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Cognitive-Affective Processes as a mediator of the Relationship between Responsive Parenting  
and Preschool Children's externalizing Behavior

A Thesis

Submitted to the Graduate Faculty of the  
University of New Orleans  
in partial fulfillment of the  
requirements for the degree of

Master of Science  
in  
Psychology  
Applied Developmental Psychology

by

Kathleen McGoron

B.S., Eastern Michigan University 2006

December, 2009

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## Abstract

Responsive parenting is characteristically child-centered and creates a climate where children's needs are met. While responsive parenting has been studied less than harsh parenting, initial evidence supports a negative relationship between responsive parenting and children's externalizing problems. The current study sought to identify mechanism by which responsive parenting reduces risk for externalizing problems in the preschool years. Specifically, the study sought to evaluate the extent to which children's language development and children's emotion regulation skills mediate the expected negative relationship between responsive parenting and children's externalizing problems. While responsive parenting was found to be negatively related to children's externalizing problems, support for mediation was not found. Results are discussed in terms of what may account for the lack of support for study hypotheses.

Keywords: Parenting, preschool, language development, emotion regulation, problems behaviors, low-income,

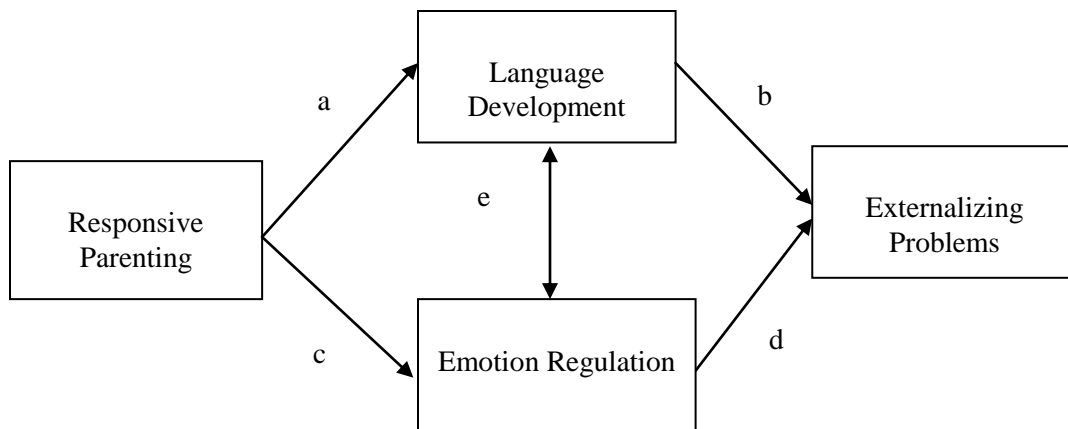
## Introduction

Repeatedly, harsh parenting practices have been linked with the emergence of problem behaviors during early childhood (Kimonis et al., 2006; Laible, Carlo, Torquati, Ontai, & 2004; Strassberg, Dodge, Pettit, & Bates, 1994; Weiss, Dodge, Bates, & Pettit, 1992). Comparatively less work has considered how more positive parenting practices, such as responsive parenting, reduces children's risk for problem behaviors during early childhood. While harsh parenting directly models and reinforces externalizing behaviors, the process by which responsive parenting reduces risk of externalizing problems may be less direct. That is, initial evidence suggests that responsive parenting, or parenting which is characterized by clear, consistent, and sensitive parent behavior, is associated with fewer externalizing problems during early childhood (Miner & Clarke-Stewart, 2008; Owens & Shaw, 2003; Pettit, Bates, & Dodge, 1997; Shaw, Keenan, & Vondra, 1994). Furthermore, responsive parenting also has been linked to more sophisticated language development (Sohr-Preston, Scaramella, Neppl, Ontai, & Conger, 2008) and emotional competence (Denham, 1997; Denham, Mitchell-Copeland, Standberg, Auerbach, & Blair, 1997) during the preschool period. Quite possibly, responsive parenting effectively teaches children language and emotion regulation skills that provide children with tools to manage frustrating situations in socially competent ways.

