

THE UNIQUE AND COMBINED IMPACT OF MOTHER AND CHILD TEMPERAMENTAL  
NEGATIVE REACTIVITY ON MOTHER-CHILD INTERACTIONS: THE PROTECTIVE  
ROLE OF MATERNAL COPING STRATEGIES

by

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*I dedicate this dissertation to Dr. Henry C. Kinley and Dr. Robert Harris. In the words of Daryl Coley “You didn’t let me fall. You didn’t let me fail. But God, you held me up. And your victory prevailed.” Thank you. To my nieces and nephews, you can do anything you set your mind to. Auntie Lissa/Missy is living proof. And last but certainly not least, I dedicate this to the little Black girl from New Orleans. We did it!*

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by

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The mother-child relationship can be influenced by individual characteristics of the mother and child. Negative reactivity, a dimension of temperament, has been shown to be highly heritable, yet research has only focused on the consequences of child negative reactivity. It is important to understand if levels of negative reactivity are associated with displays of negative behavior in mothers and their children, given these behaviors can be barriers to conflict resolution in familial relationships. Additionally, it is important to understand if maternal positive coping skills may act as a buffer between negative reactivity and negative behavior in mother-child interactions, as these skills could offer protective benefits to the relationship. In this dissertation, I had three principal aims. The first aim was to investigate if both maternal and child negative reactivity would individually and jointly contribute to observed negativity in a discussion of conflict and their associations with the type of resolution reached. The second aim was to investigate if positive maternal coping behaviors would act as a buffer between negative reactivity and observed negativity during a discussion of conflict. And lastly, the third aim was to identify

distinct mother-child dyads based on the negative affectivity domain of temperament, and whether those dyad groupings had associations with observed negativity in the discussion of conflict as well as the resolution outcomes. Participants included 189 mother-child dyads, where the study child participant ranged in age between five and seven years old. Variable-centered analyses were used to test the first two aims of the study and did not reveal significant associations between mother or child negative reactivity and the observed negativity variables, outside of the initial bivariate correlations. A person-centered approach was the focus of the third aim and results revealed that there were two distinct mother-child negative reactivity profiles among the study participants: a group where mothers reported moderate levels of negative reactivity in themselves and slightly lower levels in their children (Moderate Mother/ Slightly Low Child Negative Reactivity) and a group where mothers reported higher levels of negative reactivity in themselves and slightly higher levels of negative reactivity in their children (High Mother/Slightly High Child Negative Reactivity). There were no significant associations between the dyadic reactivity groups and observed negativity in the conflict discussion. However, a main effect emerged for the racial or ethnic group of children in these groups and the resolution outcomes, where children that were identified as African American were more likely to have the resolution outcome be a “win/loss” in favor of the mother when compared to children identified as European American. Results are discussed in terms of temperament heritability and the usefulness of person-centered analyses in conjunction with traditional variable-centered approaches.



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## **CHAPTER 1**

### **INTRODUCTION**

The mother-child relationship is the first relationship most children experience in their lives. This symbiotic relationship between a mother and her child is influenced by a variety of factors, including positive and negative emotions in the relationship (Dix, 1991). In Dix's survey of the literature, he found that parents who exhibit more positive emotions (i.e., warmth and sensitivity) with their children were more likely to see better developmental outcomes in their children as opposed to parents who exhibit more negative emotions (e.g., hostility). As emotion in the parent-child relationship is an essential marker of the health of the relationship (Dix, 1991), it is important to understand what behaviors or characteristics can influence these emotions, especially displays of negative emotions.

Mothers and their children both bring to the relationship their own characteristic way of displaying emotions in reaction to the environment. These characteristics can impact mother-child interactions, particularly during challenging, emotionally charged situations. While the effects of mothers' and children's emotional characteristics have been widely studied in relation to mother-child interaction quality, there are few studies that consider the combination of both mother and child emotional characteristics in the same study (Scott & Hakim-Larson, 2021). The current study contributes to the parenting literature in this way, while also investigating whether some mothers may be equipped with skills to manage their emotional reactions and create more harmonious parent-child interactions when navigating difficult situations.

## **Background Literature**

Temperament refers to the characteristic way an individual responds to the environment (Rothbart, 2007). A wide range of research has investigated temperament throughout childhood, including the heritability of temperament (Buss & Plomin, 1986), the stability of temperament over time (Neppl et al., 2010), and the various dimensions of temperament (Rothbart & Derryberry, 1981; Thomas & Chess, 1977). One of the most widely studied dimensions of temperament is negative reactivity. Negative reactivity describes how an individual reacts to stressors within their environment, including distress and displays of anger, irritability, and fear (Rothbart & Bates, 2006). Higher levels of negative reactivity in children have been linked to aggressive behaviors (Crockenberg et al., 2008), increases in emotional eating (Steinsbeck et al., 2018), and more depressive and anxiety symptoms (Lonigan et al., 1999). Due to these potential developmental consequences, negative reactivity is an important child characteristic to understand. It is also one of the most heritable dimensions of temperament, suggesting that individuals are genetically predisposed to negative reactivity (Zheng et al., 2016) and that parents are also likely to be emotionally reactive (Brenning et al., 2020). However, there are but few studies that consider negative reactivity of parents and their children in the same study or how the combination of these parent and child characteristics may relate to the quality of parent-child interactions (Scott & Hakim-Larson, 2021). It is important to continue to research negative reactivity in the parent-child relationship as such research may have implications for parental intervention programs.

### *Child and Mother Negative Reactivity*

**Negative Reactivity in Children.** Negative reactivity is an element of temperament. In children, it can be characterized by experiencing and exhibiting negative emotions such as frustration, sadness, and decreased ability to soothe oneself (Scott & Hakim-Larson, 2021). It can be identified in children as early as infancy and has been found to show stability from toddlerhood through adolescence (Neppl et al., 2010). In the 2010 longitudinal study, Neppl and colleagues examined the consistency of three dimensions of temperament (i.e., positive affectivity, negative reactivity, and constraint) as reported by mothers and fathers, over three time periods of the study child's life: toddlerhood (2 years), early childhood (3 to 5 years), and middle childhood (6 to 10 years) (Neppl et al., 2010). Results revealed the continuity of each dimension of temperament from toddlerhood through middle childhood. The results also revealed consistency in the report of temperamental characteristics when comparing mothers' reports to fathers' reports.

Research in this area has focused on the associations between negative reactivity and child behavior, specifically child externalizing behavior. Previous research has shown that children with negatively reactive temperaments display more aggressive behaviors, are more likely to engage in conflict with same sex peers, and are more likely to exhibit externalizing behaviors later in life (Rubin et al., 2003). The reasons why children with negative reactive temperaments display these behaviors are two-fold. First, these children are more easily frustrated by their environments, and thus encounter more emotion-eliciting situations (Calkins et al., 1999). This may be difficult to navigate during childhood when emotion regulation skills are still developing. Second, as previously mentioned, there is a genetic component to

temperament, meaning parents may also be negatively reactive. Children's difficulty in navigating their environments with a negative temperament style may be exacerbated by hostility and discord in the parent-child relationship. Rubin et al. (2003) found that children with a reactive temperament are more likely to have mothers with higher levels of maternal negativity. Previous research has also considered temperament of children in comparison to their biological and adoptive parents. In Waller and colleagues' (2016) study examining temperamental pathways to antisocial behavior in a sample of adopted children, the researchers compared personality traits of children and their biological parents and found associations between biological mother's and child's traits of fearlessness and child antisocial behaviors. However, positive parenting of adoptive parents moderated the relationship between children high in fearlessness at risk of developing antisocial behaviors (Waller et al., 2016).

Thus, the combination of genetics and environment are relevant with temperament, but the research is not as robust when considering if there is an interaction between a parent's temperament and their child's temperament, and if that interaction has any relation to children's social-emotional development (Lewis, 2014; Scott & Hakim-Larson, 2021). This is particularly important to consider in the context of dealing with conflict in the mother-child relationship and can have implications for conflict resolution (Nelson et al., 2014).

**Negative Reactivity in Mothers.** In mothers, negativity is often evaluated in the context of parenting behaviors. Researchers have linked mothers' internal emotional states to negative parenting behaviors, including intrusiveness (Dix, 1991), use of physical and verbal punishment (Conger et al., 2010), and being overly critical while not expressing warmth (Scott et al., 2020). Research has shown that negative parenting experiences, characterized by displays of anger and

distress with their children, are behaviors that have developed due to how mothers have internalized responses to difficult or stressful events over time (Dix, 1991; Tooby & Cosmides, 2008). The root cause for these negative parenting behaviors is also due to genetic (Dix, 1991) and environmental influences (Conger et al., 2010). As mothers who are predisposed to negative reactivity navigate their parenting relationship, they may not know how to process their feelings and emotions when dealing with stressful situations with their children. Moreover, this inability to regulate their emotions may lead to maternal negativity, which in turn tends to lead to more child behavior problems, and further contributes to a stressful relationship between the mother and her child.

It is important to continue to consider the individual differences in mothers that contribute to negative parenting behaviors, given negative parenting behaviors have been linked to less desirable outcomes such as maternal depression and child externalizing behavior. In a 2020 study by Conger and colleagues, the researchers investigated whether changes in a mother's negative reactivity predicted changes in her aversive, or negative, parenting behaviors. Conger and colleagues found that when mothers' negative reactivity increased, their aversive parenting behaviors increased as well. Therefore, I expected that mothers high in negative reactivity would display more negative behaviors, evidenced by displays of more anger and irritation, in a mother-child conflict discussion.

**Interactions Between Maternal and Child Negative Reactivity.** Associations between maternal negativity and children's negative emotions have been investigated, with mothers' punitive responses and maternal distress both related to negative reactivity in children (Eisenberg & Fabes, 1994). Furthermore, researchers have found associations between children high in



negative emotionality and mother's tendency to exert behavioral and psychological control (Laukkanen et al., 2014). Researchers have also found interactions between maternal negativity and child negative reactivity in predicting chaos in the household (Chen et al., 2014), and interactions between maternal negativity and children's aggressive behaviors predicting conflict with their peers (Rubin et al., 2003). Therefore, the first aim of the current study was two-fold: to investigate how the (1) individual and (2) combined contributions of maternal negative reactivity and child negative reactivity relate to behaviors in an observed mother-child interaction of a discussion of conflict. In exploring the first goal of this aim, it was my expectation that both sources of negative reactivity would contribute to increased mother-child conflict, as shown in past research. In Scott and Hakim-Larson's 2021 study, the researchers found that when mothers self-report high levels of negative reactivity, they also report higher levels of negative reactivity in their children (Scott & Hakim-Larson, 2021). Maternal report of child temperament is a widely accepted measure of children's temperamental characteristics and has been used extensively in previous studies. In the early years of child development, children spend their time with their mothers almost exclusively so it could be argued that mothers would be the best judge of their child's temperament. Still, it is possible that monorater bias contributes to some of this shared variance between maternal reports of both mother and child negative reactivity. However, in previous studies where child temperament was measured by both maternal report and observational measures, researchers found agreement between the methods (Bridges et al., 1993).

The combination of maternal and child negative reactivity is important to consider in the context of conflict in the mother-child relationship. Therefore, the second part of the first aim

was to investigate how the combination of maternal and child negative reactivity relates to behaviors in an observed mother-child interaction discussing conflict. Patterson's coercion theory (1982) posits that negative behaviors in the mother-child relationship can occur through a transactional process. In trying to redirect their child's negative behavior, mothers may reinforce children's negative behaviors, which in turn, can cause the mother to react negatively. This process continues until either the mother or child "wins" (Smith et al., 2014). Conflict between a mother and her child is expected; if negative reactivity in either dyad member relates to more conflictual interactions, the combination of high negativity in both mothers and children – a likely scenario considering the heritability of this temperament trait – is expected to have a particularly detrimental impact on mother-child interactions.

### ***Mother-Child Conflict***

The quality of the mother-child relationship is imperative, as various outcomes like child health (Larkin & Otis, 2019), child socializing behavior (Lincoln et al., 2017), and child academic outcomes (Morrison et al., 2003), are linked to how mothers interact with their children. One of the more objective strategies for evaluating the mother-child relationship is through observations of mother-child interactions. These interactions are often coded for parenting behaviors like sensitivity, intrusiveness, and negativity. For the purposes of this dissertation, I investigated how mothers interact with their children and how children respond to their mothers in a mother-child interaction in the context of a conflict discussion (see Nelson et al., 2014).

Conflict in the mother-child relationship is expected and can be healthy in building children's social competence (Maccoby, 1992). The need to adequately resolve conflict is great,

as previous research has shown that unresolved conflict in the parent-child relationship can lead to deterioration in the relationship (García-Ruiz et al., 2013; see Nelson et al., 2014). As noted by Nelson and colleagues (2014), one of the difficulties in resolving parent-child conflict is due to the fact that the parent-child relationship is not a relationship of equal partners. Parents, especially mothers, are authority figures that gradually permit greater child autonomy over time as children develop. As can be expected, when in conflict with their children, parents may assert their authority to increase child compliance (Recchia, Ross, & Vickar, 2010).

