

EMOTIONAL AND BEHAVIORAL EFFECTS WITHIN THE TRIADIC FAMILY
SYSTEM: ACTOR-PARTNER INTERDEPENDENCE BETWEEN PARENTS AND
PRESCHOOLERS

by

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A Thesis Submitted to the Faculty of
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Master of Arts

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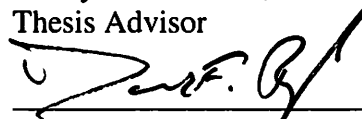
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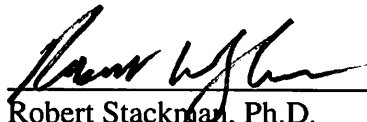
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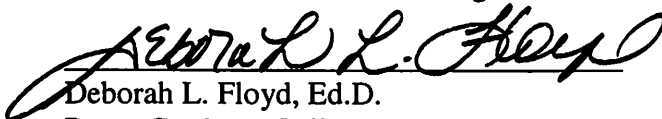
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ABSTRACT

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The purpose of the current study is to examine emotional and behavioral interdependence within the triadic family system. Interdependence was assessed over time between 17 participant groups of mothers, fathers and preschoolers. Responses of each parent and preschooler were observed during story recitations that were chosen to elicit positive or negative responses; observations included measures of attention, external affect, and affective congruency. Parental self-report ratings of expressivity, negative emotions, and child temperament were compared to observations during story recitations, as well. Some father-child interactions appeared to be affected by story condition. However, parent gender had little effect on parent-child interactions overall in regards to child consistency. The findings suggest that children drive the interactions more so than parents. Further research with a larger sample size is needed to fully

examine the emotional and behavioral interdependence between parents and preschoolers.

DEDICATION

This manuscript is dedicated to my family: thank you all for your words of encouragement and unwavering support.

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I. INTRODUCTION

The overall emotional and behavioral expressiveness and responsiveness of a family system is determined by the interactions of each family member. As a main source of daily interaction, parents have a meaningful impact on the emotional and behavioral development of preschoolers. However, preschoolers affect the emotional and behavioral expressions of the parents, as well. Additionally, the interactions within the family are likely affected by the emotional context of a given situation: different emotional states (i.e. happy and sad) provoke different responses (Shewark & Blandon, 2015). Since the emotions and behaviors expressed by each family member are developed through the contributions of each family member (Sánchez-Núñez, Fernández-Berrocal, & Latorre, 2013), it is also important to determine if their expressions change during positive (happy) and negative (sad) conditions, and whether those changes impact the expressive interdependence between mothers, fathers, and preschoolers.

The development of emotional and behavioral regulatory abilities begins in the toddler and preschool years, and the guidelines for expression and modulation of emotions first become evident through familial interactions (Shewark & Blandon, 2015); thus, parental influence plays a meaningful role in the development of emotional and behavioral competence. Wong, McElwain, and Halberstadt (2009) explained that parental expressiveness is a form of modeling that helps children to learn how to react to, and understand, emotion-laden events. For example, parental dismissive responses toward negative emotions expressed by their child will lead to more externalizing

problems and heightened arousal in the child. In contrast, corrective-coaching responses to these negative behaviors will lead to better emotional understanding in the child. Also, while there are interactive similarities between parents, findings have shown that mothers and fathers interact with their child differently (Cabrera, Fitzgerald, Bradley, & Roggman, 2014). Zaman and Fivush (2013) found that when discussing previous experiences with preschool-aged children, mothers were more elaborate while discussing happy experiences, and more engaged when discussing sad experiences. Wilson and Durbin (2013) determined that during parent-child interactions, fathers were more likely to attempt to control the interaction rather than engage in the interaction. Therefore, parental displays of, and responses to, emotional expressions differ by parent, and play a large role in preschoolers' emotional and behavioral development (Dennis, 2006).

The influence of the child's behavior on the parents is very similar in importance to the parents' behavior toward the child (Feldman, 2015; Pardini, 2008). Mills-Koonce et al. (2007) described how child behavior changes parenting styles: negative infant behavior challenged sensitive parenting styles, while positive child behavior encouraged warmth, attention, and caring behaviors from the parent. Essentially, children who display less desirable behaviors are more likely to deter sensitive parenting styles, which, in turn, will impact the child's behavioral and emotional development. Wilson and Durbin (2013) also found evidence of child-driven effects during parent-child interactions; children made more negative bids to mothers, which then caused mothers to react differently toward the children than the fathers in similar situations. Thus, children guide the emotional responses of their parents through their expressions, as well.

When examining the emotional and behavioral exchanges between parents and preschoolers, it is important to consider the emotional circumstances surrounding the family: the emotional states of each family member and the emotional context of the examined situation and/or task. Slatcher and Trentacosta (2012) found that mothers with low levels of positive emotional expressiveness and/or high levels of negative emotional expressiveness tended to have children that displayed increased problematic behaviors. Shewark and Blandon (2015) stated that fathers who offered unsupportive responses to their child's positive and negative emotional displays contributed to their child's emotional regulation, in that unsupportive responses to child negative emotional displays led to poorer emotional regulation in the child. Additionally, while both parents engage their child in play activities, fathers tend to engage in more active, risk taking play than mothers (Cabrera et al., 2014); this may allude to more active engagement from children when paired with fathers during positive (happy) conditions. In following with these findings, it is important to consider the emotional climate of the family members and the situation when exploring the emotional and behavioral exchanges between each member.

Furthermore, upon examining the bidirectional interplay between family members in different emotional contexts, it is important to consider the possibility of mutual emotional and behavioral dependency between each relationship. As Wilson and Durbin (2013) noted, findings suggest instances where parents guide the interactions, and when children lead the interactions. Also, actor-partner interdependence between parents and children is present in specific emotional contexts, as well (Claridge et al., 2015; Ponnet et al., 2013). Therefore, the following study will seek to examine emotional and behavioral interactions between parents and children, the differences in child interactions between

mothers and fathers, the influence of different emotional contexts, and whether interdependence is present within these relationships.

Expressive Dynamics of the Triadic Family System

The expressive dynamics within the family differ by pairings of family members; fathers and mothers interact differently with their children, and the children may interact differently depending on the parent (Shewark & Blandon, 2015; Slatcher & Trentacosta, 2012; Wilson & Durbin, 2013). Children first experience emotions and behaviors at home with their families (Shewark & Blandon, 2015): specifically by way of the emotional and behavioral expressions and reactions of their parents (McCoy & Raver, 2007). Since emotional and behavioral expressions tend to differ between mothers and fathers, children likely interact with each parent differently. Therefore, it is important to account for how emotions and behaviors are expressed and received by each family member, and the impact that this has on their responses.

Expressive Differences Between Parents

Previous research regarding preschoolers' emotional development has cited parenting approaches as a major contributing source. Cabrera et al. (2014) relayed findings that noted similarities between mothers and fathers when interacting with their children: mothers and fathers both encourage explorative play of infants, and provide nurturing. Additionally, the child benefits from parental support, regardless of the gender or role of the parent. However, differences in parenting styles, specifically concerning emotions and behaviors, impact the interactions between the child: emotional and behavioral exchanges differ between mother-child and father-child dyads (Zaman &

Fivush, 2013). For this reason, differences in parental expressions are explored in relation to the interplay between parent and child.

While Cabrera and colleagues (2014) mentioned similarities between the parenting styles of mothers and fathers, the researchers also noted key differences that likely influence the emotional and behavioral exchange between the children and each parent. First, while both parents have been found to encourage play, fathers tend to encourage rougher play and more risks when playing. Interestingly, mothers were found to encourage their children to notice the reactions of other children when playing. These findings suggest that children may interact with fathers more freely during positive, happy conditions, and interact with mothers more freely during serious, sad conditions than fathers.

In addition, Zaman, and Fivush (2013) examined parental gender differences in reminiscing styles during parent-child interactions. Parent and child were advised to reminisce about 4 past emotion-laden experiences of the child (happy, sad, conflict with you, conflict with peer), and two interactions they experienced together (last time they visited playground together, last outing they engaged in together). The researchers noted that mothers and fathers differ in language interaction, and conversational context with their young children. Mothers tend to engage in more verbal play with their children, while fathers tend to engage in more physically stimulating play. Additionally, mothers tend provide more nurturing and supportive behaviors than fathers. These differences likely change the dyadic relationship between the children with each parent.

Research has shown the importance parental expression of emotions on child emotion socialization (Wong, McElwain, and Halberstadt, 2009), and that parent

emotions and behaviors differ by gender of parent (Cabrera et al., 2015; Zaman & Fivush, 2013). Because the expressivity of mothers and fathers differs, it is likely that the child responds to each parent differently. This also suggests that when children lead the emotional expressions of the parents, they likely adapt different approaches for each parent (Wilson & Durbin, 2013). For this reason, the child's displays of emotions and behaviors are examined for differences between each parent.

Preschooler Expressiveness with Each Parent

Research regarding child interactions with each parent is not as prevalent as findings related to the differences in mother father interactions with children. While evidence supports the existence of child driven effects on parents (Feldman, 2015; Mills-Koonce et al., 2007; Wilson & Durbin, 2013), more research is required on the differences in child emotional and behavioral displays between parents. Interestingly, and alternatively to the conception of most, current research has shown that children express themselves consistently across parent type. While mothers and fathers may display different emotions and behaviors toward their child, the child appears to engage each parent in a similar manner in early childhood (Martins, E. C., Soares, Martins, C., & Osório, 2016; Wilson & Durbin, 2013).

Wilson and Durbin (2013) discovered child-driven effects while examining the interactions between parents and children in terms of bids, defined as, “overtures that had the potential for response,” and responsiveness between family members. Bids were coded as follows for mothers, father, and children: social interaction, attempts at influence/control, and indicators of negative affect/distress (children only) or mood regulation (parents only). Interestingly, the researchers found consistencies across child

behavior for both parents, which in turn, elicited similar patterns of responses and engagement for each parent. Wilson and Durbin concluded their findings gave support of a child-lead effect, in that children elicit parental responses, during early and later childhood (age range: 3 to 6 years). Therefore, parents likely gauge their responses based on the child's expressions, and the child's expressions tend to remain consistent across parent genders.

Martins et al. (2016) examined infant emotion regulation (ER) with fathers and mothers, and analyzed whether father-infant interaction, specifically, contributed to child ER. Two home visits were conducted for each infant (age range: 10 to 12 months) with their mother and father. Parents completed self-report measures on child temperament. Recorded tasks included normal parent routine, parent initiated child interaction, guided child free-play/daily routine play, and another emotion eliciting and regulating task. Parent-infant interaction quality was coded for during the initial observation. The researchers found that infant ER was relatively consistent between mothers and fathers. Martins and colleagues also found that father-infant interaction quality was predictive of the consistency in infant ER styles across tasks; mother-infant interaction quality was not predictive of overall infant ER. While these findings conclude that infants regulate emotions similarly across parent gender, it seems that the interaction of the father may be more related to child ER than the interaction of the mother. Therefore, while child interaction attempts may be similar between parents, the responses of each parent may produce different effects.