Figure 1 depicts the theoretical model guiding the current study. Two mechanisms are proposed to explain the process by which responsive parenting reduces children's risk for externalizing problems during the preschool period. First, responsive parenting is expected to reduce children's risk for externalizing problems by enhancing their language development; children with a more sophisticated vocabulary are expected to be better able to understand parental requests, communicate more effectively with parents, and be less prone to act out (see

Figure 1, paths a and b). Second, responsive parenting also may provide an environment that is maximally suited to developing emotion regulation skills, thereby reducing the likelihood of experiencing behavior problems that are linked to poor emotion regulation, like externalizing problems (see Figure 1, paths c and d; Frick & Morris, 2006). Alternatively, both mechanisms may reduce risk for externalizing problems. That is, responsive parenting may enhance both language skills and emotion regulation skills and that competence in one domain, such as language skills, also is associated with more competence in another domain, such as emotion regulation. The simultaneous effect of both language skills and emotion regulation skills also will be considered (see Figure 1). The following sections first discuss normative change in externalizing behaviors during the preschool period and then will review the theoretical and empirical research regarding each of these three pathways.

Figure 1  
*Language skills and emotion regulation as mediators of the association between responsive parenting and externalizing behavior problems.*





*Externalizing Problems during the Preschool Years: Disentangling Problems from Normative Change*

The toddler period has been referred as the “terrible twos” primarily due to the high rates of externalizing problems which typify this developmental period (e.g., Shaw & Bell, 1993). Early childhood externalizing problems often include elevated levels of aggression, impulsiveness, defiance, hyperactivity, inattention, whining, and non-compliance (Gilliom & Shaw, 2004; Miner & Clarke-Stewart, 2008; Pierce, Ewing, & Campbell, 1999). Disentangling normative levels of externalizing problems from risk for more pervasive behavior problems is challenging. Longitudinal studies indicate that externalizing problems peak between the ages 2 and 3 years of age and decline steadily thereafter (Gilliom & Shaw, 2004; Miner & Clarke-Stewart, 2008), indicating that levels of externalizing problems during the preschool period are lower than during the toddler period. Boys with elevated levels of externalizing problems across the toddler and preschool period have been found to be at greater risk for conduct problems during middle childhood (Pierce et al., 1999; Shaw, Lacourse, & Nagin, 2004). Moreover, high levels of externalizing problems during early childhood have been identified as a risk factor for later problem behavior (e.g., Shaw, Gilliom, Ingoldsby, & Nagin, 2003). Consequently, while externalizing problems may be somewhat normative during the toddler period, children experiencing above average levels of externalizing problems during the preschool years may be at increased risk for problem behaviors across middle childhood and into adolescence.

By definition externalizing problems include difficulty controlling and expressing negative emotions in socially acceptable ways, both emotional control and language skills may be associated with elevated levels of externalizing problems during the preschool period. In other words, children who experience above average levels of externalizing problems also may

evidence less sophisticated language skills and poorer emotional control abilities. While the quality of parenting has frequently been linked to elevated levels of externalizing behaviors, parenting characteristics may influence levels of externalizing problems in part because of the effect of parenting on children's language development and emotional control abilities. The goal of the current study is to consider how language skills and emotional control abilities may mediate the association between parenting and children's externalizing problems during the preschool period. The impact of parenting quality on children's levels of externalizing problems during the preschool period will now be discussed.

### *The Role of Responsive Parenting in Reducing Risk for Externalizing Problems*

Characteristically, parents who use responsive parenting practices create a climate in which children's needs are adequately met. Responsive parenting involves responding to children's needs sensitively and appropriately (Kochanska, 1997). Kochanska (1995) argues that responsive parenting creates a context in which children want to please their parents and demonstrate compliance with parental standards due to the positive emotion that exists between children and parents. Importantly, children of parents who interact with them in a responsive manner seem to be more willing to internalize parents' standards and behavioral expectations, and subsequently comply with parental demands (Kochanska, 1995).

The operational definition of responsive parenting changes with development. During infancy, responsive parenting includes parents use of prompt, appropriate, and sensitive responses to children's signaling or distress, such a predictable pattern of responding teaches children that the environment is safe and their needs will be met (Smith, Landry, & Swank, 2008). During the toddler period, responsive parenting is characterized by selective responsiveness with parents ignoring inappropriate behavior, punishing misbehavior, and

rewarding positive behavior (e.g., Shaw, Winslow, Owens, Vondra, Cohn, & Bells, 1998). During the preschool years, responsive parenting includes parents' active awareness of their children's emotional and behavioral states as well as responding contingently to their children in ways that still preserves their children's autonomy (Whitside-Mansell, Bradley, Owen, Randolph, & Cauce, 2003).