Discussing conflict effectively is important as it is the pathway to resolution. Nelson and colleagues (2014) rated three types of conflict discussion resolution outcomes: compromise, win-loss, and standoff. In a compromise outcome, both individuals in the conflict discussion have some of their goals met in the solution. Typical compromise-type resolutions allow both individuals in the discussion to state their objectives in a non-threatening environment. In a win-loss resolution, only one of the individual's goals are met in the conflict discussion. Typical win-loss type resolutions may include discussions that seem one-sided, either due to either member being met with oppositional comments throughout the discussion or a member who is not able to advocate their goals adequately due to less power in the relationship. In a standoff outcome, individuals are not able to come to a resolution. They may end the conflict without a clear path forward due to excess negativity in the interaction or dyad members' unwillingness to give up control.

Characteristics of mother-child conflict interactions relate to the resolutions reached. Constructive planning comments are those that include statements that propose, discuss, modify, and ask questions about the ways to resolve future conflicts (Nelson et al., 2014). In contrast,

oppositional comments, are conversational tactics such as the use of persuasion, disagreement, and blame (Nelson et al., 2014). Previous research has shown that the use of oppositional comments is more likely to result in conflict discussions where a resolution is not reached (Nelson et al., 2014; Recchia et al., 2010). Previous research has also shown that the type of resolution reached in a mother-child conflict discussion is related to the quality of the parent-child relationship (Steinberg, 1990). As negative reactivity in mothers relates to more negative parenting behaviors, I suspected highly reactive mothers would display higher levels of negativity in the conflict discussion, resulting in a win-loss outcome. However, when combined with the child's negative reactivity, I believed both individuals would use more oppositional comments, resulting in standoff outcomes.

### ***Maternal Coping Strategies***

Coping is a mechanism by which individuals deal with stress, either employing cognitive or behavioral strategies to deal with the demands of stressful events (Folkman & Lazarus, 1980). Childrearing can be stressful and have moments of contention. When managing conflict with children, it is important to understand what coping strategies may be beneficial to mothers in decreasing negativity and resolving conflict. Mothers' coping strategies can buffer the impact of negative affect in the family (Gudmundson & Leerkes, 2012; Martorell & Bugental, 2006; Yap et al., 2008); thus, another contribution of this study is the consideration of maternal coping strategies as a moderator of the impacts of negative reactivity on mother-child relationships. Therefore, a second aim of the study was to investigate the protective effect of maternal coping strategies on the relation between maternal and child negative reactivity and mother-child conflict. Folkman and Lazarus (1988) identified eight coping processes in the development of the

Ways of Coping Questionnaire, six of which can be considered adaptive ways to manage stress. For this dissertation, I was interested in the protective effects of these positive coping processes, which may have important practical implications for increasing mothers' resilience. As negative reactivity is a fairly stable individual characteristic, it is particularly important to identify coping strategies that can assist mothers as they navigate emotionally challenging situations with their children. These protective coping strategies can then be used as levers for intervention. The practical advantages of examining negative coping strategies that exacerbate the negativity mothers and children already bring to interactions are not as large.

As defined by Folkman et al., (1986), positive coping processes include self-control (taking action to regulate one's behavior and feelings), seeking social support (making an effort to seek and receive support from one's social network), accepting responsibility (holding oneself accountable for own actions in an effort to rectify a situation), planful problem-solving (identifying problems and developing a plan of action to address issues), and positive reappraisal (focusing on self-improvement and growth, especially through spiritual practices). The distancing strategy (detaching oneself) is often described as a positive coping mechanism, however in the context of the proposed study, it is not as clear how employing such processes could influence responsiveness in the mother-child relationship. In a 2014 study examining associations between parents of children with autism, their characteristics (e.g., demographic information, socioeconomic status) and types of coping strategies parents use to deal with stress, Dardas and Ahmad found that parents who use distancing coping strategies were more likely to report higher levels of parent-child distress and difficult child interactions on a parenting stress questionnaire. The researchers argue that distancing coping strategies may be beneficial, but only

if parents are trained in a way to use them appropriately that does not invoke more stress with their child (Dardas & Ahmad, 2014).

Research investigating the benefits of maternal coping behaviors has found that positive coping behaviors are linked to less depressive symptoms in mothers, more positive mother-child interactions, and less behavioral and emotional problems in their children (Herman-Stahl et al., 1995; Smith Bynum & Brody, 2005). Coping strategies have also been found to be helpful for mothers experiencing stress from various sources (e.g., stress from the marital/romantic relationship, stress from work, etc.) and can be protective of mothers' mental and physical health (Lewinsohn et al., 1988; Sarason & Sarason, 1984). Furthermore, maternal coping behaviors have been found to moderate the relationship between children's negative emotions and mothers' own parenting behaviors (Gudmundson & Leerkes, 2012). In a 2012 study, Gudmundson and Leerkes found that "engaged" coping styles of mothers, characterized by behaviors where the mother takes part in problem solving, finding solutions, and dealing with her emotions, acted as a buffer between children's temperamental reactivity and maternal sensitivity. When mothers demonstrated lower levels of engaged coping, their child's temperamental reactivity had a more negative impact on maternal sensitivity, or how quickly and appropriately the mother responds to her child's cues (Leerkes et al., 2009), compared to mothers high on engaged coping (Gudmundson & Leerkes, 2012). The proposed study will add to the research on whether maternal coping behaviors act as buffer between maternal and child negative reactivity, and the combination of maternal and child negative reactivity, in relation to mother-child conflict interactions. As the parent-child relationship may be the first experience a child has with conflict,

it is important to understand what maternal factors can promote the healthy development of resolution behaviors.

### ***Variable-Centered Approach versus Person-Centered Approach***

Considering the types of analyses that can be done to effectively investigate the combination of mother and child negative reactivity, two possibilities arise: a variable-centered approach and a person-centered approach. In a variable-centered approach, the focus is on investigating associations among variables. Variable-centered approaches aim to find associations between the predictor variable(s) and outcome variable(s), based on homogenous groups (Laursen & Hoff, 2006). Variable-centered approaches typically include analyses such as correlations, means testing, regressions, and structural equation models. According to Laursen and Hoff (2006) these statistical techniques are adequate to analyze questions that are concerned with the ability or strength of a predictor variable to explain the variance in an outcome variable. Laursen and Hoff also argue that although the ability to explain variance in an outcome variable by a predictor variable is a benefit of variable-centered techniques, these techniques are troubled by the inability to generalize results, as it is rare that variance is distributed equally across the population (i.e., large standard errors).

An alternative approach is person-centered. In a person-centered approach, the differences among individuals are based on how variables are related to each other. Samples are often heterogeneous in relation to how the predictors operate on outcomes (Laursen & Hoff, 2006; Magnussen, 2003). Person-centered approaches typically include cluster analyses, as this type of statistical analysis is adequate for questions that investigate group or individual differences in patterns of development and associations among variables (Laursen & Hoff,

2006). In person-centered approaches, the focus is less on predictors and outcomes and more on looking holistically at the properties of individuals and their environments. Laursen and Hoff posited that a strength of the person-centered approach is description, as person-centered methods can identify distinct categories of individuals that share similar attributes. Unlike variable-centered approaches, generalization to similar populations can be inferred. Considering both variable-centered and person-centered approaches have strengths and can provide unique results, both techniques should be employed to best understand relations between mother and child characteristics.

### **The Current Study**

The current study used both variable-centered and person-centered analyses to understand how child and mother negative reactivity relate to conflict interactions. I investigated mother negative reactivity, operationalized as mothers' self-report of affective intensity of negative emotions, and child negative reactivity, operationalized as mothers' reports of their five- to seven year-old child's temperamental negative reactivity. With this approach, my goal was to investigate whether levels of mother and child negative reactivity uniquely and interactively explain differences in qualities and resolution of mother-child conflict interactions. However, if I would have solely used a variable-centered approach in the current study I may have missed the opportunity to investigate deeper how mother-child pairs naturally occur. As proposed by von Eye and Bogat (2006), populations are likely to be heterogeneous and some of the variation we may see in mother and child negativity can be related to individual differences. Therefore, I also used a person-centered approach. A person-centered approach is rooted in examining behavior at the individual level, or in this case, the dyadic level (Bergman & Trost, 2006; von Eye & Bogat,



2006). This approach enables one to create a typology of mother-child dyads based on their negative reactivity. For the purposes of this dissertation, the combination of a variable-centered and person-centered approach to understanding mother and child negative reactivity provided a more comprehensive view of how these characteristics relate to mother-child conflict interactions. This blended approach could have possibly explained if and why there may be differences between less or more mother and child negative behavior, by delving into the complex nuances of various levels of mother and child negativity in mother-child dyads. The current study had the following hypotheses:

***Maternal and Child Negative Reactivity Hypothesis***

**Hypothesis 1A:** I predicted that there would be a significant, positive association between maternal and child negative reactivity, where higher levels of maternal negative reactivity would be related to higher levels of mother's report of child negative reactivity.

**Hypothesis 1B.1:** I predicted that there would be significant associations between maternal and child negative reactivity and the mother's and her child's behaviors during a discussion of conflict. I hypothesized that when mothers reported higher levels of their own negative reactivity, they would display more negative parenting behaviors in a discussion of conflict with their child. I hypothesized that when mothers reported their child had higher levels of negative reactivity, the child would display higher levels of negative mood during a discussion of conflict.

**Hypothesis 1B.2:** Also, consistent with Patterson's (1982) cycle of coercion, I predicted mothers would display more negative behaviors during conflict interactions when children were

more negatively reactive, and children would display more negativity during conflict interactions when mothers were more negatively reactive.

**Hypothesis 1C:** I predicted that there would be significant associations between maternal and child negative reactivity and the mother's and her child's resolution during a discussion of conflict. I predicted that mothers who report higher levels of their own negative reactivity, the resolution outcome would more likely be a win-loss resolution favoring the mother compared to a compromise. I predicted the additive effect of mother and child negative reactivity would increase the likelihood of the conflict resulting in a standoff.

#### ***Protective Role of Maternal Coping Strategies***

**Hypothesis 2:** I predicted maternal coping practices would act as a moderator of the relationship between maternal/child negative reactivity and mother-child conflict interactions. I predicted that in dyads where mothers are higher in negative reactivity but report more positive coping behaviors, consequences for conflict behaviors and resolution would be lessened compared to mothers higher in negative reactivity without positive coping behaviors. Similarly, I predicted that in dyads where children are higher in negative reactivity, if their mothers reported more positive coping behaviors, consequences for conflict behaviors and resolution would be lessened compared to dyads with children higher in negative reactivity without maternal coping strategies. Finally, I predicted positive maternal coping could buffer the additive impact of mother and child negative reactivity combined on mother-child conflict negativity and resolution.

### *Types of Mother-Child Dyads*

**Hypothesis 3A:** I predicted that distinct groups of mother-child dyads would emerge from the analysis, based on maternal and child negative reactivity. I hypothesized that four types of dyads would emerge: dyads where the mother and child are both low in negative reactivity, dyads where the mother and child are both high in negative reactivity, dyads where the mother is low in negative reactivity and the child is high in negative reactivity, and dyads where the mother is high in negative reactivity and the child is low in negative reactivity. As the negative reactivity dimension of temperament was believed to be highly heritable, dyads where both the mother and her child were either high or low in negative reactivity were expected to be most common, as the child would have inherited this trait. However, considering the person-centered approach, I did not expect that the population would be easily classifiable into two dichotomous groups. I expected variability in the population and therefore believed the other two dyads were likely to emerge as well, where at least one member of the dyad was high in negative reactivity while the other member was low.

**Hypothesis 3B:** I expected that mother-child negative reactivity types would have distinct associations with the observed mother-child conflict outcomes. I hypothesized that the high mother-high child group would be characterized by the most mother and child negativity during conflict discussions. I also hypothesized that the high mother-low child group would be characterized by the second-most mother and child negativity during conflict due to the power dynamics inherent in mother-child relationships and mothers' tendency to set the emotional tone of the interaction. These predictions were somewhat different than the variable-centered

predictions, highlighting the possibility of the two approaches providing different and complementary information about mother-child dyads.

**Hypothesis 3C:** I expected that mother-child negative reactivity types would have distinct associations with the three conflict resolution types. I hypothesized that in mother-child dyads where the mother was higher in negative reactivity and the child was lower negative reactivity, the conflict discussion would be more likely to result in a win-loss resolution, in favor of the mother. I believed that mother-child dyads where both the mother and child were higher in negative reactivity, the discussion would be more likely to result in a standoff resolution. These predictions were in-line with the variable-centered predictions.

## CHAPTER 2

### METHOD

#### Participants

For this dissertation, I used a secondary data analysis and pulled data from a larger study that focused on the factors surrounding mother-child conflict interactions (Nelson et al., 2014). In the original study, 191 mother-child dyads from the Dallas, TX metropolitan area were examined at two time points. Families were recruited through various strategies: (1) through kindergarten and first grade teachers at a local public school district sending letters home with students, (2) through letters sent home with students participating in school-sponsored summer camps, and (3) posting of flyers at public libraries in the Dallas, TX metropolitan area. The letters and flyers contained information about the study, how families would be compensated for their participation, and information to contact the research lab if interested in participating.