Understanding the emotional and behavioral dynamics within the family system assist in determining how each family member will engage, interact with, and respond to

each other. Father-child interactions sometimes differ from mother-child interactions, and the way the child engages each parent may change their expected response pattern. However, when considering emotional and behavioral exchanges, it is also important to note the emotional climate of the circumstances: the emotional state of each family member, and the emotional context of the situation/task presented. For that reason, the expressions of each family member will also be examined in terms of positive, happy emotional contexts and negative, sad, emotional contexts.

Familial Expressivity within Positive and Negative Emotional Conditions

When assessing the emotions and behaviors within the family system, it is important to elicit emotions and behaviors in different emotion-laden conditions (e.g. positive and negative states) in order to examine the variations in dyadic interactions within each condition; the expressive exchanges between each dyadic relationship may differ in these different emotion eliciting contexts (McCoy & Raver, 2007; Shewark & Blandon, 2015). Thus, it is important to consider the effects of both positive (happy) and negative (sad) states, conditions, and responses, when examining the emotional and behavioral exchanges between parents and preschoolers.

McCoy and Raver (2007) examined the relationship between positive and negative emotions of caregivers, emotional regulation of children, and teachers' reports of children's externalizing and internalizing behaviors in African American and Hispanic Head Start families. The researchers concluded that caregivers who were able to subdue negative emotions were less likely to have children with internalizing behavioral problems. Additionally, caregivers who reportedly expressed more positive emotions were less likely to have children with outward behavioral issues such as aggression and

defiance. Shewark and Blandon (2015) examined whether the reactions of mothers and fathers to children's positive and negative emotions were associated with child negativity and emotion regulation. Mothers and fathers completed self-report inventory measures to assess child negativity and emotion regulation, and rated how well they would respond to their child's positive and negative emotions. Parents who were unsupportive of their child's positive emotions had children with more negativity. Also, fathers who displayed more unsupportive responses to children's negative emotions had children with lower emotion regulation skills. These findings support that parental responses and expressions during positive and negative conditions affect child behavioral and emotional control over time.

In terms of negative emotional states, Slatcher and Trentacosta (2012) examined the influence of parent and child negative emotionality of young children's behaviors. Measures were obtained through parental questionnaires on parent and child negative emotionality and self expressiveness (SEFQ), and naturalistic recordings of child behaviors and emotions over the course of 1 day: recordings were then coded for using negative emotion word use (e.g. mad, sad, hate, etc.) and problem behaviors (e.g. whining). The results concluded that mothers with higher levels of negative emotionality had children that argued/fought more with others, and used more negative emotion words; father reported child negative emotionality did not significantly predict child negative word use and behaviors. Interestingly, the researchers found that this relationship was moderated by maternal positive and negative expressiveness, in that mothers with higher negative emotionality were strongly related to child negative word

use and behaviors only when mothers had low levels of positive emotional expressiveness, or higher negative emotional expressiveness.

Parent-child pretend-play and play narrative findings can be related to a positive, happy emotional condition. As stated previously, both mothers and fathers engage their child in play activities, including encouraged exploration, nurturing responses, and more physical play with sons, specifically (Cabrera et al., 2014); although, researchers noted that fathers may encourage more “rough-and-tumble” play, while mothers encourage observation of peers during play. This is similar to the findings of Zaman and Fivush (2013), which note that mothers tend to engage children in negative emotional and positive play narratives of past events more so than fathers. This supports that mothers may be more helpful in recounting events with their child in order to help them understand their past, while fathers may not probe the meaning behind negative emotions and positive play: they simply engage and react. These findings suggest there are differences between parent emotional and behavioral expressions during happy conditions and sad conditions.

As described, mothers, fathers and children are influenced by positive and negative circumstances, whether those circumstances include emotional states, or emotion eliciting tasks. The variations in expressive content by emotional condition are important to note when examining the emotional and behavioral reciprocity between family members: the way in which one family member responds to a specific emotional condition may alter the direction of the exchange. When examining expressive interdependence within the triadic family system, it is critical to include measures of

emotional and behavioral exchanges within both positive and negative emotion-eliciting conditions and emotion reporting contexts.

Familial Interdependence

While previous findings have examined unidirectional dyadic relationships within the family system, fewer studies have analyzed the emotional and behavioral interdependence between each parent-child dyad. Nevertheless, research has provided empirical evidence to support the bidirectional influences between the parent-child relationships (Pardini, 2008). The following section will review evidence of interdependence between parents and children, and relate the findings to emotional and behavioral expressiveness in both positive and negative emotional contexts.

Findings support the presence of parent-child emotion-related interdependence from infancy and overtime: Feldman (2015) examined how the emotional regulation (ER) of newborns impacts their regulatory abilities over a 10 year time span, by way of the bidirectional dynamics between child ER and parent-child reciprocity. Regulatory capabilities were measured using respiratory sinus-arrhythmia (RSA) and the Neonatal Behavior Assessment Scale. The findings indicated that long-term effects of infant ER and parent-child bidirectional dynamics were improved with individual stability in ER and parenting over time: these reciprocal interactions changed gradually over time, as well. In addition, the findings suggest that infants guide their own regulatory development: their ER capacities at birth shape the parent-child bidirectional dynamics.

Additionally, Carrère and Bowie (2012) noted that there is a mutual emotion regulation between children and their parents, in which children respond to the emotions of their parents, and vice versa. Further, Chang and Shaw (2016) examined the parent-

child relationship through the coerciveness between parents and toddlers. The researchers examined mothers and male toddlers in this study. Specifically, the researchers assessed the bidirectional and interactive effects between child negative behavior and negative parenting in mothers during toddlerhood. The researchers found that boys with higher levels of negative emotionality at 18 months were more likely to have higher levels of disruptive behavior at 24 months, especially if subjected to higher levels of maternal negative control. Additionally, child negative emotionality was predictive of maternal negative control over-time; toddlers with higher levels of negative emotionality at 18 months decreased maternal negative control from 18 to 24 months. Therefore, the emotions and behaviors displayed by the child influenced the expressiveness and responsiveness of the mother, as well.

In a real-time analysis, Morelen and Suveg (2012) examined the reciprocal interaction effects within parent-child emotion-eliciting discussions (i.e. happy, angry, sad, anxious). Behaviors of parents were coded as either supportive emotion parenting or unsupportive emotion parenting, and child behaviors were coded as maladaptive or adaptive emotion regulation. In short, the researchers concluded that overall, parents and children both contribute to the conditions of the discussion regardless of parent gender. This also relates to Wilson and Durbin's (2013) result concluding that children engaged each parent consistently regardless of gender, which in turn, caused the parents to respond in corresponding manners: this further supports the notion of child-driven effects, in addition to the evidence supporting parent-driven effects (Cabrera et al., 2014; Wong et al., 2009).

In sum, reciprocity between parents and children has been examined in various facets, with findings concluding the existence of interdependence within the family system. While there is support for interdependence within the family unit, few studies include child interactions with both parents; maternal effects are more heavily analyzed than paternal effects. In addition, few studies examine the bidirectional exchanges in real-time, during emotion-eliciting tasks; this would provide more information on the immediate expressive exchanges between parents and children. Hence, the following study seeks to examine the bidirectional exchange of emotions and behaviors between children, mothers, and fathers, in real-time, while accounting for both positive and negative emotional states and emotion-eliciting conditions.

II. HYPOTHESES

The present study seeks to examine the emotional and behavioral exchanges between mothers, fathers, and preschoolers. Expressive differences between mothers and fathers will be explored, along with the effects of emotional states and different emotion-laden conditions. In the present study, it is hypothesized that the expressive interactions between each family member will reveal bidirectional effects, rather than single, primary, one-way effects, between each member, and that the emotional context of the situation will impact these reciprocal effects.

Expressive Dynamics Hypotheses

Hypothesis 1: The majority of findings related to parent-child interactions have focused on the mother-child relationship. While there is evidence to support consistency across parent-child interactions regardless of gender (Morelen & Suveg, 2012; Wilson & Durbin 2013), findings related to fathers engaging in play behaviors with children differ from mothers (Cabrera et al., 2014; Zaman, and Fivush, 2013). Since fathers tend to engage in more physical play behaviors, while mothers encourage children to observe their peers during play, then, fathers may in fact be more comfortable in positive, happy contexts than negative, sad contexts: it was thought that fathers may find it easier to engage with, and respond to children during the happy stories than the sad stories. Thus, fathers are predicted to display greater external affect and affective congruency during the happy story condition than the sad story condition. Specifically, external displays of affect were defined as verbal and facial expressions, and affective congruency was

defined as expressive consistency with content of story (i.e. happy or sad). In turn, it is predicted that children will display greater attentiveness, external displays of affect, and affective congruency during the happy story condition than the sad story condition when paired with the father.

Hypothesis 2: Mothers tend to provide more verbal support, and nurturing responses than fathers (Zaman & Fivush, 2013); adequate verbal expression is an important aspect of story recitations, and may further encourage child engagement. Mothers also tend to encourage their children to observe their surroundings (i.e. remain attentive), as Cabrera et al. (2014) noted during play interactions. Verbal expression and nurturing behaviors can be applied to both happy and sad story conditions, respectively. Therefore, it is hypothesized that the mother-child dyads will have more consistency in their emotions and behaviors than the fathers. Simply, the mothers and children will be more similar in their attentiveness, affect, and congruence than the fathers and children.

Positive and Negative Emotional Conditions Hypotheses

Hypothesis 3: Many studies have used self-report inventories in their analyses of parent-child interactions in relation to emotions and behaviors (Martins et al., 2016; Slatcher & Trentacosta, 2012). Specifically, Slatcher and Trentacosta noted moderation effects of maternal positive and negative emotional expressivity on maternal negative emotionality and child negative word use and behaviors, with maternal expressivity and negative emotionality derived through self-report measures, including the SEFQ. Therefore, the parent self-reports of expressivity were compared to their observed displays of affect during story recitations in order to assess for the consistency of parent's reports of their own expressiveness during happy and sad conditions. Additionally, self-

report measures provide a more general assessment of emotions and expressions because they cover a larger amount of time. For this hypothesis, self-report measures were compared to observed emotions and behaviors in order to assess the accuracy of the parent reports. Inventory responses regarding paternal self-reports of expressivity (SEFQ) and parental ratings of child temperament (CCTI) were explored and compared to coded emotions and behaviors during story recitations: SEFQ total subscales (positive expressivity, negative expressivity, and total expressivity) were compared to observational codes for parental external displays of affect, and the child attention subscale of the CCTI was compared to the observational codes for child attention.