Across the early childhood years, higher levels of responsive parenting have been associated with lower levels of child externalizing problems (Miner & Clarke-Stewart, 2008; Shaw, Keenan, & Vondra, 1994). Longitudinally, responsive parenting observed during early childhood has been found to predict fewer externalizing problems during middle childhood (McCarty, Zimmerman, Digiuseppe, & Christakis, 2005). Conversely, parenting that is marked with high levels of coerciveness and low responsiveness has been linked to higher levels of externalizing problems during early childhood (Pettit, Bates, & Dodge, 1993).

*Understanding Mechanisms by Which Responsive Parenting Reduces Risk for Externalizing Problems: The Role of Language Development*

One mechanism that may account for the low levels of externalizing problems among children with parents who use more responsive parenting is language development. The early childhood period is a time for rapid language development (Hoff, 2006a). From infancy through the preschool period, children's vocabulary expands rapidly such that by age 4, children are typically able to produce and understand complex sentences (Hoff, 2006a). Learning the meaning of words is the first step in language development and essential for reaching all other language milestones (Huttenlocher, Haight, Bryk, Seltzer, & Lyons, 1991). Essentially, if children do not know the meaning of words, they will be unable to form sentences or engage in conversations. While humans are born with a capacity to learn language, the rate of language

development varies by level of environmental stimulation (Hoff, 2006b). The number of words to which children are exposed is directly related to their vocabulary growth (Huttenlocher et al., 1991). Responsive parenting may promote language growth because such parents closely monitor their children's activities and respond promptly to their children's linguistic efforts (Tamis-LeMonda, Bronstein, & Baumwell, 2001).

An abundance of empirical research supports the idea that responsive parenting enhances language development during infancy (e.g. Baumwell, Tamis-LeMonda, & Bornstein, 1997; Karass & Braungart-Rieker, 2003; Landry, Smith, Miller-Loncar, & Swank, 1997; Paavola, Kunnari, & Moilanen, 2005; Tamis-LeMonda, Bornstein, & Baumwell, 2001). Although fewer studies have examined the association between responsive parenting and language development during the toddler years, those that have similarly report that responsive parenting is positively associated with language development (Raviv, Kessenich, & Morrison, 2004; Tamis-LeMonda, Bornstein, Baumwell, & Damast, 1996; Tamis-LeMonda et al., 2004). Preliminary evidence suggests that the process by which responsive parenting influences language development may be similar during the preschool years as in earlier developmental periods. For example, continuity in responsive parenting from infancy through the preschool years has been found to be associated with better language development during the preschool years (Landry, Smith, Swank, Assel, & Vellet, 2001). Interestingly, high levels of responsive parenting at any point during early childhood have been linked with better language development than no responsiveness. For instance, La Paro, Justice, Skibbe, and Pianta (2004) found that unresponsive parenting predicted continuity of language delays from 3 to 4 years of age.

Children who lack the requisite language skills upon entry into preschool may be at elevated risk for a host of behavioral and emotional problems, in particular externalizing

problems. That is, children who are unable to understand requests and demands from teachers and who are unable to communicate their needs to their teachers may become frustrated during interactions with their teachers. Similar processes may emerge during interactions and conflicts with peers. Children with language delays have been found to experience more social isolation as they seem to be less likely to be picked to play with peer and to have trouble forming friendships (e.g., Fujiki, Spackman, Brinton, & Hall, 2004).

A number of studies have linked language delays with higher levels of externalizing problems among school-aged children (Camarata, Hughes, & Ruhl, 1988; Cohen, Menna, Vallence, Barwick, Im, & Horodensky, 1998; Fujiki, Brinton, Isaacson, & Summers, 2001; Gallagher, 1999). School-aged children with language delays seem to have higher levels of immaturity, hyperactivity, impulsivity, frustration, aggression, conduct disorders, low self-esteem, low self-confidence, social withdrawal, depression, and anxiety (Gallagher, 1999). Although there are clear, established links between language delays and externalizing problems during the elementary school years, evidence is mixed during earlier developmental periods. During the toddler years, some studies have found a relationship between language delays and behavior problems (Carson, Klee, Perry, Muskins, & Donaghy, 1998; Caulfield, Fischel, DeBaryshe, & Whitehurst, 1989), while others have not (e.g. Rescorla, Ross & McClure, 2007). For instance, Carson and colleagues (1998) studied 64 toddler aged children and found significantly higher levels of externalizing problems among language delayed children as compared to normal developing peers, although the mean internalizing and externalizing scores did not reach clinical significance for either group. In contrast, Reascorla, Ross and McClure (2007) assessed the relationship between language development behavior problems among 18-35 month old children. Although no statistical relationship between language development and