Demographic information from the original study revealed children ranged in age from five to seven years old ( $M = 77.64$  months,  $SD = 9.48$ ). Approximately half of the children were female (47%). The racial/ethnic break-down of children was: 56% European American, 15% African American, 8% Hispanic, 3% Asian American, and 18% identified as mixed or other ethnicities. For mothers, the median education level was a 4-year college degree and the mean age was 37.40 years. The socioeconomic status of the families was based on income-to-needs ratios and were calculated using poverty thresholds for a given family size during the year in which data were collected. Of the study families, 36% were considered low income (an income-to-needs ratio less than two), 52% were considered middle income (an income-to-needs ratio

between two and five), and 12% were considered high income (an income-to-needs ratio greater than five; Nelson et al., 2014).

### **Procedure**

At Time 1, mothers and their children visited The Family Research Laboratory at The University of Texas at Dallas to complete a variety of tasks. The approximate time of the visit was one hour. At the beginning of the visit, mothers and their children received information about the study and were informed that their participation was voluntary and that they could choose to end the visit at any time. Research assistants obtained consent from the mothers and assent from the children. During the visit, mothers completed questionnaires on their emotional reactions, their child's behavior, their coping strategies, and topics of conflict with their child.

While the mother completed the questionnaires, her child worked with a research assistant to also identify common sources of mother-child conflict. The research assistant asked the child whether they had discussed each of 36 conflict topics with their mother in the past few weeks. When the child indicated they had discussed the topic with mom, they were then presented with four pictures of varying facial expressions. The expressions ranged in emotion, from "calm" to "angry" and the research assistant also provided examples of when one could experience these emotions. The examples and pictures were used to help aide the child in understanding each of the ratings of the four-point rating scale. The child could make their choice as to how upset each source of conflict made them by pointing to one of the four pictures.

After completing reports of conflict topics and emotional reactions by both the mother and her child, the research assistants compared the answers and chose two topics. The chosen topics were ones that both dyad members indicated the pair had recently discussed, and that

those discussions were emotionally charged. The mother-child dyad was reunited and given eight minutes to discuss the two topics however they would like. Participants were provided with an index card containing the following prompts to guide their discussion, if needed: “What is the problem? How does the problem begin? Who becomes involved in the problem? What might be done to avoid the problem in the future?” The discussions were filmed and later rated by trained coders. Of the 191 mother-child dyads, the research assistants were unable to code six of the recorded discussions due to equipment malfunction, mothers’ use of a foreign language during the discussion, or mothers’ refusal to be filmed (Nelson et al., 2014).

## **Measures**

### ***Children’s Negative Reactivity.***

The Children’s Behavior Questionnaire Very Short Form (CBQ-VSF; Putnam & Rothbart, 2006) was used to assess children’s negative reactivity. It is a 36-item mother-report questionnaire on temperament, focusing on the dimensions of negative affectivity, surgency, and effortful control based on the child’s behaviors and reactions over the past six months. Mothers completed each item of the CBQ using the following response options: 1 (*extremely untrue*), 2 (*quite untrue*), 3 (*slightly true*), 4 (*neither true nor false*), 5 (*slightly true*), 6 (*quite true*), 7 (*extremely true*), and 8 (*not applicable*). When scoring the responses, a response of eight on any item was coded as a missing response and not included in the calculations. For this dissertation, I used the Negative Affect Scale in my analyses. This scale is comprised of 12 items, such as: “Gets quite frustrated when prevented from doing something s/he wants to do”, “Seems to feel depressed when unable to accomplish some task”, and “Gets angry when s/he can’t find

something s/he wants to play with” (Putnam & Rothbart, 2002). Participants’ mean scores on this scale ranged from 1.92 to 6.25 with an internal reliability (Cronbach’s alpha) of 0.71.

### ***Mother’s Negative Reactivity***

The Affective Intensity Measure (AIM; Larsen & Diener, 1987) is a 40-item questionnaire that measures how individuals experience emotions. The items focus on reactions to various events and the emotions, both positive and negative, they may illicit. Mothers completed the measure by indicating how often they react, with a selection from the following response options: 1 (*never*), 2 (*almost never*), 3 (*occasionally*), 4 (*usually*), 5 (*almost always*), and 6 (*always*). One scale is derived from this measure, the Affective Intensity Total Score. This sum score is the total of all items, with scores ranging from 40 to 240 and an internal reliability (Cronbach’s alpha) of 0.89. For the purposes of this dissertation, I used the items of the AIM measure that measured negative reactivity. Previous research has investigated the validity of the AIM and its single factor scale. Researchers have proposed that there may be subscales within the AIM (Bagozzi & Moore, 2014; Weinfurt et al., 1994; Williams, 1989). In a 2011 study conducting confirmatory factor analysis, Bagozzi and Moore found a six-factor structure of the AIM; the six-factor model’s comparative fit index was acceptable for women ( $CFI = .94$ ) and for men ( $CFI = .97$ ). I used the six items Bagozzi and Moore identified in the “Negative Affectivity” factor loading of the six-factor model, utilizing reverse coding when necessary. A few sample items from this subscale include: “When I do feel anxiety, it is normally very strong.” and “My friends would probably say I’m a tense or ‘high- strung person.” To create the mother’s Negative Affectivity score in the current study, I created the mean score of the six items Bagozzi and Moore (2011) identified.



### ***Maternal Coping***

The Ways of Coping Questionnaire Revised (WCQ; Folkman & Lazarus, 1988) is a 66-item questionnaire exploring how respondents deal with stressful events. It contains items that consider what thoughts and behaviors people employ to cope with internal and external stressors. The WCQ was completed by mothers as a self-assessment of their ways of coping. Mothers replied using the following response options: 0 (*not used*), 1 (*used somewhat*), 2 (*used quite a bit*), and 3 (*used a great deal*). The WCQ has eight summary scales. Each scale is comprised of a subset of the items of the WCQ and is calculated by finding the mean of the items that make up the respective scale. For the purposes of this dissertation, I created a Positive Coping Composite, using five of the eight scales of the WCQ. This Positive Coping Composite had internal reliability (Cronbach's alpha) of 0.86.

The Self-Controlling scale includes items that refer to behaviors where individuals exercise self-control in response to a stressful encounter, such as "I tried not to act too hastily or follow my first hunch". The Seeking Social Support scale includes items that would suggest an individual sought support from a social network in response to a stressful event. For example, one of the items of this subscale is "I got professional help". The Accepting Responsibility scale includes items where the individual took accountability for their behavior in relation to the stressful event. For example, one of the items of this subscale is "I apologized or did something to make up". The Planful Problem-solving scale includes behaviors where the respondent employed planning and problem-solving tactics to cope with the stressful event. Examples of these types of behaviors include "I made a plan of action and followed it." Finally, the Positive Reappraisal scale includes behaviors where the respondent took inspired actions such as prayer

or self-improvement. An example from this scale includes “Changed or grew as a person in a good way.”

### ***Mother-Child Conflict Interactions***

Interactions were rated for various conflict characteristics and mother-child behaviors. The current study utilized ratings for maternal negativity, child negative mood, and conflict resolution during the discussion task. Around 25% ( $N = 45$ ) of the video-recorded discussions were double-coded for inter-rater reliability.

The ratings of maternal negativity were based on previous parent-child interaction coding (Neitzel & Stright, 2003). Negativity, which included displays of frustration, disrespect towards her child, and irritability, was rated from 1 (no negativity shown) to 5 (more often negative than not). During the conflict discussion, mothers who did not engage in negative behaviors received the lowest ratings on this scale, whereas mothers who were rated the highest on this scale engaged in negative behaviors for the majority of the conflict discussion (Nelson et al., 2014). The intraclass correlation coefficient was 0.88 for negativity (Nelson et al., 2014).

Ratings of child negative mood were rated within the same coding scheme. They ranged from 1 (no negativity shown) to 5 (more often negative than not). Children who were rated low on this scale did not display negative behaviors and were neutral or happy. Children who were rated high on this scale displayed negative behaviors such as irritability throughout the majority of the discussion. The intraclass correlation coefficients for this scale was 0.86.

Two research assistants coded the outcome of each discussion for the following resolution types: compromise, win/loss, or standoff. As explained by Nelson and colleagues (2014), when the child presented ideas for solution and both parties of the mother-child dyad

received at least some of what they proposed as a solution in the discussion, the research assistants coded the outcome of the discussion as a compromise resolution. The win/loss resolution type was coded if only one member of the dyad's solution was selected as the outcome or if the child was not a contributor to the solution. In all but one case, the mother was the "winner" in the win-loss resolution. A standoff resolution type occurred if the dyad did not resolve the disagreement. For both conflict topics discussed, inter-rater reliability was high (ICC Topic 1 = .90, ICC Topic 2 = .86). Research assistants coded 43% of cases as the compromise resolution type, 43% of cases as the win-loss resolution type, and 14% of cases as the standoff resolution type (Nelson et al., 2014).

### **Analysis Plan**

Data were analyzed using Stata version 16 (Statacorp, 2019). Preliminary analyses included running frequencies of the data to examine distributions, as well as performing any data cleaning or recoding to prepare the data for analysis. Initial correlations were run on all the study variables. Correlations included both mother and child study variables as well as demographic variables to identify potential control variables. Given the proposed study conducted analysis using secondary data, post-hoc power analysis for F tests were explored in Stata. The power level was set at .80 and p-value at .05.

To test the relationship among the variables using variable-centered analyses, I ran a series of regression models. Controlling for relevant demographic covariates, such as family income and child sex, I tested the main effects of mother and child negative reactivity on observed mother and child conflict interaction negativity scores using linear regressions. To test the combined effect of mother and child negativity, I created an interaction term after centering

each variable. This variable was included in the regression models, along with the main effects, to predict the observed mother-child conflict interaction negativity scores. Instances of multicollinearity among predictors was addressed using Variance Inflation Factor (VIF) and was calculated at the time of analysis. VIF assesses how much the variance of the regression coefficient is inflated due to high correlations between the predictors in the model.

To test the effect of mother and child negative reactivity on resolution outcomes, logistic regression models were run. In a series of models, the predictor variables were maternal negative reactivity, child negative reactivity, and the interaction between maternal and child negative reactivity; the outcome variable was each of the conflict resolution types compared to a reference group (win/loss vs. compromise, standoff vs. compromise, and win/loss vs. standoff). Logistic regression allowed for a dichotomous dependent variable and investigation of odds ratios.

The final variable-centered regressions included tests of maternal coping moderation. I tested moderation using a hierarchal regression model, organized in a series of steps. The hierarchal regression model allowed me to add predictors to the model in steps and assess each variable group's variance explained in the outcome. Based on the results of the initial correlations, I input the demographic covariates into the model at step one. Next, I added the main effects of maternal negative reactivity, child negative reactivity, and maternal coping at step two. At step three, I added two-way interaction variables between mother and child negativity reactivity, along with the other two-way interactions that make up the three-way interaction between mother reactivity, child reactivity, and mother coping: mother reactivity by mother coping and child reactivity by mother coping. Finally, in step four I included the three-way interaction variable (mother negativity x child negativity x maternal coping behaviors). To

interpret significant interaction effects, I conducted tests of simple slopes. The outcome variable was the observed conflict behaviors during the mother-child discussion. This procedure was replicated in a logistic regression for the conflict resolution outcome.

For the person-centered analyses, a latent profile analysis approach was selected as it is one of the person-centered methods used to identify homogenous subgroups within a sample. Furthermore, the latent profile analysis approach naturally groups individuals by examining between-person similarity in both the mean and variances of the indicators. Thus, it is possible that one group may be characterized by more or less variability around the mean. In the current study, latent profile analysis was used to identify a typology of mother-child negative reactivity with the indicators being maternal negative reactivity and child negative reactivity. Scott and Hakim-Larson used a similar type of analysis to create a model of mother-child (dyadic) temperament profiles in their 2021 study. They were able to group individuals by variables based on the best fit from the data instead of assigning dyads a-priori. I believed the latent profile analysis approach was beneficial for me to identify what types of dyads naturally existed in the dataset. To conduct the latent profile analysis, I ran a series of class solutions using the mother and child negative reactivity scores as the group identifiers. I calculated three fit indices and chose the model with the best fit given these indices.

The latent profile groups were analyzed in relation to the observed mother and child behaviors during the mother-child discussion of conflict using multiple regression. The predictor variables were any covariates, the cluster membership variable, the coping variable, and the interaction between the cluster membership variable and maternal coping. The outcome variable

was the observed scores of mother and child negativity during the conflict discussion. This procedure was replicated with logistic regression to predict conflict resolution.

## CHAPTER 3

### RESULTS

#### Preliminary Analyses

Once the merged dataset was created, there were 189 mother-child dyads in the analysis dataset. Frequencies were run on all variables for missing or unexpected values. Of the total number of cases in the analysis dataset, 96% ( $N = 183$ ) of the mother-child dyads had complete data on all study and demographic variables. In the original study, as noted by Nelson and colleagues (2014), the research assistants were unable to code six of the mother-child conflict discussions for various reasons, including equipment malfunction, mothers' use of a foreign language during the discussion, or mothers' refusal to be filmed. Descriptive information and correlations for the study variables and the demographic variables are shown in Table 1. Correlations revealed a negative association between family income and maternal coping strategies, where lower levels of income were related to higher scores on the positive coping composite. As expected, there was an association between observed maternal and child negativity during the conflict discussion; higher levels of maternal negativity observed during the conflict discussion was related to higher levels of child negativity observed during the conflict discussion. Also as expected, higher levels of maternal negative reactivity were related to higher levels of child negative reactivity; this association was small-to-moderate in size (Cohen, 1988).