Hypothesis 4: Negative emotional contexts are commonly assessed in relation to parent-child interactions (McCoy & Raver, 2007; Shewark & Blandon, 2015). Specifically, Slatcher and Trentacosta (2012) examined parent and child negative emotionality through parent self-report measures, and child negative behaviors and word use through naturalistic observation. In following this methodology, parental negative emotional states will be compared to parent and child observed emotional and behavioral states; this will allow for the analysis of parent reported negative emotionality on parent and child observed expressions. Parent reports of negative emotional states (via CES-D scores) will be compared to observed parent and child emotions and behaviors. Therefore, it is hypothesized that (1) parents with higher scores on the CES-D will display more neutral external affect during both happy and sad story conditions, and less affective congruency during the happy story condition, and (2) the children of parents with higher scores on the CES-D will display less attentiveness, more neutral external affect, and less affective congruency during the happy story condition.

Familial Interdependence Hypotheses

Hypothesis 5: Previous findings have established the existence of interdependence between parents and children (Carrère & Bowie, 2012; Chang & Shaw, 2016; Feldman, 2015; Pardini, 2008). However, much of the research has focused on the mother-child relationship while using longitudinal data. Morelen and Suveg (2012) examined real-time effects between parents and children; their findings suggested the presence of expressive reciprocity between fathers and children, and mothers and children. Therefore, the following hypothesis concerns the real-time reciprocity between each parent and the preschooler in both emotion-eliciting conditions; it is hypothesized that interdependence between each parent-child dyad will be present during each story condition for each coded response (attention/on-off task, external displays of affect, and affective congruency). Therefore, changes in the parents' expressions will influence the child's expressions, and vice versa. The examiner will also explore whether the child directs the emotional and behavioral exchanges more often than the parents, whether this occurs more often when paired with mother or father, and whether the story condition impacts this.

III. METHODS

Participants

The participants were selected from the *Familial Influences on the Development of Empathy in Preschoolers*, a study that began in 2008 to examine preschoolers' empathy and emotional regulation and the familial socialization strategies between parents and toddlers. Out of the 119 preschoolers from the original study, 65 preschooler participants (36 males, 29 females) included both the mother and father data that was needed to study the triadic family dynamic; of those 65 groups, 17 preschooler (12 males, 5 females) and parent participant groups were used for the present study. The 17 participant groups were chosen based on the following criteria: 1) duration of at least 60-seconds for all story recitations, and 2) completion of all inventory measures by each parent. On average, the preschoolers are 4 years of age ($M = 3.91$, $SD = 0.54$), with the youngest being 3 years old and the oldest participant being 5 years old. The average age of fathers is 40 years ($M = 39.93$, $SD = 5.16$), with ages ranging from 31 years to 47 years. For mothers, the average age of is 37 years ($M = 37.27$, $SD = 4.77$), with ages ranging from 31 years to 48 years. Sixteen mothers and fathers labeled themselves as Caucasians (94.12%), while one set of parents did not report their ethnicity (5.88%).

Measures

Written Measures

Parents completed a battery of questionnaires on measuring their perceptions of their self-expressivity, negative emotions, and their child's temperament. The Self-

Expressiveness in the Family Questionnaire (SEFQ; Halberstadt et al., 1995) was used to measure the self-expressivity of each parent (Appendix C). Mothers and Fathers complete a 40-item version of the SEFQ. Parents rate how frequently they express emotions with family members on a 9-point scale from 1 (*rarely expresses feeling*) to 9 (*frequently expresses feeling*). Each question either falls into the positive (22 items), the negative-dominant (14 items), or the negative-submissive (4 item) category. The negative-dominant and the negative-submissive items are combined to compare the positive ratings with the overall negative ratings. Five of the 40 questions that had very low intra-item correlations compared to the other 35 items. Those five questions (Questions 10, 13, 14, 20, and 34) will not be included in the final calculations. The averages for the positive scores, the negative scores, and the total overall expressivity scores were calculated from the 35 highly-correlated items from the original 40-item version of the SEFQ.

Parental negative experiences were measured using the 20-item Center for Epidemiological Studies-Depression Scale (CES-D; Raldoff, 1977). Parents rate the severity in which they experience each statement, which consists of either a depressive or non-depressive assertion (Appendix D). The parent must choose between four answer options on a Likert-type scale (1= *< one day*; 2= *1-2 days*; 3= *3-4 days*; 4= *5-7 days*). The score for each answer options is as follows: 1= 0 score; 2= 1 score; 3= 2 score; 4= 3 score). However, statement items 4, 8, 12 and 16 are scored in reverse (1= 3; 2= 2; 3= 1; 4= 0) because they are positive statements. Total overall scores were calculated using each item: total scores of 16 or higher are indicative of depression. For the purposes of this study, higher scores on the CES-D were considered to experience more negative emotions.

Parental ratings of child temperament were assessed through the Colorado Childhood Temperament Inventory (CCTI; Buss & Plomin, 1984), a parental rating instrument for ages 1-6 years (Appendix E). The CCTI is made up of 30 items that measure the following subscales: emotionality, activity level, sociability, soothability, and attention. Parents assessed temperamental characteristics on a 5-point Likert-type scale in relation to their child's likeness to each item. For this study, the total scores for the parent-reported child attention subscale were compared to the child's coded attention during the story recitations.

Emotional and Behavioral Coding

Emotional and behavioral responses were coded for the mother, father, and child during each story recitations. Coded variables included child attentiveness, parental task consistency (i.e. parental attention), external displays of affect through vocalization and facial expression, and affective congruency. Child attention was assessed on a continuous scale based on the child's visual gaze: codes for this measure ranged from no focused attention (0) to intent, focused attention (5). The parent task consistency measure consisted of 6 coding options, which included whether the parent was on or off task with an accompanied description. The parent and child displays of affect measure included displays of neutral affect (1), verbal or vocal affect (2, 3), and both verbal and vocal affect (4). For more information on the coded variables, please see Appendices A-B.

Father-child dyads and mother-child dyads were coded for exactly 60 seconds for each variable within each story condition. Time constraints for coding were applied to the original recordings to ensure the consistency of the number of coded variables across participant groups. Graduate and undergraduate students conducted the behavioral

coding; inter-rater reliability was assessed for approximately 23% of the participants by checking the reports of two independent coders for each measure. The emotions and behaviors were coded using the Observer program, in which keystrokes are used to assess magnitude and frequency of behavioral changes.

Procedure

In the original study, parents with preschool-aged children were recruited to participate by way of a research recruitment flyer left with teachers at numerous preschools in Palm Beach, Broward, and Martin Counties in Florida. Their participation was on a voluntary basis. An 8mm video was used during the happy and sad story recitations and discussions for emotional and behavioral coding. Happy and sad (i.e. positive and negative) conditions were counterbalanced to avoid any possible biases due to disproportions in the order of the story conditions. For the positive emotion condition, one happy story (“The Crunching, Munching, Caterpillar” or “I Know a Rhino”) was chosen at random and recited to the child by their mother. Then, for the negative emotion condition, one sad story (“The Tenth Good Thing about Barney” or “Goodbye Mousey”) was chosen at random and recited to the child by their mother. The mother discussed the story with the child directly after finishing each story. Following the completion of the mother-lead stories and discussions, the father completed the same story recitation and discussion tasks with the preschooler with the two remaining books in an alternate order (i.e. if the happy story was read first by the mother, the father began with the sad story). Following completion of the story tasks, mothers and fathers were asked to fill out several questionnaires and a demographic sheet. Finally, an age-appropriate educational book and a participation certificate were provided to each child at the end of the home-

visit. This study required recoding of behavioral observations to ensure accuracy of start-and-stop times, which was required for the posited time-series analyses; additionally, only story recitations were examined further due to the time discrepancies in story discussions.

Data Analyses

Data was collected for each written measure provided by the parent, and for each coded variable through the examiner observations during story recitations. Changes in coded emotions and behaviors [attentiveness (i.e. child attention and parent on/off task), affective congruency, and affect through verbal and facial expression] were recoded second-by-second for each family member. Each participant pairing (father-child, mother-child) had at most 60 repeated measures time points for each variable within each story condition; therefore, for each participant group, the father and mother provided 120 variables per measure (240 time points total per measure for parents), and the child provided 240 variables per measure with each parent; thus, the data provided 240 variables per measure to examine for reciprocity. However, it should be noted that recordings for one father-child dyad during the sad story recitation ended 40 seconds early. A Hierarchical Linear Modeling method was used to assess the changes in data over time between each dyadic relationship. Data were nested within participants, and thus all analyses employed multilevel modeling with participants as the nested factor. To simplify analyses of coded measures, some variables were converted into continuous variables. Basic preliminary analyses were used to examine possible interaction effects.

IV. RESULTS

Preliminary Analysis

As stated previously, each participant had at most 60 repeated measures time points. Therefore, data were nested within participants, and thus all analyses employed multilevel modeling with participants as the nested factor using the lme4 package (Bates, Maechler, Bolker, & Walker, 2014) in R (R Core Team, 2014). For all models, fixed effect coefficients (b) along with their 95% bootstrapped ($k = 1,000$) confidence intervals (using the confint() function in R with bootstrapping) were reported. When discussing significance of effects, the closer the t-value or z-value is to zero, the less likely it is to be a significant effect.

Many of the behavioral variables were originally coded categorically. For simplification of analyses and interpretation of effect sizes, a few key variables were analyzed as continuous variables. For example, external displays of affect were coded in four categories: a) No reaction, 1 reaction (either b) verbal or c) facial), and d) 2 reactions. To convert this variable into a continuous variable, it was translated into a ratio scale of number of affective reactions: 0, 1, or 2.

Inter-rater reliability (IRR) was assessed for 23% of participants by way of comparing the work of two independent coders. First, each measure was assessed for IRR using Cohen (1960) Kappa (k). Kappa scores across measures were low to very low; however, the percent agreement across measures ranged from moderate to high for child attention ($P_o = 76\%$), child congruence ($P_o = 70\%$), child external affect ($P_o = 67\%$),

parent congruence ($P_o = 72\%$), and parent on/off task ($P_o = 64\%$) with the exception of paternal displays of affect ($P_o = 36\%$). High agreement between raters can produce low reliability scores due to the lack of variability between codes. Additionally, the larger number of possible codes for specific measures (Parent and Child External Affect, Parent On/Off Task) may have negatively impacted reliability. For example, for external affect, codes 4, 3, and 2 are all related to displaying affect, and code 4 is a combination of codes 3 and 2 (see Appendices A-B for coding details). Therefore, codes for External Displays of Affect and Parent Task Consistency were aggregated into dichotomous variables, noting whether affect was displayed or not/neutral, and whether the parent remained on task or off task, for the purpose of examining IRR (Heyman, Lorber, Eddy, & West, 2014).

The Gwet (2008) AC_1 statistic is an alternative reliability measure for Cohen's k ; the AC_1 statistic can be used for dichotomous variables, and is less sensitive to low variability. Gwet's AC_1 was calculated for Child and Parent Congruency, and the aggregated codes for Child and Parent External Affect, and Parent Task Consistency. Reliability improved for Child External Affect-Aggregated ($AC_1 = 0.55$), Parent Congruence ($AC_1 = 0.60$), and Parent On/Off Task-Aggregated ($AC_1 = 0.94$). While Parent External Displays of Affect-Aggregated also improved, it still produced a low reliability score ($AC_1 = 0.20$); Child Congruency produced a similar k and AC_1 scores ($k = .398$; $AC_1 = .396$). An AC_1 statistic could not be calculated for Child Attention, as this was not a dichotomous variable ($k = 0.21$). See Table 1 for a complete description of IRR statistics for each measure. While reliability is low for Child Congruence, Parent Affect-Aggregated, and Child Attention, percent agreement among these measures is reasonably

high. Future studies should include more participant groups and consider a more advanced coding software, in addition to coding for a longer time period in each state; these adjustments will likely improve reliability among raters.

