documenting the unique contributions of fathers to child development (Cabrera et al., 2017; Cabrera et al., 2018). Moreover, I included mothers' *and* fathers' parenting behaviors within the same conceptual models, enabling me to isolate and more accurately estimate the

unique influence of each parent. As both mothers and fathers shaped their children's socioemotional outcomes, the findings highlight the importance of studying maternal *and* paternal parenting behaviors.

Finally, in terms of methodological contributions, my study on mothers' and fathers' emotion socialization (Alonso et al., revise and resubmit under review^a) is one of the few studies that coded mothers' *and* fathers' emotion socialization behaviors (ESB) from observational data as most of the previous research on ESBs has relied on self-report. Observational data of both parents in ethnically diverse families is scarce and this type of data is considered the gold standard in assessing parent-child interactions. Another important contribution is the focus on toddlers as most ESB research has been conducted with preschool age or older children. Finally, research on the ESBs of ethnic minority parents has typically been descriptive in nature (Gamble et al., 2007). This study addressed this gap by identifying the mechanisms linking mothers' and fathers' ESBs with toddlers' social competence in ethnically diverse families.

Implications for Programs

The findings of the three studies have implications for parenting programs and interventions in early childhood. As one of the most proximal systems to the child, parent-child interactions are one potential mechanism for improving toddlers' socioemotional development. Given that maternal and paternal parenting were uniquely associated with different aspects of children's socioemotional functioning, programs that engage both mothers and fathers are more likely to be effective in promoting young children's socioemotional skills. Involving both parents can also encourage cross-parent consistency in high-quality parenting behaviors, which can further promote positive developmental outcomes.

There are also recommendations for the content and approach of these programs. In the study on emotion socialization, mothers and fathers generally provided high levels of supportive responses (e.g., validation; encouraging expression of the emotion) to their toddlers' positive emotions. This is clearly a strength of these families that programs should validate and capitalize on. However, less frequent were didactic responses, an emotion socialization behavior that promotes greater emotional knowledge (Denham et al., 2007). Programs can encourage parents to use emotional displays as opportunities for labeling emotions and teaching emotion regulation strategies and frame these behaviors as another way of supporting and validating their children's emotions. Furthermore, the findings from the study on parent-child synchrony suggest that promoting fathers' emotional and behavioral attunement to their child's cues and emotions is one avenue for fostering young children's self-regulation. This study also showed that providing families with information on child socioemotional development and positive parenting behaviors (e.g., responsiveness) can support the development of self-regulation by increasing dyadic synchrony between fathers and children.

Finally, these studies highlight infancy and toddlerhood as optimal developmental periods for the implementation of parenting programs and interventions as the first two years of life are foundational for socioemotional functioning. For example, the results of the study of cascading effects from responsive parenting to children's socioemotional functioning indicate that high levels of warmth and responsiveness, particularly from mothers, in infancy have long-term implications for children's socioemotional competence (e.g., interacting positively with others). Given the malleability of socioemotional skills at these ages, programs and interventions during these developmental periods are more likely to bring about positive developmental cascades and prevent early gaps in socioemotional functioning.

Limitations and Future Directions

As with all research, my studies also have some limitations that should be kept in mind when interpreting my findings. Although observational measures have several advantages over self-report, we were limited to observing parents' emotion socialization in two short semi-structured tasks due to the time-consuming nature of event-based coding. Future studies would benefit from assessing emotion socialization through both observational and self-report measures. It is also important to note that approximately two thirds of our sample identified as Latine. Based on work showing that emotion socialization and its effects on child outcomes may differ across racial and ethnic groups due to variation in cultural values and beliefs (Raval & Walker, 2019), focus groups with Latine parents are a necessary step in developing culturally relevant questionnaires and observational measures that assess culture-specific emotion socialization behaviors.

Across studies, the measurement of socioemotional outcomes was limited to one method (parent-report vs. direct assessment) and, with the exception of my study on emotion socialization behaviors, at one time point. Due to constraints on the length of home visits, we were unable to administer a battery of direct child assessment tasks which would have provided a more robust measure of their skills. Assessing socioemotional skills using multiple methods and at multiple points in children's development can further our understanding of stability and change in these skills. Statistical models that test stability (e.g., cross-lagged models) and change (e.g., growth curve models) enable us to better isolate the unique contribution of parenting behaviors to socioemotional outcomes.

I assessed dyadic synchrony using global coding and although there are advantages to this type of coding (Funamoto & Rinaldi, 2015), it does not capture how parent-child dyads

recover from lapses in synchrony. Recovering from these lapses is just as vital for learning how to modify one's behaviors to adapt to changes in the environment, an important aspect of self-regulation (Lobo & Lunkenheimer, 2020; Lunkenheimer et al., 2011). Observational studies of parent-child synchrony have found transitions in and out of synchrony to be common, even in dyads who show high levels of synchrony (Harrist & Waugh, 2002). Time-based coding of dyadic synchrony may be one way to address this limitation in future studies. Furthermore, dyadic synchrony was assessed during play tasks that were generally characterized by positive emotions. Assessing synchrony in contexts that elicit conflict between parents and children (e.g., cleaning up toys) can capture dyad flexibility and adaptability in situations when the goals of each partner differ.

Considerably more work is needed that identifies and examines additional contextual factors (e.g., socialization goals; parents' social support) that shape developmental outcomes through its effects on parenting. Moreover, examining the moderating effect of contextual factors, such as bilingualism, enables researchers to identify protective factors for socioemotional development. Such research can inform programs and policies on how to best support families based on their strengths and needs. Finally, although beyond the scope of this dissertation, it is important for researchers to study the role of other socializers, such as grandparents, extended family, and teachers in promoting socioemotional skills. Opportunities to interact with individuals beyond the immediate family enrich children's understanding of social interactions and help to refine their self-regulation and socioemotional skills.

Conclusion

This dissertation consisted of three interrelated empirical studies examining longitudinal associations between parent-child interactions and socioemotional development and moderating

effects of child temperament. Collectively, these studies provide important insights into the conditions under which young ethnic minority children develop strong socioemotional competence. As the quality of parent-child interactions was a consistent predictor of socioemotional outcomes, this indicates that prevention and intervention programs can promote socioemotional functioning by targeting parenting behaviors. Notably, the toddlers in our sample showed strong socioemotional and self-regulation skills, despite studies indicating that toddlers have difficulty with regulating their behaviors (Mulder et al., 2019). However, little research has been done to identify the predictors and mechanisms that can account for individual differences in socioemotional outcomes. Additionally, I found that as with other samples, parents matter for children's development in similar ways: children's socioemotional development thrives when they have parents who are responsive and warm, encourage their expression of emotions, and are highly attuned to them both behaviorally and emotionally. A significant contribution of my dissertation is the way that the father-child relationship supports self-regulation. These findings make a strong call for studies of parenting and child development to include fathers as they have direct effects on their children's socioemotional outcomes. Moreover, I found that the father-child relationship is an important mechanism through which parenting interventions can help young ethnic minority children to develop greater self-regulation skills. Identifying the sources of variation (predictors, moderators, mediators) in ethnically diverse children's socioemotional outcomes can enhance our understanding of why individual differences are observed early in development and can inform efforts to help young ethnic minority children develop a strong socioemotional foundation.

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