The study child's gender was not included in the bivariate correlations as it is a categorical variable. However, an independent samples *t*-test revealed that there was a difference by gender for child negative reactivity scores. Mothers reported higher levels of negative reactivity for female children ( $M = 39.25$ ,  $SD = 0.91$ ) compared to mothers' reports of negative

reactivity for male children ( $M = 36.05$ ,  $SD = 0.81$ ),  $t(189) = 2.63$ ,  $p < .01$ . There were no associations observed between the child's gender and the other study variables (maternal negativity observed in the conflict discussion, child negativity observed in the conflict discussion, maternal negative reactivity, and maternal coping behaviors).

The study child's racial or ethnic group was also not included in the bivariate correlations as it is a categorical variable. An analysis of variance test was performed comparing the study child's racial or ethnic group to each of the study variables (maternal negativity observed in the conflict discussion, child negativity observed in the conflict discussion, maternal negative reactivity, and maternal coping behaviors). Table 2 displays the results from the ANOVA tests and shows that differences were not observed for any of the study variables by child race/ethnicity.

The conflict resolution outcomes were not included in the bivariate correlations as they are also categorical variables. A series of analysis of variance tests were performed comparing each of the conflict resolution outcomes to the study variables. Table 3 displays the results from the ANOVA tests and shows that differences were not observed for any of the study variables by the resolution outcomes. The resolution outcomes were also examined with the child's racial or ethnic group in a series of chi-squared of independence tests. Results revealed there was a significant relationship between racial or ethnic group and resolution outcome one,  $\chi^2(8, N = 184) = 17.41$ ,  $p = 0.03$ , and a significant relationship between racial or ethnic group and resolution two,  $\chi^2(8, N = 180) = 23.18$ ,  $p = 0.00$ .



**Table 1.** Descriptive Information and Correlations among Study Variables

Variables	<i>M(SD)</i>	<i>Range</i>	1	2	3	4	5
1. Income-to-Needs Ratio	2.77(1.64)	0-8					
2. Negativity (M)	3.06(1.33)	1-5	-0.06				
3. Negativity (C)	2.60(1.28)	1-5	-0.02	0.41**			
4. Negative Reactivity (M)	3.47(.74)	1-6	0.04	0.04	0.03		
5. Negative Reactivity (C)	3.13(.71)	1-7	-0.03	0.05	0.06	0.28**	
6. Coping Strategies (M)	1.30(.48)	0-3	-0.25**	0.05	-0.01	-0.03	0.06

Note. M = Mother; C = Child. \*  $p < .05$ , \*\*  $p < .01$ .

**Table 2.** One-Way Analyses of Variance of Study Child's Racial/Ethnic Identity and Study Variables

Variable		Sum of Squares	df	MS	F	p
Negativity (M)	Between groups	12.92	4	3.23	2.01	0.10
	Within groups	284.8	177	1.61		
Negativity (C)	Between groups	10.59	4	2.65	1.51	0.20
	Within groups	311.74	178	1.75		
Negative Reactivity (M)	Between groups	186.36	5	37.27	1.95	0.10
	Within groups	3492.78	183	19.09		
Negative Reactivity (C)	Between groups	471.72	5	94.34	1.33	0.26
	Within groups	13023	183	71.16		
Mother's Positive Coping Behaviors	Between groups	1947.94	5	389.59	1.89	0.10
	Within groups	37707	183	206.05		

Note. M = Mother; C = Child.

**Table 3.** One-Way Analyses of Variance of Resolution Outcomes and Study Variables

Variable		Sum of Squares	df	MS	F	p
<b>Resolution Outcome 1</b>						
Negativity (M)	Between groups	36.05	2	18.02	11.33	0.12
	Within groups	286.29	180	1.59		
Negativity (C)	Between groups	12.16	2	6.08	3.81	0.21
	Within groups	285.56	179	1.6		
Negative Reactivity (M)	Between groups	41.86	2	20.93	1.07	0.35
	Within groups	3557.18	181	19.65		
Negative Reactivity (C)	Between groups	288.53	2	144.26	2.06	0.13
	Within groups	12673.90	181	70.02		
Mother's Positive Coping Behaviors	Between groups	621.72	2	310.86	1.48	0.23
	Within groups	38056.4	181	210.26		
<b>Resolution Outcome 2</b>						
Negativity (M)	Between groups	39.49	2	19.74	12.54	0.15
	Within groups	277.06	176	1.57		
Negativity (C)	Between groups	13.72	2	6.86	4.3	0.28
	Within groups	280.90	176	1.60		
Negative Reactivity (M)	Between groups	7.81	2	3.91	0.19	0.82
	Within groups	3551.83	177	20.07		
Negative Reactivity (C)	Between groups	56.52	2	28.26	0.39	0.68
	Within groups	12736.34	177	71.96		
Mother's Positive Coping Behaviors	Between groups	193.86	2	96.93	0.45	0.64
	Within groups	37835	177	213.76		

Note. M = Mother; C = Child.

## **Hypothesis 1**

Hypothesis 1 had three sub-parts. Hypothesis 1A proposed that there would be a positive association between maternal negative reactivity and child negative reactivity. To examine this relationship, I performed a partial correlation, accounting for the covariates family income-to-needs ratio and child gender. When controlling for family income and child gender on the relationship between maternal negative reactivity and child negative reactivity, there was a positive partial correlation of  $r = 0.28, p < .01$ .

The second part of hypothesis one, Hypotheses 1B.1 and 1B.2, proposed that when mothers are more negatively reactive, they will display more negative behaviors in a conflict discussion with their child, and when children are more negatively reactive, they will display more negativity during the conflict discussion (Hypothesis 1B.1). Before performing the regression analyses, I centered each of the study variables that would be entered as predictors or covariates in the regression models, and I created an interaction term by multiplying centered maternal negative reactivity by centered child negative reactivity. Models were run separately for each outcome variable: one with the covariates, maternal negative reactivity, and child negative reactivity predicting maternal negativity, and one with the covariates, maternal negative reactivity, and child negative reactivity predicting child negativity. The results are displayed in Table 4. Both models were non-significant, indicating mothers with higher levels of negative reactivity were not more likely to display more negative behaviors in a conflict discussion with their child and children with higher levels of negative reactivity were not more likely to display more negative behaviors during the conflict discussion with their mothers. To test Hypothesis 1B.2, the interaction between maternal negative reactivity and child negative reactivity was

entered in the models. When added to each model, the interaction between maternal and child negative reactivity did not significantly predict maternal negativity or child negativity.

Hypothesis 1C proposed that when mothers are more reactive, the conflict resolution would more likely be one-sided (“win-loss” resolution favoring the mother) compared to the other conflict resolution outcomes (compromise or standoff). To test this hypothesis, I performed a series of logistic regression analyses (one model for each resolution outcome), entering the predictor variables of maternal negative reactivity, child negative reactivity, the interaction between maternal negative reactivity and child negative reactivity and the covariates of child gender and family income-to-needs ratio predicting conflict resolution as the outcome variable. The outcome variable was entered in each of the models with the following contrasts: win/loss versus compromise, win/loss versus standoff, and compromise versus standoff. Each dyad discussed two conflict topics resulting in two resolution outcome variables (Topic 1 and Topic 2). The results of these analyses are presented in Table 5. The logistic regression models revealed that none of the main effects nor the interaction term predicted the odds of a “win/loss” resolution favoring the mother versus a compromise or a standoff in either conflict discussion Topic 1 or Topic 2. Furthermore, the model revealed that none of the main effects nor the interaction term predicted the odds of a standoff versus a compromise in either conflict discussion Topic 1 or Topic 2.

**Table 4.** Multiple Regression Analysis with Maternal Reactivity, Child Reactivity, and Demographic Variables Predicting Maternal Negativity and Child Negativity Observed in the Conflict Discussion

Variable	Negativity (M)						Negativity (C)						
	R2	ΔR2	Unstandardized Coefficients		Standardized Coefficients		p	R2	ΔR2	Unstandardized Coefficients		Standardized Coefficients	
			B	SE B	B	p				B	SE B	B	p
Negative Reactivity (M)	0.01	-0.01	0.01	0.02	0.03	0.67	0.01	-0.02	0.00	0.02	0.02	0.84	
Negative Reactivity (C)			0.00	0.01	0.02	0.76			0.01	0.01	0.06	0.48	
Family Income to Needs Ratio			-0.05	0.06	-0.06	0.39			-0.02	0.06	-0.02	0.78	
Child Gender			-0.19	0.20	-0.07	0.35			-0.08	0.20	-0.03	0.68	
Negative Reactivity (M) X Negative Reactivity (C)			0.00	0.00	0.06	0.46			0.00	0.00	0.03	0.69	

Note. M = Mother; C= Child.

**Table 5.** Maternal Reactivity, Child Reactivity, and Demographic Variables Predicting Resolution Type

	Log-odds B (SE B)						Odds Ratio		
	1 vs. 2	p	2 vs. 3	p	1 vs. 3	p	1 vs. 2	2 vs. 3	1 vs. 3
<b>Resolution 1 Outcome</b>									
Negative Reactivity (M)	0.02 (0.04)	0.95	-0.03 (0.05)	0.86	-0.06 (0.05)	0.24	1.03	0.97	0.94
Negative Reactivity (C)	-0.02 (0.02)	0.89	-0.04 (0.03)	0.74	-0.02 (0.03)	0.38	0.98	0.96	0.98
Negative Reactivity (M) X Negative Reactivity (C)	0.03 (0.00)	0.99	0.00 (0.00)	0.99	0.00 (0.00)	0.40	1.00	1.00	1.00
Family Income to Needs Ratio	0.10 (0.10)	0.90	0.21 (0.13)	0.95	0.11 (0.13)	0.38	1.10	1.23	1.12
Child Gender (1 - Male)	0.09 (0.33)	0.55	0.52 (0.45)	0.71	0.48 (0.44)	0.28	1.09	1.68	1.62
<b>Resolution 2 Outcome</b>									
Negative Reactivity (M)	0.01 (0.03)	0.67	-0.01 (0.05)	0.78	-0.01 (0.05)	0.87	1.01	0.98	1.00
Negative Reactivity (C)	0.04 (0.07)	0.56	-0.09 (0.1)	0.40	-0.02 (0.03)	0.42	1.04	0.91	0.98
Negative Reactivity (M) X Negative Reactivity (C)	0.00 (0.00)	0.44	0.00 (0.00)	0.51	0.00 (0.01)	0.51	1.00	0.99	1.00
Family Income to Needs Ratio	0.04 (0.1)	0.63	-0.06 (0.13)	0.62	-0.07 (0.13)	0.62	1.05	0.93	0.94
Child Gender (1 - Male)	-0.03 (0.34)	0.92	-0.23 (0.42)	0.58	-0.24 (0.43)	0.58	0.96	0.78	0.79

Note. M = Mother; C = Child. 1 = compromise; 2 = win/loss; 3 = standoff.

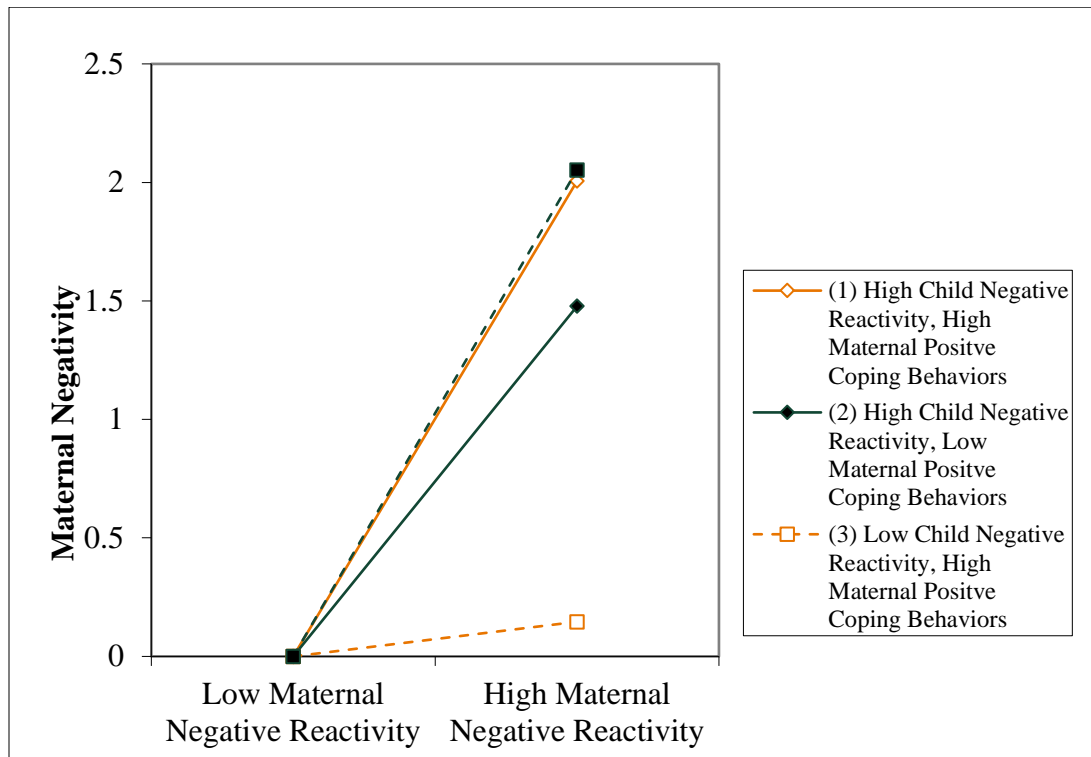
## **Hypothesis 2**

Hypothesis 2 proposed that maternal coping practices would moderate the relationship between maternal negative reactivity, child negative reactivity, and mother-child conflict interactions. To test this hypothesis, I performed two separate hierarchical linear regression models to examine associations between the predictor variables including maternal negative reactivity, child negative reactivity, mother's positive coping behaviors, and the identified covariate demographic variables with the outcome variables of maternal negativity observed during the mother-child conflict discussion (first model) and child negativity observed during the mother-child conflict discussion (second model).