Table 1. Inter-Rater Reliability and Percent Agreement Across Measures

| | | |
|----------------------------------------|------------------|-----------------|
| Child Congruency | | |
| <i>Percent Agreement</i> | <i>Cohen's K</i> | <i>Gwet AC1</i> |
| Po= .697 | k= .398 | AC1= .396 |
| Child Affect (Aggregated) | | |
| <i>Percent Agreement</i> | <i>Cohen's K</i> | <i>Gwet AC1</i> |
| Po= .72 | k= .269 | AC1=.55 |
| Child Attention | | |
| <i>Percent Agreement</i> | <i>Cohen's K</i> | |
| Po= .755 | k= .214 | |
| Parent Congruency | | |
| <i>Percent Agreement</i> | <i>Cohen's K</i> | <i>Gwet AC1</i> |
| Po= .725 | k= .138 | AC1=.60 |
| Parent Affect (Aggregated) | | |
| <i>Percent Agreement</i> | <i>Cohen's K</i> | <i>Gwet AC1</i> |
| Po= .553 | k= .033 | AC1= .20 |
| Parent On/Off Task (Aggregated) | | |
| <i>Percent Agreement</i> | <i>Cohen's K</i> | <i>Gwet AC1</i> |
| Po= .94 | k= .277 | AC1= .935 |

Preliminary analyses were conducted in order to obtain a basic understanding of the observed parent and child behaviors overall, and within each story condition. As stated previously, descriptions of each coded measure can be found in Appendices A-B. For observed child attention, children displayed similar attentiveness with mothers ($M = 4.346$, $SD = 1.243$) and fathers ($M = 4.483$, $SD = 1.093$) on average. In addition, child affective congruence was similar on average with fathers ($M = 1.432$, $SD = .495$) and mothers ($M = 1.388$, $SD = .487$). Children also displayed similar affect on average with fathers ($M = 1.371$, $SD = .758$) and mothers ($M = 1.373$, $SD = .788$). Interestingly, fathers and mothers performed similarly on average across all coded measures, as well.

Moreover, children and parents displayed similar behaviors on average within each story

condition. In sum, no notable differences were found. For a full description of these preliminary analyses, see Tables 2 and 3.

Table 2. Descriptive Statistics of Child Coded Measures by Story

| Story Type | | Child-Father Attention | Child-Father Affective Congruence | Child-Father Displays of Affect | Child-Mother Attention | Child-Mother Affective Congruence | Child-Mother Displays of Affect |
|------------|------------------|------------------------|-----------------------------------|---------------------------------|------------------------|-----------------------------------|---------------------------------|
| Happy | <i>Mean</i> | 4.534 | 1.300 | 1.406 | 4.533 | 1.242 | 1.403 |
| | <i>Std. Dev.</i> | 1.029 | .458 | .830 | 1.034 | .427 | .820 |
| | <i>Variance</i> | 1.060 | .210 | .689 | 1.070 | .184 | .673 |
| Sad | <i>Mean</i> | 4.430 | 1.569 | 4.430 | 4.159 | 1.533 | 1.344 |
| | <i>Std. Dev.</i> | 1.155 | .495 | 1.155 | 1.397 | .499 | .753 |
| | <i>Variance</i> | 1.333 | .245 | 1.333 | 1.951 | .249 | .567 |
| Total | <i>Mean</i> | 4.483 | 1.432 | 1.371 | 4.346 | 1.388 | 1.373 |
| | <i>Std. Dev.</i> | 1.093 | .495 | .758 | 1.243 | .487 | .788 |
| | <i>Variance</i> | 1.196 | .245 | .575 | 1.545 | .238 | .621 |

Table 3. Descriptive Statistics of Parent Coded Measures by Story

| Story Type | | Father Affective Congruence | Father Displays of Affect | Father On/Off Task | Mother Affective Congruence | Mother Displays of Affect | Mother On/Off Task |
|------------|------------------|-----------------------------|---------------------------|--------------------|-----------------------------|---------------------------|--------------------|
| Happy | <i>Mean</i> | 1.796 | 2.443 | 3.936 | 1.866 | 2.644 | 4.283 |
| | <i>Std. Dev.</i> | .403 | 1.049 | .773 | .340 | 1.012 | .752 |
| | <i>Variance</i> | .162 | 1.101 | .598 | .116 | 1.024 | .566 |
| Sad | <i>Mean</i> | 1.765 | 2.546 | 4.109 | 1.814 | 2.817 | 4.249 |
| | <i>Std. Dev.</i> | .424 | .958 | .515 | .389 | 1.044 | .837 |
| | <i>Variance</i> | .180 | .919 | .265 | .152 | 1.089 | .701 |
| Total | <i>Mean</i> | 1.781 | 2.494 | 4.021 | 1.840 | 2.731 | 4.266 |
| | <i>Std. Dev.</i> | .414 | 1.007 | .665 | .366 | 1.031 | .796 |
| | <i>Variance</i> | .171 | 1.014 | .442 | .134 | 1.064 | .634 |

Hypothesis 1

The first hypothesis involves the assessment of father's interactions with the children: specifically, this within this hypothesis, it was predicted that fathers will display

greater external displays of affect and affective congruency during happy story conditions, and in turn, children will display greater attentiveness, external displays of affect, and affective congruency during the happy than sad story condition when paired with the father. To test this hypothesis, a means as outcomes model was estimated in fathers only to determine whether story type affected the level of parental and child displays of affect. Story type was a categorical variable with two levels (“Happy” and “Sad”). Therefore, coefficients in Table 4 are displayed in relation to the “Happy” condition: a positive coefficient would be interpreted as a positive relationship to the “Happy” condition, and a negative coefficient would mean a positive relationship to the “Sad” condition. Story type did not significantly influence the level of affect displayed by fathers ($b = -.02, t = -.65, 95\% \text{ CI } [-.06; .03]$) or children ($b = -.01, t = -.37, 95\% \text{ CI } [-.05; .04]$). For a full description of effects for Hypothesis 1, see Table 4.

A similar model was estimated in fathers to determine whether story type affected the level of child attentiveness. There appears to be a small effect of story type on child attentiveness in the predicted direction. Children display slightly greater attentiveness ($b = .09, t = 2.24$) in the happy story condition than in the sad condition when paired with the father, although non-significant (95% CI [.01; .18]).

Lastly, congruence is a categorical outcome variable with two levels: congruent and not congruent. Therefore, a multilevel logistic regression model was estimated to determine whether story type affected the level of parental and child congruence in fathers only. Effects from multilevel logistic regression models are log odds. In order to make these coefficients more interpretable, Table 4 displays the exponentiated log odds converted to probability values. Results suggest that story type does affect the level of

parental congruence in fathers. As predicted, fathers displayed significantly more congruence in the happy story condition than the sad story condition (*probability coefficient* = .60, $z = 3.27$, 95% CI [.53; .66]). Fathers were 10% more likely to display congruence in the happy story condition than the sad story condition. However, the opposite effect was detected for child congruence. Children displayed significantly more congruence in the sad story condition than the happy story condition (*probability coefficient* = .16, $z = -14.89$, 95% CI [.13; .20]). Children were 34% less likely to display congruence during the happy story condition than the sad story condition.

Table 4. Hypothesis 1: Story Condition and Parent and Child Behavior

| Model | Fixed Parameters | | | |
|------------------------------------------------------|------------------|----------|--------------|---------------|
| | <i>intercept</i> | <i>b</i> | <i>t (z)</i> | <i>95% CI</i> |
| Story Type (Happy)→ Parent Affect | .84 | .02 | .65 | [-.06; .03] |
| Story Type (Happy) → Child Affect | .28 | -.01 | -.37 | [-.05; .04] |
| Story Type (Happy) → Child Attentiveness | 4.56 | .09 | 2.24 | [.01; .18] |
| Story Type (Happy) → Parent Congruence (Probability) | .86 | .60 | (3.27) | [.53; .66] |
| Story Type (Happy) → Child Congruence (Probability) | .33 | .16 | (-14.89) | [.13; .20] |

Note: N=17, n = 1999. *b* = unstandardized multilevel regression coefficient. *t (z)* = t-value for multilevel models and z-value for multilevel logistic models. The highlighted rows are displayed as probability coefficients from multilevel logistic models. 95% CI = 95% confidence interval from bootstrapped analysis (k=1000).

Hypothesis 2

In this hypothesis, mother-child dyads were predicted to produce more consistent observed emotions and behaviors over time than father-child dyads. To test this hypothesis, three random coefficient models were estimated to first determine whether children displayed consistency in external affect, attentiveness, and congruence from one second to the next. (As discussed above, congruence is a binary categorical outcome variable, and thus, multilevel logistic regression was used for any model including congruence as an outcome). Each key variable was first predicted by itself at time $n-1$. This resulted in strong consistency from one second to the next; for example, child

displays of affect was related $b = .75$ to the display of affect the second before, regardless of parent or condition. For a full description of effects for Hypothesis 2, see Table 5.

Then, three intercepts and slopes as outcomes models were estimated to determine whether the type of parent had an impact on this consistency. Parent type was introduced as an interactive effect to the models above. There was no effect of parent on second-by-second consistency in child external affect or congruence. However, a small effect was detected in the relationship between parent type and consistency in child attention.

While there are more sophisticated methods for probing interactive effects in multilevel models, for a basic preliminary understanding of the effect, each consistency model was estimated on a subset of the data based on parent type. Upon examination of the coefficients for each of these models (.88 in mothers compared to .86 in fathers), it does not seem that there is a notable difference between mothers and fathers in second-by-second consistency in child attention.