The results of the first hierarchical regression model predicting maternal negativity are displayed in Table 6. For the first step, I entered the covariates and they were not significant, indicating the demographic covariates did not explain the variance in mother's negative behaviors observed in the mother-child conflict discussion. In the second step, I entered the main effects of maternal negative reactivity, child negative reactivity, and maternal positive coping behaviors. None of the main effects were significant. The non-significance of these results indicate that maternal negative reactivity, child negative reactivity, and maternal positive coping behaviors did not explain the variance in mother's negative behaviors during the mother-child conflict discussion. In step three, I entered the two-way interaction terms of maternal negative reactivity by child negative reactivity, maternal negative reactivity by maternal positive coping behaviors, and child negative reactivity by maternal positive coping behaviors. None of these interaction terms were significant. And finally, in step four, I entered the three-way interaction term (maternal negative reactivity x child negative reactivity x maternal positive coping



behaviors). This model addition approached significance  $\beta = 0.00, p = 0.06$  and therefore I probed the interaction. The graph revealed a pattern of results that were consistent with my predictions. Maternal negative reactivity was least likely to be related to observed maternal negativity when mothers reported lower levels of negative reactivity in their children and higher levels of positive coping behaviors in themselves. However, the simple slopes were non-significant and thus no further efforts were taken to probe the marginal effect.



**Figure 1.** Plot of Simple Slopes for Interaction between Maternal Negative Reactivity, Child Negative Reactivity, and Maternal Positive Coping Behaviors on Observed Maternal Negativity

The results of the second hierarchical regression model predicting child negativity are displayed in Table 7. For the first step, I entered the covariates and they were not significant, indicating the demographic covariates did not explain variance in the child's negative behaviors observed in the mother-child conflict discussion. In the second step, I entered the main effects of maternal negative reactivity, child negative reactivity, and maternal positive coping behaviors. None of the main effects were significant. The non-significance of these results indicate that maternal negative reactivity, child negative reactivity, and maternal positive coping behaviors did not explain the variance in children's negative behaviors during the mother-child conflict discussion. In step three, I entered the two-way interaction terms of maternal negative reactivity by child negative reactivity, maternal negative reactivity by maternal positive coping behaviors, and child negative reactivity by maternal positive coping behaviors. None of these interaction terms were significant. And finally, in step four, I entered the three-way interaction term (maternal negative reactivity x child negative reactivity x maternal positive coping behaviors). This model addition was not significant.

Hypothesis 2 also proposed that maternal coping practices would moderate the relationship between mother/child negative reactivity and the resolution outcomes. I performed two separate hierarchal logistic regression models to examine associations between the predictor variables including maternal negative reactivity, child negative reactivity, mother's positive coping behaviors, and the identified covariate demographic variables with the resolution outcome from topic one of the conflict discussion (first model) and the resolution outcome from topic two of the conflict discussion (second model).

For the hierarchical logistic regression models shown in Tables 8 and 9, I entered the covariates in the first step. None of the covariates were significant, indicating the demographic covariates did not increase the odds the resolution outcome would result in a “win/loss” favoring the mother compared to either of the other resolution outcomes (compromise and standoff) nor the odds the resolution outcome would result in a standoff compared to a compromise. In the second step, I entered the main effects of maternal negative reactivity, child negative reactivity, and maternal positive coping behaviors. The main effects of maternal negative reactivity and child reactivity were not significant predictors of resolution. However, the main effect of maternal positive coping behaviors did predict resolution for Topic 1, specifically the “win/loss” versus standoff comparison. This suggests that given an increase of one standard deviation of the mother’s overall score on the positive coping composite, the mother-child dyad were 1.01 more likely ( $p = 0.03$ ) to have a “win/loss” outcome rather than a standoff at the conclusion of the conflict discussion for Topic 1. In step three, I entered the two-way interaction terms of maternal negative reactivity by child negative reactivity, maternal negative reactivity by maternal positive coping behaviors, and child negative reactivity by maternal positive coping behaviors. None of the variables entered in this step significantly predicted resolution. Finally, in step four, I entered the three-way interaction term (maternal negative reactivity x child negative reactivity x maternal positive coping behaviors). This model addition did not predict resolution.

**Table 6.** Hierarchical Regression Analysis with Maternal Reactivity, Child Reactivity, and Mother’s Positive Coping Strategies Predicting Maternal Negativity

	R2	ΔR2	Unstandardized Coefficients		Standardized	p
			B	SE B	Coefficients	
Step 1	0.01	0.00	-0.06	0.06	-0.07	0.37
Family's Income to Need's Ratio			-0.20	0.20	-0.07	0.30
Child's Gender						
Step 2	0.01	-0.02				
Negative Reactivity (M)			0.01	0.02	0.04	0.43
Negative Reactivity (C)			0.00	0.01	0.02	0.28
Mother's Positive Coping			0.00	0.01	0.01	0.53
Step 3	0.02	-0.02				
Negative Reactivity (M) X Negative Reactivity (C)			0.00	0.00	0.77	0.39
Negative Reactivity (M) X Mother's Positive Coping			0.00	0.00	-0.11	0.30
Negative Reactivity (C) X Mother's Positive Coping			0.00	0.00	0.00	1.00
Step 4	0.04	-0.01				
Negative Reactivity (M) X Negative Reactivity (C) X Mother's Positive Coping			0.00	0.00	0.15	0.06

Note. M = Mother; C = Child.

**Table 7.** Hierarchical Regression Analysis with Maternal Reactivity, Child Reactivity, and Mother’s Positive Coping Strategies Predicting Child

	R2	ΔR2	Unstandardized Coefficients		Standardized	p
			B	SE B	Coefficients	
Step 1	0.00	0.00	-0.02	0.06	0.02	0.77
Family's Income to Need's Ratio			-0.11	0.20	-0.04	0.57
Child's Gender						
Step 2	0.01	-0.02				
Negative Reactivity (M)			0.00	0.02	0.17	0.84
Negative Reactivity (C)			0.01	0.01	0.06	0.47
Mother's Positive Coping			0.00	0.01	0.02	0.80
Step 3	0.00	-0.03				
Negative Reactivity (M) X Negative Reactivity (C)			0.00	0.00	0.10	0.73
Negative Reactivity (M) X Mother's Positive Coping			0.00	0.00	0.20	0.56
Negative Reactivity (C) X Mother's Positive Coping			0.00	0.00	0.12	0.85
Step 4	0.01	-0.04				
Negative Reactivity (M) X Negative Reactivity (C) X Mother's Positive Coping			0.00	0.00	-0.01	0.98

Note. M = Mother; C = Child.

**Table 8.** Hierarchal Regression Analysis with Maternal Reactivity, Child Reactivity, and Mother’s Positive Coping Strategies Predicting Resolution Outcome of Topic One

	Log-odds B (SE B)						Odds Ratio		
	1 vs. 2	p	2 vs. 3	p	1 vs. 3	p	1 vs. 2	2 vs. 3	1 vs. 3
<u>Step 1</u>									
Family's Income to Need's Ratio	0.10 (0.10)	0.32	0.20 (0.13)	0.13	0.10 (0.13)	0.43	1.11	1.22	1.11
Child's Gender	0.12 (0.33)	0.70	0.64 (0.44)	0.15	0.51 (0.43)	0.23	1.13	1.89	1.67
<u>Step 2</u>									
Negative Reactivity (M)	0.03 (0.04)	0.50	-0.03 (0.05)	0.54	-0.06 (0.05)	0.25	1.03	0.97	0.94
Negative Reactivity (C)	-0.02 (0.02)	0.35	-0.05 (0.03)	0.10	0.46 (0.44)	0.32	0.98	0.96	0.97
Mother's Positive Coping	0.01 (0.01)	0.23	0.03 (0.02)	0.03	0.02 (0.02)	0.19	1.01	1.03	1.02
<u>Step 3</u>									
Negative Reactivity (M) X Negative Reactivity (C)	0.00 (0.00)	0.36	0.00 (0.01)	0.93	0.00 (0.01)	0.52	1.00	1.00	1.00
Negative Reactivity (M) X Mother's Positive Coping	-0.01 (0.00)	0.05	-0.01 (0.00)	0.15	0.00 (0.00)	0.90	0.99	0.99	1.00
Negative Reactivity (C) X Mother's Positive Coping	0.00 (0.00)	0.28	0.00 (0.00)	0.27	0.00 (0.00)	0.80	1.00	1.00	1.00

**Table 8, continued**

Step 4

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Negative Reactivity (M)

X Negative Reactivity (C)

X Mother's Positive Coping	0.00 (0.00)	0.98	0.00 (0.00)	0.86	0.00 (0.00)	0.82	1.00	1.00	1.00
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Note. M = Mother; C = Child. 1 = compromise; 2 = win/loss; 3 = standoff.



**Table 9.** Hierarchical Regression Analysis with Maternal Reactivity, Child Reactivity, and Mother's Positive Coping Strategies Predicting Resolution Outcome of Topic Two

	Log-odds B (SE B)						Odds Ratio		
	1 vs. 2	p	2 vs. 3	p	1 vs. 3	p	1 vs. 2	2 vs. 3	1 vs. 3
Step 1	0.05 (0.10)	0.60	-0.07 (0.13)	0.61	-0.12 (0.13)	0.36	1.06	0.94	0.89
Family's Income to Need's Ratio	0.01 (0.33)	0.97	-0.20 (0.42)	0.63	-0.21 (0.42)	0.61	1.01	0.82	0.81
Child's Gender									
Step 2									
Negative Reactivity (M)	0.02 (0.04)	0.68	-0.01 (0.05)	0.86	-0.02 (0.05)	0.62	1.02	0.99	0.98
Negative Reactivity (C)	-0.01 (0.02)	0.58	-0.02 (0.03)	0.39	-0.01 (0.03)	0.69	0.99	0.98	0.99
Mother's Positive Coping	0.00 (0.01)	0.73	0.01 (0.01)	0.61	0.01 (0.01)	0.44	1.00	1.01	1.01
Step 3									
Negative Reactivity (M) X Negative Reactivity (C)	0.00 (0.00)	0.41	0.00 (0.01)	0.60	-0.01 (0.01)	0.25	1.00	1.00	1.00

**Table 9, continued**

Negative Reactivity (M) X Mother's Positive Coping	0.00 (0.00)	0.35	0.00 (0.00)	0.28	0.00 (0.00)	0.73	1.00	1.00	1.00
Negative Reactivity (C) X Mother's Positive Coping	0.00 (0.00)	0.94	0.00 (0.00)	0.81	0.00 (0.00)	0.87	1.00	1.00	1.00
Step 4									
<hr/>									
Negative Reactivity (M) X									
Negative Reactivity (C) X									
Mother's Positive Coping	0.00 (0.00)	0.11	0.00 (0.00)	0.93	0.00 (0.00)	0.17	1.00	1.00	1.00

Note. M = Mother; C = Child. 1 = compromise; 2 = win/loss; 3 = standoff.

### **Hypothesis 3**

Hypothesis three focused on the identification of distinct types of mother-child dyads that existed in the dataset; hypothesis three also had three subparts. In order to identify the distinct types of mother-child dyads in the dataset, a latent profile analysis was performed, using the mean scores for mother's negative reactivity and child's negative reactivity as indicators to identify groups within the dataset. After running iterations for a two-class, three-class, and four-class model, I considered three fit indices in order to select the best fitting class solution for the detection of natural groupings among the mother-child dyads: the Akaike's information criterion (AIC), the Bayesian information criterion (BIC), and entropy values. Statistics for each of these indices are displayed in Table 10. Based on these statistics, I concluded that the two-class solution was the best fitting model, as the Bayesian statistic of 832.77 was the lowest for the two-class solution and the entropy value for the two-class solution was the highest at .75. Therefore, I selected the two-class solution for the person-centered analyses to examine hypothesis three.

In hypothesis 3A, I proposed that distinct groups of mother-child dyads would emerge from the analysis, based on maternal and child negative reactivity. I hypothesized that four types of dyads would emerge: dyads where the mother and child were both lower in negative reactivity, dyads where the mother and child were both higher in negative reactivity, dyads where the mother was lower in negative reactivity and the child was higher in negative reactivity, and dyads where the mother was higher in negative reactivity and the child was lower in negative reactivity. However, after performing the latent profile analysis, there was evidence of two types of dyads within the sample: a dyad where the mother had moderate levels of maternal negative

reactivity,  $M = 3.23$ ,  $SD = 0.53$ , and the child had slightly low levels of negative reactivity,  $M = 2.99$ ,  $SD = 0.57$ , (“Moderate Mother/Slightly Low Child”), and a dyad where both the mother and child had higher levels of negative reactivity: mothers  $M = 4.16$ ,  $SD = 0.40$ , child,  $M = 3.77$ ,  $SD = 0.48$  (“High Mother/Slightly High Child”).