Table 5. Hypothesis 2: Lagged Effects of Child Behavior

| Model | Fixed Parameters | | | |
|--------------------------------------------------------|------------------|----------|--------------|---------------|
| | <i>intercept</i> | <i>b</i> | <i>t (z)</i> | <i>95% CI</i> |
| Child Affect (-1 Second) → Child Affect | .27 | .75 | 71.89 | [.74; .78] |
| Child Attention (-1 Second) → Child Attention | 4.45 | .87 | 112.20 | [.86; .89] |
| Child Congruence (-1 Second) → Child Congruence | .05 | .995 | (37.79) | [.993; .997] |
| Child Affect (-1 second)*Parent → Child Affect | .27 | | 28.73 | |
| Child Affect (-1 Second) | | .75 | 71.85 | [.73; .78] |
| Parent | | .00 | .17 | [-.03; .02] |
| Child Affect (-1 sec)*Parent | | .02 | 1.13 | [-.02; .07] |
| Child Attention (-1 second)*Parent → Child Attention | 4.45 | | 305.41 | |
| Child Attention (-1 Second) | | .87 | 109.06 | [.86; .89] |
| Parent | | .03 | 1.97 | [.00; .07] |
| Child Attention (-1 sec)*Parent | | -.03 | -2.00 | [-.06; -.00] |
| Mothers | | | | |
| Child Attention (-1 second) → Child Attention | 4.36 | .88 | 82.44 | [.86; .90] |
| Fathers | | | | |
| Child Attention (-1 second) → Child Attention | 4.55 | .86 | 75.2 | [.84; .88] |
| Child Congruence (-1 second)*Parent → Child Congruence | .05 | | -19.50 | |

| | | | |
|----------------------------------|------|-----|--------------|
| Child Congruence (-1 Second) | .995 | | [.993; .996] |
| Parent | .52 | .38 | [.43; .61] |
| Child Congruence (-1 sec)*Parent | .51 | .14 | [.38; .63] |

Note: N = 17, n = 3971. b = centered multilevel regression coefficients. t (z) = t-value for multilevel models and z-value for multilevel logistic models. The highlighted rows are displayed as probability coefficients from multilevel logistic models. 95% CI = 95% confidence interval from bootstrapped analysis (k=1000).

Hypothesis 3

This hypothesis concerned reviewing whether parent ratings immediately preceding the experiment accurately reflected behavior of the parent and child during the experiment: essentially, did parents accurately rate their own expressivity, and their child’s temperament related to attention. A means as outcomes model was used to estimate the relationship between parents’ self-report measure of expressivity (using the total score of the SEFQ) to parental external displays of affect during each story condition. There was not a significant relationship between parents’ total rating of expressivity to their own affect displayed during story conditions ($b = .005$, $t = .415$). However, there was a positive relationship between the positive facet of the SEFQ and displays parental affect in both conditions ($b = .035$, $t = 3.24$); in sum, parents who scored higher on the positive facet of the SEFQ also exhibited more displays of affect in the story recitation. There was a negative relationship between the negative facet of the SEFQ and parental displays of affect in both conditions ($b = -.042$, $t = -2.93$), in that parents who scored higher on the negative facet of the SEFQ displayed less affect in the story recitation (i.e. more neutral affect).

A means as outcomes model was used to estimate the relationship between parents’ ratings of their child’s temperament. Using the attention subscale score of the CCTI, the relationship between parents’ ratings of child attention after the story

recitations and observed child attention during the story recitations was examined. Counter to expectations, there was a negative relationship between parents' ratings of child attention and the actual displays of attention during recitations ($b = -.126, t = -3.78$).

Hypothesis 4

This hypothesis concerned comparing parent self-report measures of negative emotions (via CES-D scores) to observed emotions and behaviors: parents with higher CES-D scores would produce more neutral external displays of affect during both story conditions and less affective congruence during the happy story condition, while children of parent with higher CES-D scores will display less attentiveness, more neutral external affect, and less affective congruency during the happy story condition. First, preliminary scoring of CES-D inventories revealed the following: of the 17 sets of parents, 3 fathers and 2 mothers were depressed, 2 fathers were undefined, and 12 fathers and 15 mothers were not depressed. For the purpose of these hypotheses, CES-D scores were used continuously and considered as a range of negative emotionality. To examine these predictions, several means as outcomes models were estimated predicting behavioral outcome variable from parent-reported negative emotions. Effects of the models testing Hypothesis 4 are displayed in Table 6. Regarding external displays of affect, the effect of parent-reported negative emotions on external displays of affect in parents and the effects of parent-reported negative emotions on external displays of affect in children were not significant and were close to zero, but they were in the hypothesized direction.

For child attentiveness, the effect of parent-reported negative emotions on attentiveness was small and significant but in the opposite direction of the hypothesis (b

= .014, $t = 4.43$, 95% CI [.01; .02]). Children of parents with more depressive symptoms showed slightly more attentiveness throughout both conditions.

Regarding congruence, the effect of parent-reported negative emotions on parental congruence overall was significantly and negatively related, as hypothesized (*probability coefficient* = .495, $z = -2.21$). The effect of parent-reported negative emotions on child congruence overall, however, was non-significant (*probability coefficient* = .502, $z = 1.12$).

The relationship between parent-reported negative emotions and parental and child congruence was further explored, examining specifically whether story type interacted with parent-reported negative emotions to predict parental displays of affect and congruence or child displays of affect, attentiveness, and congruence. The effect of parent-reported negative emotions on child congruence did not vary by story type, but the effect of parent-reported negative emotions on parent congruence did. As mentioned above, there is a more sophisticated approach to probing these interaction effects, but in order to gain a basic, preliminary understanding, the data set was split by story type to examine the effects on each story condition separately. Upon examination of the coefficients for each of these models (.495 in the Happy condition compared to .495 in the Sad condition), it does not seem that there is a difference between conditions in the effects of parent-reported negative emotions on parental congruence.

The same approach was taken to gain a basic and preliminary understanding of the interaction between parent-reported negative emotions and story type and its effect on child affect. The interaction effect was significant ($t = 7.31$), and thus the data were split by story type and the relationship between parent-reported negative emotions and child

affect was examined separately. Interestingly, in the happy condition, the relationship between depression and child affect was positive but non-significant ($b = .003$, $t = 1.12$, 95% CI [-.00; .01]), and in the sad condition, the relationship was negative and significant ($b = -.007$, $t = -3.28$, 95% CI [-.01; -.00]).

Lastly, the same approach was taken to gain a basic and preliminary understanding of the interaction between parent-reported negative emotions and story type and its effect on child attentiveness. The interaction effect was significant ($t = 36.09$), and the data were split by story type to examine the relationship by condition separately. In the happy condition, the relationship between parent-reported negative emotions and child attentiveness was negative but non-significant ($b = -.006$, $t = -1.69$, 95% CI [-.01; .00]), and in the sad condition, the relationship between parent-reported negative emotions and child attentiveness was positive and significant ($b = .036$, $t = 7.12$, 95% CI [.03; .05]).

It is important to note that although several of the findings for the above hypothesis were significant, the coefficients were close to zero or essentially zero. Whereas many of the effects were in the hypothesized direction, more participants are needed to determine a more robust estimation of the size of the effects.

Table 6. Hypothesis 4: Parent-Reported Negative Emotions and its Relationship to Parent and Child Behavior

| Model | Fixed Parameters | | | |
|----------------------------------------------|------------------|----------|--------------|---------------|
| | <i>intercept</i> | <i>b</i> | <i>t (z)</i> | <i>95% CI</i> |
| Parent CES-D → Parent Affect | .92 | -.00 | -.84 | [-.01; .00] |
| Parent CES-D → Parent Congruence | .87 | .495 | (-2.21) | [.49; .50] |
| Parent CES-D* Story Type → Parent Congruence | .87 | | (11.57) | |
| Parent CES-D | | .495 | (-2.42) | [.49; .50] |
| Story Type | | .67 | (4.92) | [.60; .72] |
| Parent CES-D*Story Type | | .491 | (-2.70) | [.48; .50] |
| Happy | | | | |

| | | | | | |
|-------|------------------------------------------------|------|-------|----------|--------------|
| | Parent CES-D → Parent Congruence | .90 | .495 | (-1.67) | [.49; .50] |
| Sad | Parent CES-D → Parent Congruence | .86 | .495 | (-1.57) | [.49; .50] |
| | Parent CES-D → Child Affect | .29 | -.002 | -1.25 | [-.01; .00] |
| | Parent CES-D* Story Type → Child Affect | .28 | | 7.31 | |
| | Parent CES-D | | -.002 | (-1.26) | [-.01; .00] |
| | Story Type | | -.103 | -4.06 | [-.15; -.05] |
| | Parent CES-D*Story Type | | .015 | 5.89 | [.01; .02] |
| Happy | Parent CES-D → Child Affect | .26 | .003 | 1.12 | [-.00; .01] |
| Sad | Parent CES-D → Child Affect | .32 | -.007 | -3.28 | [-.01; -.00] |
| | Parent CES-D → Child Attentiveness | 4.34 | .014 | 4.43 | [.01; .02] |
| | Parent CES-D* Story Type → Child Attentiveness | 4.34 | | 36.09 | |
| | Parent CES-D | | .014 | 4.41 | [-.03; -.01] |
| | Story Type | | .495 | 9.76 | [.40; .59] |
| | Parent CES-D*Story Type | | -.024 | -4.88 | [-.03; -.01] |
| Happy | Parent CES-D → Child Attentiveness | 4.66 | -.006 | -1.69 | [-.01; .00] |
| Sad | Parent CES-D → Child Attentiveness | 4.02 | .036 | 7.12 | [.03; .05] |
| | Parent CES-D → Child Congruence | .30 | .502 | (1.12) | [.50; .51] |
| | Parent CES-D* Story Type → Child Congruence | .27 | | (-2.35) | |
| | Parent CES-D | | .502 | (1.45) | [.49; .51] |
| | Story Type | | .155 | (-13.72) | [.12; .20] |
| | Parent CES-D*Story Type | | .500 | (.07) | [.49; .51] |

Note: N=17, n = 4039. b = unstandardized multilevel regression coefficient. t (z) = t-value for multilevel models and z-value for multilevel logistic models. The highlighted rows are displayed as probability coefficients from multilevel logistic models. 95% CI = 95% confidence interval from bootstrapped analysis (k=1000).

Hypothesis 5

This hypothesis addressed the reciprocity between family members: it was predicted that interdependence was present between each dyadic relationship. Furthermore, it was also noted that the direction of effects (child- or parent-lead), parent gender, and story condition would be explored in the analyses. To test this hypothesis, a

series of random coefficient models were estimated to determine whether there is interdependence between parents and children during story recitations. First, each child's response was predicted by each parental response concurrently. Then, each child response was predicted by each parental response at time $n-1$, while controlling for the child's response at time $n-1$. For a full description of effects for Hypothesis 5, see Table 7.

There are a few findings of note for this hypothesis. Firstly, it appears that parent displays of affect, congruence, and attention are related to concurrent child displays of affect, attention, and congruence. Parent affect, congruence, and attention are negatively related to child affect but positively related to child attention and congruence. Furthermore, concurrent relationships between parent behaviors and child behaviors (*average absolute b* = .245, *average absolute probability* = .594) are stronger than lagged relationships (*average absolute b* = .033, *average absolute probability* = .523). Lastly, the directionality of effects was examined to determine whether parent behavior influences child behavior or vice versa. The effects displayed in Table 7 suggest that children influence parent behavior more than parents influence child behavior during story recitations. This effect was explored further by examining whether parent or story condition moderated the lagged effects between child and parent. There were no significant interactive effects between child behavior and parent type and their relationship to parent behavior a second later. There were, however, two significant interactions between child attention and story type and their relationship to parent attention (*probability coefficient* = .608, $z = 2.01$, 95% CI [.48; .63]) and congruence (*probability coefficient* = .571, $z = 2.29$, 95% CI [.55; .64]) a second later. When split by

story type, child attention was more likely to be related to parent attention (parent task consistency) in the happy condition ($probability = .668, z = 3.98, 95\% CI$) than the sad condition ($probability = .556, z = 1.604$), but child attention was positively related to parent attention in both conditions. When split by story type, child attention was more likely to be related to parent congruence in the happy story condition ($probability = .582, z = 3.60$) than the sad condition ($probability = .496, z = -.163$).