The means of these groups are displayed in Figure 2. T-tests comparing the means of mother negative reactivity between the Moderate Mother/Slightly Low Child and High Mother/Slightly High Child groups showed that mothers in the High Mother/Slightly High Child group had a higher average of maternal negative reactivity ( $M = 4.16$ ,  $SD = 0.40$ ) compared to mothers in the Moderate Mother/Slightly Low Child group ( $M = 3.23$ ,  $SD = 0.53$ ),  $t(187) = -14.35$ ,  $p < .001$ . The t-test comparing the means of child negative reactivity totals between the Moderate Mother/Slightly Low Child and High Mother/Slightly High Child groups showed that the study children in the High Mother/Slightly High Child group had a higher average of child negative reactivity ( $M = 3.77$ ,  $SD = 0.48$ ) compared to children in the Moderate Mother/Slightly Low Child group ( $M = 2.99$ ,  $SD = 0.57$ ),  $t(187) = -6.49$ ,  $p < .001$ .

The Moderate Mother/Slightly Low Child dyads composed approximately 82% ( $n = 155$ ) of all dyads in the sample. The study children of this group were 52% European American, 16% African American, 8% Hispanic, 3% Asian American, and 21% identified as multiple or other racial and ethnic identities. The gender make-up of the study children in this group was 46% female, 54% male. Based on family income-to-needs ratios that are calculated using poverty thresholds for a given family size during the year in which data were collected, 43% of families were considered low income (ratios  $< 2$ ), 47% were considered middle income (ratios ranging between 2 and 5), and 10% were considered high income (ratios  $> 5$ ).

The High Mother/Slightly High Child dyads composed approximately 18% ( $n = 34$ ) of all dyads in the sample. The study children of this group were 73% European American, 9% African American, 9% Hispanic, 3% Asian American, and 6% identified as multiple or other racial and ethnic identities. The gender make-up of the study children in this group was 46% female, 54% male. Based on family income-to-needs ratios that are calculated using poverty thresholds for a given family size during the year in which data were collected, 26% of families were considered low income (ratios  $< 2$ ), 50% were considered middle income (ratios ranging between 2 and 5), and 24% were considered high income (ratios  $> 5$ ).

Based on these demographic profiles, I tested whether the High Mother/Slightly High Child dyads were significantly more likely than the Moderate Mother/Slightly Low Child dyads to be European American and higher income, as the descriptive data suggested. Chi-squared tests of independence revealed there was a significant relationship between racial or ethnic group and profile membership,  $\chi^2(5, N = 189) = 12.39, p = 0.03$ , with the High Mother/Slightly High Child dyads more likely to be European American compared to the Moderate Mother/Slightly Low Child group. There was not a significant relationship between family income-to-needs ratio and group membership,  $\chi^2(93, N = 189) = 87.89, p = 0.63$ , or between the child's gender and group membership,  $\chi^2(1, N = 189) = 0.14, p = 0.71$ .

To examine whether the mother-child reactivity dyad type related to observed mother-child conflict outcomes, I performed a series of analyses of covariance (ANCOVA) tests. ANCOVA was selected due to the categorical nature of the dyad type predictor variable. The results of the model examining differences between the Moderate Mother/Slightly Low Child group and the High Mother/Slightly High Child group on maternal observed negativity in the

conflict discussion are displayed in Table 11. The model was not significant when including the dyad type as a predictor, controlling for the study child's race, which was the only potential demographic covariate found to vary by profile group. The model examining differences between the Moderate Mother/Slightly Low Child group and the High Mother/Slightly High Child group on the child's observed negativity in the conflict discussion was not significant when including the dyad type and mother's positive coping scores as predictors, controlling for the study child's race.

To examine whether maternal positive coping behaviors would moderate the relationship between the mother-child reactivity dyad type and the observed mother-child conflict outcomes, I performed a series of analyses of covariance (ANCOVA). The results of the model examining differences between the Moderate Mother/Slightly Low Child group and the High Mother/Slightly High Child group on maternal observed negativity in the conflict discussion and whether there was moderation of mother's positive coping behaviors are displayed in Table 12. The main effects were not significant when including the dyad type and maternal positive coping behaviors as predictors, controlling for the study child's race. The interaction between the dyad group membership and maternal positive coping behaviors was also not significant, suggesting that coping behaviors did not moderate the relationship between dyad group membership and the observed mother negativity during the conflict discussion. These non-significant results were also seen when considering child negativity as the outcome (see Table 12).

To examine whether the mother-child reactivity dyad types had associations with the conflict resolution outcomes, I performed a series of multinomial logistic regression models. The results of these analyses are displayed in Table 13. In predicting conflict discussion Topic 1, a

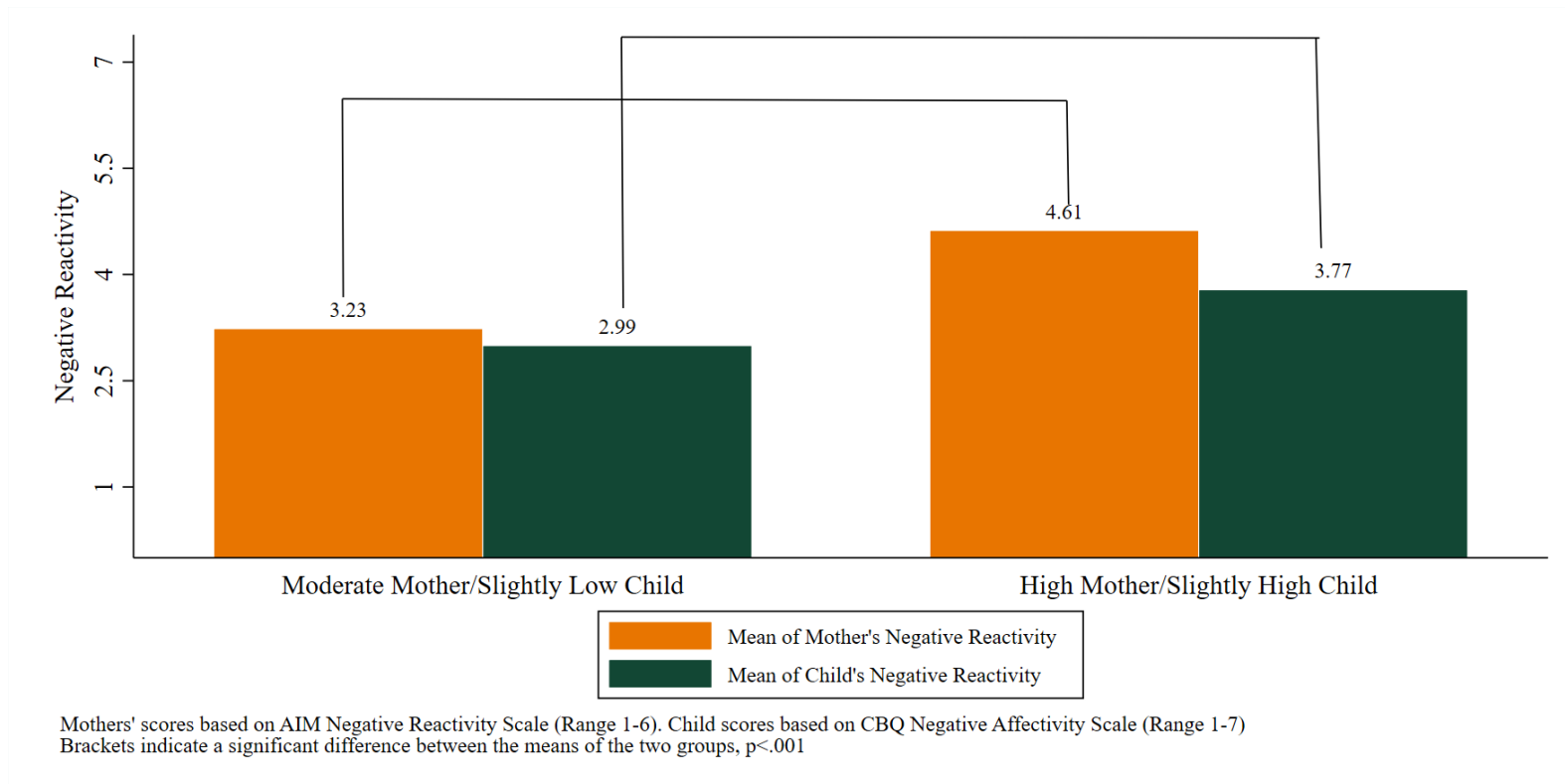
main effect emerged for maternal positive coping behaviors and the likelihood of reaching a “win/loss” outcome rather than a compromise. Dyads where mothers reported higher levels of positive coping behaviors were more likely ( $OR = 1.03, p = 0.04$ ) to reach a “win/loss” outcome favoring the mother than they were to reach a compromise and more likely ( $OR = 1.04, p = 0.03$ ) to reach a “win/loss” outcome favoring the mother than they were to reach a standoff. Another main effect emerged for the race covariate. Dyads where race was identified as African American were more likely ( $OR = 0.21, p = 0.00$ ) than dyads where race was identified as European American to reach a “win/loss” outcome favoring the mother outcome for conflict discussion Topic 1 than they were to reach a compromise.

When predicting the resolution outcome for Topic 2, a main effect emerged for the race covariate. Dyads where race was identified as African American were more likely ( $OR = 0.17, p = 0.04$ ) than dyads where race was identified as European American to reach a “win/loss” resolution versus a standoff outcome. There were no other main effects observed for any of the other racial and ethnic groups, the mother-child dyad group membership, mother’s positive coping behaviors, nor the interaction between the mother-child dyad group and mother’s positive coping behaviors.

**Table 10.** Fit Indices of Latent Profile Analysis Class Solutions

Model	N	AIC	BIC	Entropy
Two Class Solution	189	810.08	832.77	0.75
Three Class Solution	189	802.01	834.43	0.53
Four Class Solution	189	799.70	841.84	0.48





**Figure 2.** Mean Negative Reactivity Scores by Latent Profile Analysis Group

**Table 11.** Analyses of Co-variance Results using Mother-Child Dyad Group Membership as the Criterion for Associations with Maternal Negativity and Child Negativity

Variable	Negativity (M)					Negativity (C)				
	Sum of Squares	df	MS	F	p	Sum of Squares	df	MS	F	p
Intercept	13.58	5	2.72	1.56	0.17	14.17	5	2.83	1.76	0.12
Mother-Child Dyad Group	2.99	1	2.99	1.71	0.19	1.24	1	1.24	0.77	0.38
Child's Race	12.24	4	3.06	1.75	0.14	13.50	4	3.38	2.10	0.10
Error	308.76	177	1.74			283.55	176	1.61		

**Table 12.** Analyses of Co-variance Results using Mother-Child Dyad Group Membership and Maternal Positive Coping Behaviors as a Moderator as the Criterion for Associations with Maternal Negativity and Child Negativity

Variable	Negativity (M)					Negativity (C)				
	Sum of Squares	df	MS	F	p	Sum of Squares	df	MS	F	p
Intercept	14.09	7	2.01	1.14	0.34	14.34	7	2.05	1.26	0.27
Mother-Child Dyad Group	2.95	1	2.95	1.68	0.20	1.29	1	1.29	0.79	0.38
Maternal Coping Behaviors	0.16	1	0.16	0.09	0.77	0.13	1	0.13	0.08	0.78
Mother-Child Dyad Group X Maternal Coping Behaviors	0.06	1	0.06	0.03	0.86	0.15	1	0.15	0.09	0.76
Child's Race	11.99	4	3.00	1.70	0.15	13.47	4	3.37	2.07	0.10
Error	308.25	175	1.76			283.38	174	1.63		

**Table 13.** Mother-Child Dyad Group Membership, Maternal Coping Behaviors, and Demographic Variables Predicting Resolution Type

	Log-odds B (SE B)				Odds Ratio				
	1 vs. 2	p	2 vs. 3	p	1 vs. 3	p	1 vs. 2	2 vs. 3	1 vs. 3
Resolution 1 Outcome									
Mother-Child Dyad Group	0.09 (0.44)	0.84	-1.00 (0.71)	0.16	-1.09 (0.68)	0.11	1.09	0.37	0.34
Maternal Coping Behaviors	0.29 (0.01)	0.04	0.04 (0.02)	0.03	0.01 (0.02)	0.66	1.03	1.04	1.01
Mother-Child Dyad Group X Maternal Coping Behaviors	-0.04 (0.03)	0.16	-0.03 (0.05)	0.60	-0.03 (0.05)	0.71	0.96	0.98	1.02
Child's Race									
Black/African American	-1.56 (0.54)	0.00	-1.02 (0.68)	0.20	0.05 (0.71)	0.95	0.21	0.22	1.05
Hispanic	-0.96 (0.64)	0.13	-1.75 (1.11)	0.12	-0.79 (1.13)	0.49	0.38	0.17	0.46
Asian/Asian American	-15.53 (960.98)	0.99	-0.56 (1.03)	0.59	14.97 (960.98)	0.99	0.00	0.57	1.88
Other/ Two or More Races	-0.77 (0.44)	0.10	-0.91 (0.70)	0.32	-0.89 (0.70)	0.20	0.46	0.19	0.41

**Table 13, continued**

Resolution 2 Outcome	1 vs. 2	p	2 vs. 3	p	1 vs. 3	p	1 vs. 2	2 vs. 3	1 vs. 3
Mother-Child Dyad Group	-0.31 (0.44)	0.48	-0.68 (0.61)	0.27	-0.37 (0.60)	0.27	0.73	0.51	0.70
Maternal Coping Behaviors	0.00 (0.01)	0.98	0.03 (0.20)	0.12	0.03 (0.20)	0.12	1.00	1.03	1.03
Mother-Child Dyad Group X Maternal Coping Behaviors	0.00 (0.03)	0.90	-0.05 (0.04)	0.29	-0.04 (0.04)	0.29	1.00	0.96	0.96
Child's Race									
Black/African American	-0.76 (0.52)	0.14	-1.76 (0.86)	0.04	-1.00 (0.86)	0.04	0.47	0.17	0.37
Hispanic	-0.43 (0.74)	0.56	0.45 (0.77)	0.56	0.88 (0.76)	0.56	0.65	1.56	2.04
Asian/Asian American	-15.18 (682.53)	0.98	-15.30 (926.41)	0.99	-0.12 (1150.68)	0.99	0.00	0.00	0.88
Other/ Two or More Races	-0.64 (0.50)	0.23	-0.83 (0.58)	0.13	0.43 (0.65)	0.13	0.19	0.30	1.53

## CHAPTER 4

### DISCUSSION

The current study investigated associations between mother and child negative reactivity and conflict interactions, with expectations that maternal positive coping behaviors would be protective against relational consequences of negative reactivity. As previous research has shown, there is a genetic component of temperamental characteristics with negative reactivity being particularly heritable (Brenning et al., 2020; Rubin et al., 2003; Zheng et al., 2016). Thus, understanding the combination of mother and child negative reactivity is particularly relevant. Furthermore, conflict in familial relationships is inevitable, especially between mothers and their children in the early childhood years. Therefore, the importance of the current study was apparent, given the highly heritable trait of negative reactivity, in understanding risk factors for more negative and unresolved mother-child conflict.

As expected, preliminary findings revealed associations between negative reactivity in mothers and their children, with higher levels of maternal negative reactivity being associated with higher levels of child negative reactivity. Additionally, there was an association between maternal negativity observed during the conflict discussion and child negativity observed during the conflict discussion. However, the initial correlations did not reveal an association between maternal negative reactivity and maternal negativity observed in the conflict discussion. This finding is contrary to previous studies that have found associations between negative reactivity and negative parenting behaviors (Conger et al., 2010; Rubin et al. 2003). This inconsistent finding could be due to the fact that, on average, mothers in the current sample reported moderate levels of reactivity, with some variability between the maternal negative reactivity

scores. Overall, the average negative reactivity score for mothers of the current study was 3.32 with a standard deviation of 0.51, yet the max of this scale was 6. Additionally, the initial correlations did not reveal an association between child negative reactivity and child negativity observed in the conflict discussion. This finding was also unexpected as previous studies have found associations between child negative reactivity and observed negativity in children, even in conflict situations with their peers (Rubin et al., 2003). Similarly, I think this inconsistent finding is due to the fact that the majority of mothers tended to report that their children had slightly lower levels of negative reactivity, with the average negative reactivity score for all children of the sample was at approximately 3.02 with a standard deviation of 0.42, whereas the max of this scale was 7.

One interesting finding was that mothers reported higher levels of negative reactivity in female children compared to male children. This result is consistent with a previous finding of Niess and colleagues (2005), where women reported higher levels of negative affectivity in a study of genetic influences on self-esteem and negative affectivity. In their study, Niess and colleagues investigated if there were associations between monitoring and controlling one's behavior, self-esteem, and negative affectivity by identifying genetic and environmental sources of variation in these three characteristics (Niess et al., 2005). In a sample of adult twins, the researchers found that women in same-sex twin pairings tended to report higher levels of negative affectivity compared to males in same-sex twin pairings. This is an important finding for identifying genetic characteristics that may influence levels of negative reactivity. Furthermore, the finding could be useful for parents, as it runs counter to common gender stereotypes about male children being more easily frustrated and angered.

Though not the focus of the current study, another interesting finding was the negative association observed between family income-to-needs ratio and maternal positive coping strategies. This finding suggests that mothers who reported lower income reported more positive coping strategies. Low-income parents may need to draw upon these coping strategies more frequently as they navigate the stress of poverty. There is support for this finding in the literature, as one study of factors impacting family coping strategies by Brantley and colleagues (2002) found that lower income individuals reported greater rates of coping strategy use, specifically emotion focused strategies, compared to the original sample used in the development of the Ways of Coping questionnaire (Folkman & Lazarus, 1988). This finding could have implications for understanding the factors associated with resiliency in mothers and whether there are any protective benefits that extend to the family.

### **Variable-Centered Analyses**

As foreshadowed by the initial correlations, when the regression model was tested, neither maternal nor child negative reactivity predicted maternal or child negativity in the conflict discussion. Furthermore, there was not an additive effect of mother and child negative reactivity in predicting mother or child conflict negativity.

Maternal and child negative reactivity and the interaction of these main effects also did not predict conflict resolution for either of the topics discussed. This finding was a bit unexpected. As discussed in Nelson et al. (2014), previous research has proposed that more hostile and negative behaviors have been linked to fewer chances of successfully resolving conflict (Eisenberg & Garvey, 1981; Rueter & Conger, 1995). In the 2014 study, Nelson and colleagues originally hypothesized that dyads that displayed more negativity and oppositional



comments (i.e., comments that are coercive or undermining to exert one's own position and perspective) during the conflict discussion would more likely reach a standoff resolution outcome than any of the other outcomes (Nelson et al., 2014). Though no direct associations were found with maternal or child negativity and the likelihood of predicting any of the resolution outcomes, the researchers did find that in dyads where mothers were more emotionally responsive, used fewer oppositional comments, and their children had more constructive contributions to the discussion resulted in the resolution outcome to more likely be a compromise than a win-loss resolution. As discussed by Nelson and colleagues (2014) mothers that displayed higher levels of emotional responsiveness more likely created an environment where their children felt supported and accepted, which was beneficial to the dyad reaching a mutually agreeable solution. Taken together, I think findings from the current study and the original study demonstrate that a parent-child relationship that is characterized by mothers who show consideration for their children's opinions and foster an environment where their children feel comfortable contributing to the conflict discussion are more important to reaching a resolution (Nelson et al., 2014) whereas temperamental negative reactivity is not as influential to the resolution of conflict.

Another possible explanation for these findings is the reported levels of negative reactivity. As seen in the person-centered analyses, the majority of the dyads fit into the "Moderate Mother/ Slightly Low Child" group, where mothers reported moderate levels of negative reactivity in themselves and slightly low levels of negative reactivity in their children. It is possible that there may be an association between negative reactivity and conflict resolution that the current study did not detect, due to the relatively moderate levels of negative reactivity

reported. Given these findings, future research should investigate whether there is a certain threshold or degree of negative reactivity that may be related to a greater risk for not resolving conflict successfully. This could be important to help identify parents that may be at greater risk for failure to achieve conflict resolution with their children, given they may have a genetic predisposition to higher levels of negative reactivity, perhaps paired with poor coping skills to manage their reactivity.

The interaction between maternal negative reactivity, child negative reactivity, and maternal positive coping behaviors approached significance,  $\beta = 0.00$ ,  $p = 0.06$ . Graphical procedures and a test of simple slopes were conducted to investigate the nature of the interaction, however, the results were inconclusive and require further study. Nevertheless, I found it interesting that the pattern appeared to be consistent with my predictions. Maternal negative reactivity was least likely to be related to more observed maternal negativity when mothers reported lower levels of negative reactivity in their children and higher levels of positive coping behaviors in themselves. The other slopes, which included lower levels of maternal coping behaviors, higher levels child negative reactivity, or both, displayed a stronger positive association between maternal negative reactivity and observed maternal negativity. It should be noted that since the results from the simple slopes tests were not significant, a larger sample size would be beneficial to conduct further analyses and explore this trend further.

### **Person-Centered Analyses**

The current study also used a person-centered approach to identify negative reactivity types among mother-child dyads. I expected to find four distinct groups; however, only two emerged in this sample. Though my hypothesis of the four distinct groups were formed based upon a

review of the literature, previous analyses have been conducted using variable-centered interactions, an approach that tends to reveal differences based on high or low levels of variables. The groups I detected with person-centered analyses were characterized by more moderate levels of negative reactivity. Although different than what I expected from previous variable-centered research, these profiles may be more ecologically valid than groups based on more extreme values. Person-centered approaches are thought to have more ecological validity because they are developed in a more holistic way at the person-level rather than the variable-level (Nelson et al., 2014; von Eye & Bogat, 2006). I believe the current study provides an important finding of how researchers can expect to see typical manifestations of negative reactivity. Additionally, I believe this finding provides support for the use of person-centered analyses, in conjunction with variable-centered analyses. By using a person-centered analysis approach, I was able to detect some of the nuances between the groups. The latent profile analysis revealed a two-group solution based on negative reactivity types: one group where mothers reported moderate levels of negative reactivity in themselves and slightly low levels of negative reactivity in their children, and another group where mothers reported higher levels of negative reactivity in themselves and slightly elevated levels of negative reactivity in their children. As my original prediction of the groupings outlined more concordant temperament mother-child dyads would be the most common (i.e., high mother/high child, low mother/low child), the prediction did not take into account the possibility of moderate levels of negative reactivity.

Nevertheless, two distinct temperament profile groups were detected. There were some differences observed between these groups. First, the High Mother/Slightly High Child Negative Reactivity group, representing 18 percent of the dyads in the sample, demonstrated higher scores

in the reporting of negative reactivity levels of both dyad members compared to the other profile. The dyads in this group were more of a match in the reporting of negative reactivity levels in mothers and their children. The concordance between maternal and child negative reactivity reported for dyad members in this group shows support for the heritability of temperament, consistent with previous research. As found in Zheng and colleague's 2016 study, negative affect was highly heritable and more likely to be dispositional, rather than positive affect, which was more likely to be influenced by environmental factors (Zheng et al., 2016).

In contrast, the Moderate Mother/Slightly Low Child Negative Reactivity group, representing 82 percent of the dyads in the sample, demonstrated lower scores in the reporting of negative reactivity levels in mothers and their children compared to the other profile. For mothers of this group, the range of average scores on the negative affectivity scale of the AIM were between 2.16 and 4.00, out of a possible 6. However, there was not a lot of variability within the mothers of this group's average scores. Most of the mothers of this group had an average score within the 3.00 range, right around the mid-point of this scale. For children of this group, the range of average scores on the negative affectivity scale of the CBQ were between 1.08 and 3.95, out of a possible 7. The children of this group had an average negative reactivity score of approximately 3.00, slightly lower than the mid-point of this scale. The difference in rates of negative reactivity reported may reflect the fact that only one of the child's parents were assessed for negative reactivity. As previously mentioned, mothers contribute half of the genetic makeup of their children and the slightly lower levels of negative reactivity reported for the children of this group could be due to fathers' genetic contributions.

There were also noticeable differences in the racial and ethnic make-up of the dyads between these two identified groups. The High Mother/Slightly High Child group was more likely to be European American than the Moderate Mother/Slightly Low Child group. However, this difference could be attributed to the fact that more than three-fourths of the entire study's sample, which was already more than half European American, were members of the Moderate Mother/Slightly Low Child group, therefore resulting in a nearly racially homogenous High Mother/Slightly High Child group.

I did not find support for my hypotheses that the dyadic reactivity groups would have distinct associations with observed negativity in the mother-child conflict discussion. As with the variable-centered analyses, these non-significant findings could be due to the fact that the largest group reported moderate and slightly lower levels of negative reactivity, with little variability between the mother's scores of this group or the children's scores of this group, respectively. For both mothers and children of this group, the negative reactivity scores were pretty concentrated either at or right below the mid-point of the respective scale. This could suggest that it is harder to detect differences between groups when the range of negative reactivity reported is limited. Another possible cause for the non-significant findings could be due to the nature and manifestation of emotions around reactivity. Negative reactivity relates to how an individual reacts to the stressors of their environment, including shows of fear, anger, and irritability (Rothbart & Bates, 2006). It is possible that individuals high in negative reactivity display these behaviors in response to situations that are highly stressful. Moreover, it is possible that a discussion of a previous situation that may have caused conflict is not necessarily highly stressful enough to elicit the response a temperamentally reactive individual would produce to

demonstrate behaviors that characterize higher levels of negative reactivity. In the original study, mother-child dyads were asked to discuss two topics that had caused conflict within the last month. It is possible that the emotions related to negative reactivity were more intense as the situation occurred and after some time had passed, dyad members did not experience them as intensely during the conflict discussion. Future research on parent-child conflicts in the moment may provide better opportunities to observe the impact of negative reactivity on maternal and child behavior.