Table 7. Hypothesis 5: Directionality of Effects Between Parent and Child

| Model | Fixed Parameters | | | |
|------------------------------------------------------|------------------|----------|--------------|---------------|
| | <i>intercept</i> | <i>b</i> | <i>t (z)</i> | <i>95% CI</i> |
| Parent Affect → Child Affect | .27 | -.060 | -4.52 | [-.09; -.03] |
| Parent Affect → Child Attention | 4.46 | .129 | 4.61 | [.07; .19] |
| Parent Affect → Child Congruence | .31 | .540 | (2.66) | [.51; .57] |
| Parent Congruence → Child Affect | .32 | -.143 | -6.55 | [-.18; -.10] |
| Parent Congruence → Child Attention | 4.35 | .310 | 7.04 | [.22; .40] |
| Parent Congruence → Child Congruence | .30 | .531 | (.20) | [.48; .58] |
| Parent Attention → Child Affect | .29 | -.058 | -1.40 | [-.14; .02] |
| Parent Attention → Child Attention | 4.10 | .770 | 9.23 | [.61; .94] |
| Parent Attention → Child Congruence | .23 | .711 | (4.31) | [.61; .81] |
| Parent Affect (-1 Second) → Child Affect | .27 | -.007 | -.072 | [-.03; .01] |
| Parent Affect (-1 Second) → Child Attention | 4.45 | -.013 | -.89 | [-.04; .01] |
| Parent Affect (-1 Second) → Child Congruence | .28 | .482 | (-.61) | [.43; .53] |
| Parent Congruence (-1 Second) → Child Affect | .28 | -.025 | -1.68 | [-.04; .01] |
| Parent Congruence (-1 Second) → Child Attention | 4.44 | .048 | 2.16 | [-0.01; 0.06] |
| Parent Congruence (-1 Second) → Child Congruence | .31 | .503 | (.887) | [.32; .46] |
| Parent Attention (-1 Second) → Child Affect | .29 | -.046 | -1.64 | [-.11; .01] |
| Parent Attention (-1 Second) → Child Attention | 4.43 | .057 | 1.33 | [-.03; .14] |
| Parent Attention (-1 Second) → Child Congruence | .04 | .589 | (.96) | [.42; .74] |
| Child Affect (-1 Second) → Parent Affect | .91 | -.028 | -2.28 | [-.05; .00] |
| Child Affect (-1 Second) → Parent Attention | .84 | .512 | (.166) | [.44; .58] |
| Child Affect (-1 Second) → Parent Congruence | .72 | .412 | (-3.18) | [.34; .44] |
| Child Congruence (-1 Second) → Parent Affect | .91 | .013 | 1.84 | [-.01; .05] |
| Child Congruence (-1 Second) → Parent Attention | .82 | .634 | (1.601) | [.47; .81] |
| Child Congruence (-1 Second) → Parent Congruence | .71 | .513 | (.35) | [.47; .56] |
| Child Attention (-1 Second) → Parent Affect | .91 | .015 | 2.58 | [.01; .03] |
| Child Attention (-1 Second) → Parent Attention | .86 | .606 | (4.03) | [.53; .64] |
| Child Attention (-1 Second) → Parent Congruence | .72 | .531 | (1.97) | [.52; .55] |
| Child Affect (-1 Second) *Parent → Parent Affect | .89 | -.008 | .70 | [-.03; .02] |
| Child Affect (-1 Second) *Parent → Parent Attention | .84 | .307 | (-1.32) | [.17; .45] |
| Child Affect (-1 Second) *Parent → Parent Congruence | .70 | .601 | (1.63) | [.45; .69] |
| Child Congruence (-1 Second) *Parent → Parent Affect | .89 | .039 | 1.47 | [.03; .10] |

| | | | | |
|---------------------------------------------------------------|-----|-------|---------|---------------|
| Child Congruence (-1 Second) *Parent → Parent Attention | .82 | .489 | (-.06) | [.23; .83] |
| Child Congruence (-1 Second) *Parent → Parent Congruence | .71 | .622 | (1.65) | [.56; .65] |
| Child Attention (-1 Second) *Parent → Parent Affect | .89 | .016 | 1.36 | [.00; .05] |
| Child Attention (-1 Second) *Parent → Parent Attention | .86 | .497 | (-.06) | [.44; .62] |
| Child Attention (-1 Second) *Parent → Parent Congruence | .70 | .511 | (.36) | [.46; .56] |
| Child Affect (-1 Second) *Story Type → Parent Affect | .91 | -.032 | -1.32 | [-0.09; 0.02] |
| Child Affect (-1 Second) * Story Type → Parent Attention | .85 | .388 | (-.76) | [.32; .67] |
| Child Affect (-1 Second) * Story Type → Parent Congruence | .72 | .407 | (-1.48) | [.34; .51] |
| Child Congruence (-1 Second) * Story Type → Parent Affect | .89 | .016 | 1.37 | [-0.11; 0.03] |
| Child Congruence (-1 Second) * Story Type → Parent Attention | .82 | .579 | (.68) | [.39; .84] |
| Child Congruence (-1 Second) * Story Type → Parent Congruence | .71 | .376 | (-1.61) | [.34; .61] |
| Child Attention (-1 Second) * Story Type → Parent Affect | .89 | .016 | 1.37 | [.00; 0.04] |
| Child Attention (-1 Second) * Story Type → Parent Attention | .87 | .608 | (2.01) | [.48; .63] |
| Child Attention (-1 Second) * Story Type → Parent Congruence | .72 | .571 | (2.29) | [.55; .64] |

Note: N=17, n = 3971. b = unstandardized multilevel regression coefficient. t (z) = t-value for multilevel models and z-value for multilevel logistic models. The highlighted rows are displayed as probability coefficients from multilevel logistic models. 95% CI = 95% confidence interval from bootstrapped analysis (k=1000).

V. DISCUSSION

The purpose of this study was to investigate the transactional emotional and behavioral exchanges between parents and preschoolers in different emotion states. Effects were found for parent gender, parent-report emotionality/expressivity, and bidirectional parent-child exchanges. While many of the findings were non-significant, trends in the data suggest a need for further analyses: larger sample size, increased time-frame in coded observations, added or adjusted coded measures, and more advanced behavioral coding programs will likely enhance our understanding of the interactive dynamics of parent-child relationships during different emotional interactions in future investigations.

Hypothesis 1: Expressive Dynamics of the Father and Child

In order to understand the expressive dynamics of the family system, and to extend this understanding with fathers specifically, it was predicted that fathers would display greater performance during the happy story condition than the sad story condition: particularly, father's will displays greater external affect and affective congruency during the happy condition than the sad condition. It was also predicted that in turn, the children would display greater attentiveness, external displays of affect, and affective congruency during the happy story condition than the sad story condition when paired with the fathers. Father-child dyads did not differ on affect based on story-type, but children displayed slightly greater attentiveness during the happy story than the sad story when paired with fathers; although, these findings were non-significant. However,

father-child pairings included fathers that displayed significantly more affective congruence during the happy story condition, while children displayed significantly more affective congruence during the sad story condition.

The non-significant effect between the exchanges of father-child affect by story type, although unexpected, is supported by the findings of Wilson and Durbin (2013); they found that fathers were more likely to attempt to control child interactions than engage in, or regulate, the interaction. Consistent affect across story types may reflect low emotional engagement, which likely impacted the child's displays of affect across story-types. While affect in father-child pairings was unaffected by different emotion conditions, an increase in child attentiveness during the happy story condition supports evidence that fathers engage children in happy, play-related activities more so than negative, serious activities, as described by Zaman and Fivush (2013) and Cabrera et al. (2014). In addition, story type significantly impacted affective congruency in fathers and children. Since paternal affective congruence was significantly better during the happy than sad story condition, it can be inferred that fathers more readily expressed positive, happy affect than negative, sad affect with their children; this finding is also supported by the literature (Cabrera et al., 2014; Zaman & Fivush, 2013) However, contrary to predictions, children displayed significantly more affective congruence in sad story condition than the happy story condition when paired with father. This effect may have occurred due to the way in which congruence was coded for and the serious content of the sad stories. First, because overt expressions of "sadness" (i.e. crying) were not expected during story recitations, neutral affect was accepted as a congruent expression of sadness while laughing/smiling was not. The serious content within the sad stories may

have increased neutral expressions in the children; this could also have been increased due to the father's performance during the sad story conditions, in that fathers may have been more comfortable with the happy content than the sad. Future research should include more coded measures to assess for both parent and child engagement during emotion eliciting conditions, as these measures may further explain why the results differed from expectations.

Hypothesis 2: Expressive Dynamics of the Mother and Child

The expressive dynamics within the family system were then assessed in terms of mother-child interactions: it was predicted that the interactions between mothers and children would produce more consistent responses in children over time than the father-child pairings. The consistency of child responses when paired with mothers was predicted based on evidence supporting mothers as more verbally expressiveness, thought provoking, and nurturing than fathers (Cabrera et al. 2014; Zaman & Fivush, 2013); considering that story recitations were used to elicit positive and negative emotions, mothers would appear to fair better than fathers in maintaining consistent child engagement across emotional contexts. However, children produced consistent emotional and behavioral responses regardless of parent gender or story type. This follows Wilson and Durbin's (2013) findings, which suggest that children respond consistently to both parents, and that parents respond similarly in return. While this result did not match the predicted relationship, it may provide further evidence of child-driven effects. In support of this, consistency of child congruence and displays of affect were also unaffected by parent gender; there was a slight trend for consistency of child attention and parent type, but this was non-significant. Overall, the findings appear to support the evidence that

suggests parent gender does not impact parent-child interactions, and that the child drives the interaction (Martin et al., 2016).

Hypothesis 3: Familial Expressivity in Relation to Self-Reported and Observed Expressivity and Attentiveness

Familial expressivity during both positive and negative emotion-eliciting contexts was examined by way of comparing parent-reported parent and child emotions and behaviors to observed emotions and behaviors. Researchers have noted their use of parental-self-report measures when assessing positive and negative emotional exchanges between parents and preschoolers (Martins et al., 2016; McCoy & Raver, 2007; Shewark & Blandon, 2015; Slatcher & Trentacosta, 2012), with many researchers comparing self-report measures to observed emotions and behaviors; for example, Slatcher and Trentacosta (2012) found that self-reported maternal expressivity (as measured by the SEFQ) moderated the relationship between maternal-reported negative emotionality and child negative expressions. Therefore, parent-reported self-expressivity and parent reported child attention were compared to the respective emotions and behaviors observed during story recitations.

The SEFQ was used as a facet of overall, positive and negative parental emotional expressiveness; in following with Slatcher and Trentacosta's (2014) methods, SEFQ scores were then compared to actual, observed parental displays of affect during both happy and sad conditions. While results were non-significant, effects were found between the SEFQ positive and negative expressivity and observed parental affect in happy and sad conditions, respectively: high scores on the positive facet of the SEFQ were related to high parental affect during both conditions, and high scores on the negative facet of the

SEFQ were related to low/neutral parental affect during both conditions, as expected.

These results suggest that the SEFQ is a reliable measure of parental expressivity in terms of positive and negative emotional expressiveness. In turn, the results support that parents are likely able to adequately report their own positive and negative emotional expressiveness. However, further research is needed to determine whether these effects would be significant with added participants.

To further examine familial expressivity in differing emotional contexts, the child's behavior (specifically, child attentiveness) was then examined through parental-reported measures and observed observations. While some of the reviewed studies have assessed child emotion regulation (Shewark & Blandon, 2015) and facets of child temperament (Slatcher & Trentacosta, 2012), measures of child attention, specifically, via parent-report and observations, were not examined. This was explored in the current study because parent's perceptions, if inaccurate, can affect parent-child interactions overall; for example, if the parent displays affect tailored to a specific condition, and incorrectly assumes that the child is paying attention, the parent will not alter their displays of affect to draw the child into the condition. Although non-significant, the results determined a negative relationship between parent-reported child attention and observed child attention during story recitations: higher parental ratings of child attention produced lower observed child attention across story conditions. While this finding may suggest that parents are unable to accurately determine child attention, another option may be that observing child attention solely based on visual gaze does not capture engaged attention. Adding additional measures of observed attention that do not focus on visual gaze may be more effective in future studies. However, it should also be noted

that the inventory measure of child attention differed from the observed measure of child attention, in that the inventory measure was based on how parents perceive their child's attentiveness in one day as opposed to one condition; providing parents with an inventory of child attention related to the respective condition, in terms of time and/or content, may provide more consistency among reported and observed measures.

Hypothesis 4: Familial Expressivity in Relation to Parent-Reported Negative Emotions and Observed Expressions

Next, familial expressivity was examined by focusing on negative emotional contexts: specifically, parent self-report measures of experienced negative states were compared to the observed emotions and behaviors of parents and children. Previous findings suggest parent-reported negative emotionality was related to negative expressions in children (Slatcher & Trentacosta, 2012), and that unsupportive response patterns from parents produced negative emotional effects in children (Shewark & Blandon, 2015). Therefore, hypotheses were developed based on findings suggesting that parents who experience high levels of negative emotions (i.e. depression) would likely interact with their children differently, perhaps less engagingly, which would then impact the overall parent-child interaction. First, it was predicted that parents with more reports of negative emotions would display more neutral external affect during both happy and sad story conditions, and less affective congruency during the happy story condition, and second, it was predicted that the children of parents with more reports of negative emotions would display less attentiveness, more neutral external affect, and less affective congruency during the happy story condition.

Overall, the relationship between parent-reported negative emotions and observed parent affective congruence was significant, with more negative emotions resulting in less affective congruence. The relationship between parent-reported negative emotions and observed parent and child displays of affect were non-significant; however, when story type was considered, there was a significant interaction effect between parent-reported negative emotions and child affect, in that in the happy condition, the relationship between parental negative emotions and child affect was positive, and in the sad condition, the relationship was negative. Lastly, the interaction between child attention and parent-reported negative emotions by story type was found to be significant: in the happy condition, the relationship between parent-reported negative emotions and child attentiveness was negative, and in the sad condition, the relationship between parent-reported negative emotions and child attentiveness was positive.

Interestingly, these findings can be related to notes of Slatcher and Trentacosta (2012), in that self-reports of negative emotionality may not necessarily indicate overt expressions of negative emotions. Incongruent child affect may be explained by a need to compensate for parent-reported negative reported emotions, in that children may have displayed more emotions during the happy story, for example, to compensate for their parent's negative emotions. This can also be said for the findings of parent-reported negative emotions and child attentiveness during the sad story condition. Additionally, when paired with a parent who reports more negative emotions, the child may express less affect during the sad story condition because of the parent's attempts to compensate. However, further analysis is required to understand these findings.

Hypothesis 5: Familial Interdependence

Lastly, the concept of emotional and behavioral familial interdependence was explored through observed parent and child measures: these relationships were analyzed for parent-driven effects, child-driven effects, parent gender effects, and story type effects in real-time. While past research has indicated the presence of bidirectional effects between parents and children (Carrère & Bowie, 2012; Chang & Shaw, 2016; Feldman, 2015; Pardini, 2008), Morelen and Suveg (2012) demonstrated that emotional reciprocity was found in real-time analyses. Hence, observed interdependence within the family was examined in real-time to assess immediate emotional and behavioral effects. First, concurrent relationships between parents and preschoolers were stronger than lagged, second-by-second effects. Meaning that the relationship between a parent's behavior at second one was more strongly related to the preschooler's behavior at second one than second two. While this finding is not what was expected, there are several reasons why this may have occurred. First, this finding may be a result of the coding software, which was not as adequate for second-by-second coding as other programs. Additionally, coding for each behavior every second, as opposed to every 10th of a second, for example, may have caused some behavioral exchanges to be overlooked. In contrast, it is possible that one second is not enough time for one family member to form a reaction based on another family member's behavior. Therefore, while a more efficient coding program may provide the solution, the question remains: what increments of time are required for one to form a reaction to the expression of another? This concept should be explored in future studies examining real-time emotional and behavioral exchanges between parent-child dyads.

For concurrent interactions, increased parent affect, congruence, and attention were related to decreased child affect, but increased child attention and congruence. The relationship between parent and child affective congruence was partially supported by research, in that negative parental emotions negates negative child emotions, and vice versa (Carrère & Bowie, 2012; Chang & Shaw, 2016; Morelen & Suveg, 2012). Interestingly, while parent-reported child attention was negatively related to observed child attention, observed parent attention was positively related to observed child attention; this furthers the need to reexamine the measures used to assess child attention, including additional assessments for child engagement. In regards to displays of affect, it appears that parents and children may compensate for each other's displays of affect: when parent's displays more affect, children display less affect. However, more research is needed in order to examine these relationships, as they were non-significant.

In exploring the direction of effects between parent-child interactions, the results suggest that children drive the parents responses more so than the parents influencing the child. Additionally, there was no significant difference in child-driven effects between parents, which further supports Wilson and Durbin's (2013) findings of child-driven effects, which note that children reacted consistently regardless of parent gender. Lastly, in terms of story condition, two significant interactions were found between child attention and parent attention and affective congruency: child attention was more related to parent attention in the happy story condition, and child attention was more related to parent congruence in the happy than sad story condition. While previous studies have focused on the examination of negative emotional contexts in parent-child interactions (Shewark & Blandon, 2015; Slatcher & Trentacosta, 2012), this finding suggests that

positive emotional contexts may actually have stronger effects on parent-child interactions.

Summary

The results of this study highlight the need for future analysis into the immediate bidirectional exchanges between parents and children in different emotion-eliciting conditions. Some father-child emotional and behavioral exchanges appeared to be affected by the type of emotion-eliciting condition. However, parent gender appeared to have little effect on parent-child interactions overall when accounting for consistency in child responses. Expressivity measures were related to observed parental displays of affect in their respective emotional conditions; however, child attention measures did not capture observed child attention. High levels of parent-reported negative emotions were significantly related to low levels of parental affective congruency. However, some significant interactions between parent-reported negative emotions and observed parent child behaviors were found to be in the opposite direction than hypothesized once story condition was accounted for. Lastly, child-driven effects were found between parents and children across observed measures through second-by-second analyses; in addition, child emotions and behaviors appeared consistent across parent gender, but varied by emotion-eliciting story condition.

As noted by Zaman and Fivush (2013), the findings do support possible differences between father and mother interactions with children, specifically, based on the emotion-eliciting context (Cabrera et al., 2014): although, children appear to respond consistently regardless of parent. Using inventory measures of expressivity, in addition to observed measures, allow for different facets of expressivity to be examined while

verifying that perceptions of expressivity are similar to actual expressivity. Though, some findings highlight the need for improved observed measures of child attention; accounting for attentive engagement will likely impact the results of future analyses. Additionally, children appeared to respond consistently, over-time, regardless of parent gender, which is supported by Wilson and Durbin's (2013) findings of child-driven effects. Therefore, it is suggested that future studies examine how children influence parent emotions, rather than solely parent-driven effects. Moreover, appropriate lagged increments of time for parent-child expressive exchanges should be explored further, as second-by-second increments of parent-child interactions did not provide significant findings. Future studies should also include positive, as well as negative, emotion-eliciting contexts, as the results point toward stronger child-driven effects within the happy story condition. Lastly, narrative discussions, rather than story recitations, should be considered for future studies; this may elicit more genuine responses and reactions, as the narratives would be personal, which may, in turn, influence aspects of the parent-child interaction.

APPENDICES

Appendix A

Child Coding Form

| <i>Title</i> | <i>Code</i> | <i>Behavior Descriptions</i> |
|----------------------------------------------------------------------|-------------|--------------------------------------------------------------------------------|
| Attention/Focusing/Visual Gaze Direction | | |
| | 5 | Child looks intently at book and is focused on book (or on parent) |
| | 4 | Child is momentarily distracted but then focused/concentrating on the story |
| | 3 | Child's focus wavers (shifts) on and off the book |
| | 2 | Child is focused on other things and only occasionally in focusing on the book |
| | 1 | No focused attention on the book |
| External Displays of Affect through Verbal/Facial Expressions | | |
| | 4 | Affective reaction is expressed through verbal and facial means |
| | 3 | Affective reaction is expressed through verbal means only |
| | 2 | Affective reaction is expressed through facial means only |
| | 1 | Neutral verbal and facial expressions |
| Affective Congruence | | |
| | 2 | Affect is congruent with the story condition |
| | 1 | Affect is not congruent with the story condition |

Appendix B

Parent Coding Form

| <i>Title</i> | <i>Code</i> | <i>Behavior Descriptions</i> |
|----------------------------------------------------------------------|-------------|--------------------------------------------------------------------------------------------------------|
| On/Off Task | | |
| | 6 | Parent remains on task despite reasonable distractions occurring (e.g. redirecting child) |
| | 5 | Parent continues to read story when attention is reasonably divided |
| | 4 | Parent is on task and there are no disturbances |
| | 3 | Parent is off task due to reasonable disturbances |
| | 2 | Parent continues to read story, however attention is divided between task and unnecessary distractions |
| | 1 | Parent is off task in the absence of distractions |
| External Displays of Affect through Verbal/Facial Expressions | | |
| | 4 | Affective reaction is expressed through verbal and facial means |
| | 3 | Affective reaction is expressed through verbal means only |
| | 2 | Affective reaction is expressed through facial means only |
| | 1 | Neutral verbal and facial expressions |
| Affective Congruence | | |
| | 2 | Affect is congruent with the story condition |
| | 1 | Affect is not congruent with the story condition |

Appendix C

40-Item Self-Expressiveness in Family Questionnaire

Instructions

This is a questionnaire about family expressiveness. We'd like to know more about the degree of expressiveness shown in different families. Therefore, we'd like you to tell us about the frequency of expression in your family while you were growing up. By frequency we mean, "How often does this situation occur in your family, relative to other families?"