There were some main effects observed with maternal positive coping behaviors and the resolution outcomes. Regardless of dyad group membership, mothers who reported higher levels of positive coping behaviors were more likely to reach a “win/loss” outcome favoring the mother than a compromise and a standoff. This finding is slightly inconsistent with previous research, notably the original study that has found more positive behaviors to be related to a greater likelihood to reach a compromise over a “win/loss” outcome (Nelson et al., 2014). However, further probing of this effect reveals minimal effect sizes, based on the beta coefficients, as well as very minimal showings of the likelihood to occur, as evidenced by the odds ratios being very close to 1.00.

The final findings were differences in the likelihood of reaching a “win/loss” outcome favoring the mother by the race covariate. Irrespective of dyad group membership, dyads where the study child was identified as African American were more likely to reach a “win/loss” outcome instead of a compromise as compared to dyads where the race of the study child was identified as European American. Previous research has noted the differences in parental approaches to resolving conflict, particularly as it relates to perceived respect (Dixon et al.,

2008) and power dynamics that can be at play in the parent-child relationship during conflict (Nelson et al., 2014; Recchia et al., 2010). As Dixon and colleagues found in their 2008 study investigating frequency and intensity of conflict in the parent-child relationship and respect for parental authority in an ethnically diverse sample, African American and Latina girls had higher scores of respect for parental authority than European American girls. Additionally, African American and Latina mothers reported that they had more intense arguments with their daughters than did European American mothers, when their daughters exhibited lower levels of respect in parent-child interactions. The finding of the current study is important as it adds to the literature of differences of handling of conflict by different racial groups. Similarly, dyads where the study child was identified as African American were more likely to reach a “win/loss” outcome favoring the mother than a standoff than dyads where the study child was identified as European American. This finding is also consistent with previous research around racial differences in conflict discussions and outcomes for African American mothers and their children. It is possible that a standoff resolution outcome would be perceived as highly disrespectful, and therefore unacceptable, for an African American child to perpetuate during a conflict discussion. However, the standoff resolution outcome was rarely reached, and in this case less than 10 percent ( $n = 2$ ) of the dyads where the study child was identified as African American reached a standoff resolution outcome.

### **Strengths**

Though I did not find evidence to support many of my hypotheses, there are a few strengths of the current study worth mentioning. One strength is that this study was one of the few studies in the literature to consider both maternal and child temperament styles,

characterized by negative reactivity for both mothers and children, in the same study (Hakim-Larson & Scott, 2021). This is an ecologically valid approach with high practical utility considering the high heritability of negative reactivity between parents and children. Another strength of this study was the use of both variable-centered and person-centered analyses to investigate maternal and child negative reactivity. Though the variable-centered approach did not produce many findings, I was able to investigate some of the nuances between varying levels of negative reactivity in mothers and their children via the person-centered approach.

### **Limitations**

Despite the study strengths, there were some noteworthy limitations. One limitation was that more than half of the study children within the sample were European American, whereas all other racial or ethnic groups were individually less than 20 percent. Given that previous research has found that there is an association between racial and ethnic identity and parenting behavior, it would have been beneficial if there was more diversity within the sample. Given the person-centered analyses did see some variation between race and resolution outcomes, a more racially robust sample could have been beneficial to investigate whether there were any additional racial or ethnic groups that differed in the conflict resolution outcomes.

Another limitation of the study worth mentioning is the fact that all reports of negative reactivity, for both mother and child, were given by the mother. Though mothers are often the primary caregivers and most likely the best judge of child temperament, I think this study could have benefitted from having both reported and observed measures of both maternal and child negative reactivity. An observed measure of negative reactivity would have provided an objective viewpoint of mother and child temperament free from the risk of reporter bias.



Furthermore, another limitation of the current study was that it did not contain data from biological fathers. Although negative reactivity is highly heritable, mothers only contribute half of the child's genes; thus, an exploration of mother-child temperamental heritability without father contributions is incomplete. It is possible that the current study could have seen more variation in reports of negative reactivity if biological fathers would have been included. Additionally, fathers' reports of negative reactivity could have resulted in different negative reactivity type groups that would have emerged using biological father negative reactivity data. Having biological fathers participate in the current study could have also been beneficial to explore if there are differences between conflict resolution outcomes for mothers and fathers, as previous research suggests that mothers are more likely to reach a full resolution to conflict with their children than fathers (Marceau et al., 2015).

Finally, I think another limitation of the current study was the sample size of the study. G-power analyses revealed that the sample was sufficiently powered to detect small to moderate effect sizes for main effects given the number of participants in the sample. However, an increase in the sample size could have possibly provided more power for the interaction effects, especially since there was a marginally significant interaction observed between the three-way interaction of maternal negative reactivity, child negative reactivity, and maternal positive coping behaviors. I believe a larger sample size could have also provided more variability in the mother and child negative reactivity scores to properly see main effects of these variables.

## **Conclusions**

The parent-child relationship is one of the most important relationships mothers and their children will experience in their lifetime. Though the current study did not identify many

potential risk factors for increased family conflict and dysfunction, it does provide evidence of distinct negative reactivity types of mother-child dyads, particularly dyads concordant in temperamental negative reactivity. This is an important consideration for parent-child interventions that target negatively reactive behaviors in children. Given that the current study does show evidence that some mothers are likely to have similar reactivity profiles as their children, intervention targets should focus on how to provide instruction and support for both maternal and child emotional reactions. For example, these interventions could focus on approaches such as Parent-Child Interaction Therapy (PCIT) (Eyeberg, 1988), which is an intervention method targeted at addressing problems in parenting and child behavior. The goal of PCIT is to strengthen parent-child attachments through a two-phase approach: the first phase targets maternal emotions and reactions, where mothers learn skills to promote maternal warmth and increase attachment with their children, and the second phase focuses on teaching mothers how to implement structured and consistent discipline methods (Herschell et al., 2002). This intervention method relates to the findings of the current study as it conveys that mothers who are learning to manage child negativity may also have reactive emotions that need to be managed first.

A direction of future research could be to investigate whether there are more than two distinct groups of negative reactivity types, using a larger and more racially and ethnically diverse sample. Further, this study was one of few that considered both mother and child negative reactivity in the same study. Future research should employ both observed and reported measures of temperament for detection of possible main effects and comparison of behaviors reported with those observed. Additionally, and though not the focus of this study, one of the

implications of the current study is there is some evidence of a difference of reaching a conflict resolution in mother-child dyads by racial groups. If future studies were to investigate negative reactivity types using a larger and more racially and ethnically diverse sample, it may identify if there is an interaction between racial and ethnic identity, negative reactivity, and parenting behavior. Such research can be beneficial to identify if there are certain risk factors for certain racial or ethnic groups and resolving conflict in the parent child relationship.

Furthermore, as higher levels of negative reactivity have been linked to poorer child outcomes, it is still important that future research continue to investigate how this individual characteristic can have implications for other outcomes, such as emotional disorders (Carthy et al., 2010) and overall well-being throughout child development (Myerberg et al., 2019). Additionally, the proposed study can expand our understanding of the interaction between mother and child temperamental reactivity, which is an understudied but likely common dyadic phenomenon considering the heritability of this temperamental characteristic. It is important to expand this research, as it may have implications for the creation of parenting intervention programs to help mothers cultivate their relationships with their children with less negative behaviors and conflict.

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## **BIOGRAPHICAL SKETCH**

Melissa Amos was born in New Orleans, LA and currently resides in Washington, D.C. After graduating from McDonogh 35 Senior High School in 2004, she enrolled at Dillard University, in her hometown. She held an internship in the department of psychology, assisting her professors with a research project focused on emergency preparedness in response to the September 11th tragedy. In her sophomore year, Hurricane Katrina devastated the city of New Orleans, causing her to relocate to Howard University, where she earned a Bachelor of Science degree in psychology in 2008. In August of that same year, Melissa entered the doctoral program in Psychological Sciences at The University of Texas at Dallas. She earned a Master of Science degree in Psychological Sciences in December 2012. She began her career in education research and is currently a Senior Education Research Analyst at the Office of the State Superintendent of Education (OSSE) for the Government of the District of Columbia. Her work at OSSE focuses on the collection of faculty and staff data, reporting on teacher retention and teacher effectiveness, data related to students experiencing homelessness, and data related to early childhood education providers and outcomes of these early childhood programs for all public and public charter schools in the District of Columbia.

## CURRICULUM VITAE

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The University of Texas at Dallas, School of Behavioral and Brain Sciences  
800 W. Campbell Road, GR41, Richardson, TX 75080

### EDUCATION

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The University of Texas at Dallas, Richardson TX  
**PhD Psychological Sciences, Developmental Psychology**  
Graduate Research Advised by Dr. Jackie A. Nelson  
Expected Graduation December 2022

The University of Texas at Dallas, Richardson TX  
**MS Psychological Sciences**  
Graduate Research Advised by Dr. Margaret T. Owen  
Thesis: Characteristics of Family Living Arrangements and Maternal Parenting Qualities in Low-Income, African American and Latino Families of Preschoolers  
December 2012

Howard University, Washington, D.C.

**BS Psychology, Minor in Human Development**  
Cum Laude  
May 2008

### PROFESSIONAL EXPERIENCE

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**Office of the State Superintendent of Education, Washington, D.C.** Nov 2019—Present  
*Education Research Analyst, Division of Data, Assessment, and Research*

- Standardize the collection of Faculty and Staff data for all public and public charter schools within the District for federal reporting.
- Complete research reports and data requests for the Homeless Education and English Language Learner program offices within the agency.
- Initiate, plan, and participate in meetings, workshops, seminars, and conferences for the purpose of providing information, technical assistance, and training to education professionals.
- Successfully completed a report focused on Equitable Access to Excellent Teachers for all Local Education Agencies in the District as a reporting requirement of the Every Student Succeeds Act.

**American Institutes for Research, Washington, D.C.**

Apr 2018—Nov 2019

*Program Manager, College Board Digital Suite of Assessments*

- Worked with internal staff to develop processes, procedures, and schedules for meeting project deliverables and client needs.
- Worked with client to create project specifications for all systems and development teams. Maintained all project specifications and oversee internal and client user acceptance testing.
- Led a special research project to deliver an online adaptive test to high school students. Due to success of the project, client signed on to conduct additional research projects.

**Center for Applied Linguistics, Washington, D.C.**

Dec 2012—Mar 2018

*Research Associate, Psychometrics/Quantitative Research (May 2014-Mar 2018)*

- Worked closely with senior management to coordinate project timelines and assign work to staff.
- Managed projects and the implementation of analysis plans, worked with client to coordinate data activities, and created quality control procedures.
- Supervised the work of Quantitative Research Assistants and graduate-level Research Interns.
- Managed the preparation and completion of two technical reports simultaneously; exceeded client expectations by delivering results in the same amount of time used to produce one report in previous years.

*Research Assistant, Psychometrics/Quantitative Research (Dec 2012- May 2014)*

- Assembled tables and figures and wrote and edited text for reports of English language assessments.
- Improved accuracy and efficiency for a variety of tasks by automating rote procedures and implementing traceable quality control methods.
- Successfully led research projects working with clients and state Department of Education officials to produce research reports—produced deliverables ahead of target due dates.

## **RESEARCH EXPERIENCE**

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**Dallas Preschool Readiness Project, Richardson, TX**

Aug 2008- May 2012

*Research Assistant-Lab Manager*

Assisted Dr. Margaret Owen and Dr. Margaret Caughy with a research project focused on the school readiness and self-regulation abilities of ethnic minority children. Collected, coded and analyzed data. Trained field interviewers and supervised undergraduate interns. Implemented a platform to discuss data analysis and maintained project's database.

**Superior Court of the District of Columbia-Family Court, Washington, D.C.** Summer 2007

*Child Guidance and Family Counseling Clinic-Intern*

Administered psychological testing to juvenile offenders in the District of Columbia. Attended weekly staff meetings to discuss cases and actions to take for case management. Provided clerical support to supervising psychologists.

**Dillard University**, New Orleans, LA

Summer 2005

*Summer Research Assistant-Intern*

Attended sessions that focused on the tragedy of September 11, 2001 and emergency preparedness. Provided data and clerical support for Principal Investigators. Recorded and typed all sessions for transcripts and submitted to the presiding professors.

## **PUBLICATIONS**

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### **Refereed**

Owen, M. T., Caughy, M. O., Hurst, J. M., Amos, M., Hasanizadeh, N., & Mata-Otero, A. (2013). Contributions of fathering and mothering to emerging self regulation in low-income ethnic minority preschoolers. *Early Child Development and Care*, 183, 464-482.

## **PRESENTATIONS**

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Owen, M. T., Caughy, M. O., Hurst, J., Amos, M. L., Villa, A. C., & Mejias, C.A. (2011, March-April). Universal and culture-specific qualities of mother-child and father-child interactions associated with self-regulation skills. Society for Research in Child Development, Biennial Meeting, Montreal.

Caughy, M. O., Owen, M. T., Hasanizadeh, N., Mata-Otero, A., Hurst, J., Amos, M., & Baird, A. (2012, February). Child-oriented parenting and emerging self regulation in low income, ethnic minority preschoolers. Poster presented at Positive Development in Minority Children, Themed Meeting of the Society for Research in Child Development, Tampa, FL.