Try to think of the following scenarios in terms of how frequently they occurred in your family, compared to other families, while you were growing up. Use the rating scale below to indicate how frequently that activity occurred. Thus, if a situation rarely occurred, or occurred not at all frequently, circle 1, 2, or 3. If it occurred with some or moderate frequency, circle a 4, 5, or 6. And if it occurred very frequently, circle a 7, 8, or 9.

Some items may be difficult to judge. However, it is important to answer every item. Try to respond quickly, but not randomly. Thank you very much.

1. Showing forgiveness to someone who broke a favorite possession.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

2. Thanking family members for something they have done.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

3. Exclaiming over a beautiful day.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

4. Showing contempt for another's actions.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

5. Expressing dissatisfaction with someone else's behavior.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

6. Praising someone for good work.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

7. Expressing anger at someone else's carelessness.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

8. Sulking over unfair treatment by a family member.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

9. Blaming one another for family troubles.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

10. Crying after an unpleasant disagreement.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

11. Putting down other people's interests.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

12. Showing dislike for someone.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

13. Seeking approval for an action.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

14. Expressing embarrassment over stupid mistakes.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

15. Going to pieces when tension builds up.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

16. Expressing exhilaration after an unexpected triumph.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

17. Expressing excitement over one's future plans.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

18. Demonstrating admiration.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

19. Expressing sorrow when a pet dies.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

20. Expressing disappointment over something that didn't work out.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

21. Telling someone how nice they look.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

22. Expressing sympathy for someone's troubles.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

23. Expressing deep affection or love for someone.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

24. Quarreling with a family member.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

25. Crying when someone leaves.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

26. Spontaneously hugging a family member.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

27. Expressing momentary anger over a trivial irritation.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

28. Expressing concern for the success of other family members.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

29. Apologizing for being late.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

30. Offering to do somebody a favor.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

31. Snuggling up to a family member.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

32. Crying for being punished.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

33. Trying to cheer up someone who is sad.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

34. Telling family members how hurt you are.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

35. Telling family members how happy you are.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

36. Threatening someone.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

37. Criticizing someone for being late.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

38. Expressing gratitude for a favor.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

39. Surprising someone with a little gift or favor.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

40. Saying “I’m sorry” when one realizes one was wrong.

Not at all frequently 1 2 3 4 5 6 7 8 9 Very frequently

Appendix D

CES-D Depression Inventory

Instructions: For each statement, please circle the number in the column that best describes how you have been feeling in the past week.

| | | Rarely or none of the time (less than 1 day) | Some or a little of the time (1-2 days) | Occasionally or a moderate amount of the time (3-4 days) | Most or all of the time (5-7 days) |
|-----|-----------------------------------------------------------------------------------------|----------------------------------------------|-----------------------------------------|----------------------------------------------------------|------------------------------------|
| 1. | I was bothered by things that usually don't bother me. | 0 | 1 | 2 | 3 |
| 2. | I did not feel like eating; my appetite was poor. | 0 | 1 | 2 | 3 |
| 3. | I felt that I could not shake off the blues, even with the help from family or friends. | 0 | 1 | 2 | 3 |
| 4. | I felt that I was just as good as other people. | 3 | 2 | 1 | 0 |
| 5. | I had trouble keeping my mind on what I was doing. | 0 | 1 | 2 | 3 |
| 6. | I felt depressed. | 0 | 1 | 2 | 3 |
| 7. | I felt that everything I did was an effort. | 0 | 1 | 2 | 3 |
| 8. | I felt hopeful about the future. | 3 | 2 | 1 | 0 |
| 9. | I thought my life had been a failure. | 0 | 1 | 2 | 3 |
| 10. | I felt fearful. | 0 | 1 | 2 | 3 |
| 11. | My sleep was restless. | 0 | 1 | 2 | 3 |
| 12. | I was happy. | 3 | 2 | 1 | 0 |
| 13. | I talked less than usual. | 0 | 1 | 2 | 3 |

| | | | | | |
|-----|--------------------------------|---|---|---|---|
| 14. | I felt lonely. | 0 | 1 | 2 | 3 |
| 15. | People were unfriendly. | 0 | 1 | 2 | 3 |
| 16. | I enjoyed life. | 3 | 2 | 1 | 0 |
| 17. | I had crying spells. | 0 | 1 | 2 | 3 |
| 18. | I felt sad. | 0 | 1 | 2 | 3 |
| 19. | I felt that people dislike me. | 0 | 1 | 2 | 3 |
| 20. | I could not get "going". | 0 | 1 | 2 | 3 |

Anyone with suicidal urges should seek immediate consultation with a qualified psychiatrist or psychologist.

Appendix E


Colorado Temperament Inventory

Please answer the items on this page about the behavior of this child by circling one of the numbers following each item. We know that no item will apply to your child in every situation, but try to consider his/her general behavior. Please answer honestly-there are no right or wrong answers.

| How much is the child like that? | Not at All (Strongly Disagree) | | | A Lot (Strongly Agree) | |
|-----------------------------------------------------------------------|-----------------------------------|---|---|---------------------------|---|
| 1. Child persists at a task until successful. | 1 | 2 | 3 | 4 | 5 |
| 2. Child gives up easily when difficulties are encountered. | 1 | 2 | 3 | 4 | 5 |
| 3. Child tends to be shy. | 1 | 2 | 3 | 4 | 5 |
| 4. Child cries easily. | 1 | 2 | 3 | 4 | 5 |
| 5. When upset by an unexpected situation, child easily calms down | 1 | 2 | 3 | 4 | 5 |
| 6. Child goes from toy to toy quickly. | 1 | 2 | 3 | 4 | 5 |
| 7. Child likes to be with people. | 1 | 2 | 3 | 4 | 5 |
| 8. Child is always on the go. | 1 | 2 | 3 | 4 | 5 |
| 9. Whenever child starts crying, he can be easily distracted. | 1 | 2 | 3 | 4 | 5 |
| 10. Child prefers playing with others rather than alone. | 1 | 2 | 3 | 4 | 5 |
| 11. Child tends to be somewhat emotional. | 1 | 2 | 3 | 4 | 5 |
| 12. When child moves about, (s)he usually moves about slowly. | 1 | 2 | 3 | 4 | 5 |
| 13. If talked to, child stops crying. | 1 | 2 | 3 | 4 | 5 |
| 14. Child makes friends easily. | 1 | 2 | 3 | 4 | 5 |
| 15. Child is off and running as soon as (s)he wakes up in the morning | 1 | 2 | 3 | 4 | 5 |
| 16. Child finds people more stimulating than anything else. | 1 | 2 | 3 | 4 | 5 |
| 17. Child often fusses and cries. | 1 | 2 | 3 | 4 | 5 |
| 18. With a difficult toy, child gives up quite easily. | 1 | 2 | 3 | 4 | 5 |
| 19. Child is very sociable. | 1 | 2 | 3 | 4 | 5 |
| 20. Child is very energetic. | 1 | 2 | 3 | 4 | 5 |
| 21. Child takes a long time to warm up to strangers. | 1 | 2 | 3 | 4 | 5 |
| 22. Child plays with a single toy for long periods of time. | 1 | 2 | 3 | 4 | 5 |

| | | | | | |
|------------------------------------------------------------------------------------|---|---|---|---|---|
| 23. Child gets upset easily. | 1 | 2 | 3 | 4 | 5 |
| 24. Child is somewhat of a loner. | 1 | 2 | 3 | 4 | 5 |
| 25. Child prefers quiet, inactive games to more active ones. | 1 | 2 | 3 | 4 | 5 |
| 26. When alone, child feels isolated. | 1 | 2 | 3 | 4 | 5 |
| 27. Child tolerates frustration well. | 1 | 2 | 3 | 4 | 5 |
| 28. Child reacts intensely when upset. | 1 | 2 | 3 | 4 | 5 |
| 29. Child stopped fussing whenever someone talked to him/her or picked him/her up. | 1 | 2 | 3 | 4 | 5 |
| 30. Child is friendly with strangers. | 1 | 2 | 3 | 4 | 5 |

Appendix G

| | |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | Institutional Review Board Division of Research 777 Glades Rd. Boca Raton, FL 33431 Tel: 561.297.1383 fau.edu/research/researchint |
| | Charles Dukes, Ed.D., Chair |

| | |
|------------------|----------------------------------------------------------------------------------------------|
| DATE: | October 28, 2016 |
| TO: | Nancy Jones, Ph.D. |
| FROM: | Florida Atlantic University Social, Behavioral and Educational Research IRB |
| IRBNET ID #: | 137400-10 |
| PROTOCOL TITLE: | [137400-10] Familial influences on the Development of Empathy in Preschoolers: Parts 1 and 2 |
| PROJECT TYPE: | <i>Continuing Review-Data Analysis Only/Amendment</i> |
| ACTION: | APPROVED |
| APPROVAL DATE: | October 28, 2016 |
| EXPIRATION DATE: | November 11, 2017 |
| REVIEW TYPE: | Expedited Review |
| REVIEW CATEGORY: | Expedited review category #B7 |

Thank you for your submission of Continuing Review/Amendment materials for this research study. The Florida Atlantic University Social, Behavioral and Educational Research IRB has APPROVED your *Continuing Review/Progress Report*. This approval is based on an appropriate risk/benefit ratio and a study design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

- *No subjects were recruited during the prior year. No new data is being collected on this study. The research study is only being kept open because the researchers are analyzing data (videos) that have identifiers.*

The Florida Atlantic University IRB has also APPROVED your request to modify your protocol as outlined below:

- Add Kayla Hodges and Alexandra Montena to the research study
- It is important that you use the approved, stamped consent documents or procedures included with this letter.
- ****Please note that any revision to previously approved materials or procedures, including modifications to numbers of subjects, must be approved by the IRB before it is initiated.** Please use the amendment form to request IRB approval of a proposed revision.
- All SERIOUS and UNEXPECTED adverse events must be reported to this office. Please use the appropriate adverse event forms for this procedure. All regulatory and sponsor reporting requirements should also be followed, if applicable.
- Please report all NON-COMPLIANCE issues or COMPLAINTS regarding this study to this office.

- Please note that all research records must be retained for a minimum of three years.
- **This approval is valid for one year.** A Continuing Review form will be required prior to the expiration date if this project will continue beyond one year.

If you have any questions or comments about this correspondence, please contact Danae Montgomery at:

Institutional Review Board
Research Integrity/Division of Research
Florida Atlantic University
Boca Raton, FL 33431
Phone: 561.297.1383
researchintegrity@fau.edu

* Please include your protocol number and title in all correspondence with this office.

**This letter has been electronically signed in accordance with all applicable regulations,
and a copy is retained within our records.**

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