behavior problems emerged, language delayed children were more likely to experience social withdrawal, which could contribute to the development of behavior problems.

As compared to the toddler period, the preschool years may be a time when language delays become more consistently linked to serious behavior problems. Using a parenting report measure of children's behavior problems, Kaiser, Hancock, & Qui (2000) found a marginally significant relationship between children's language delay and externalizing problems. Results of past studies, however, are more robust when looking at teacher's reports of behavior problems. For instance, preschool-aged children with specific language impairment seem to be rated by teachers and parents as being less socially competent and having more behavior problems (e.g., McCabe, 2005). Additionally, Qui and Kaiser (2004) found that preschool-aged children with language delay had significantly higher disruptive behaviors scores, as rated by their teachers, during structured activities than non-language delayed children. Kindergarten, language delays have been found to be significantly related to both school functioning and behavior problems, with school functioning mediating the relationship between language delay and behavior problems (Bowman, Barnett, Johnson, & Reeve, 2006). Taken together, results suggest that language problems evidenced during early childhood increase children's risk for developing problem behaviors during later developmental periods.

#### *Emotion Regulation as a Mediator of the Association between Responsive Parenting and Less Externalizing Problems*

Although language skills are one possible mechanism by which responsive parenting reduces children's risk for externalizing problems, children with externalizing problems characteristically have difficulty regulating their angry emotions. The second pathway considered in the present investigation suggests that emotion regulation mediates the relationship

between responsive parenting and children's externalizing problems. Emotion regulation has been defined as the internal and external processes involved in coping with heightened levels of positive and negative emotions including joy, pleasure, distress, anger, fear and other emotions (Frick & Morris, 2004; Grolnick, Bridges, & Connell, 1996; Kopp, 1989). Emotion regulation skills begin to develop during infancy when infants become aware that their different emotional states can alert their caregivers' behavior (Kopp, 1989). Since infants do not have the skills to regulate their own emotions, they rely heavily on their parents for regulation. The toddler period, however, is marked by increases in autonomous regulation. For the first time, parents begin to expect children to differentially control their expression of emotions across different environmental contexts (Kopp, 1989). According to Kopp (1989), increases in parental expectations for emotional control coincide with children's ability to understand cause and effect. That is, during the toddler years children become increasingly aware that they can behaviorally control when and how their emotions are expressed.

According to Stansbury and Sigman (2000), by the third year of life, children's regulatory strategies become more complex. That is, children shift from using comfort objects to sooth themselves to using more instrumental behaviors, such as requesting a wanted object or cognitive regulation, such as viewing a negative situation as positive. By the fourth year of life, children are expected to become more successful in using strategies to regulate their emotions and can manage their emotional expression in a variety of contexts. During the preschool years, children become more proficient in actively managing and coping with their emotions in constructive ways; children who constructively cope with emotionally laden situations may directly attempt to solve a conflict situation.

Effective strategies preschool-aged children use to cope with frustrating situations include: distracting themselves from the situation, sitting and waiting for the end of a frustrating episode, or trying to clarify the cause of the problem and eliminate the source of frustration (Gilliom, Shaw, Beck, Schonberg, & Lukon, 2002; Stansbury & Sigman, 2000). However, not all children develop such age-appropriate ways of dealing with their emotions. Instead of using such socially appropriate strategies for coping with frustration, some children fail to regulate their emotions in socially acceptable ways and respond to frustrating situations by intensifying their negative emotion (Denham, Blair, Demulder, Levitas, Sawyer, & Auerbach-Major, 2003).

Empirical evidence suggests that the degree to which children use effective or constructive emotion regulation strategies is directly tied to the quality of parenting they receive. For instance, responsive parenting has been found to influence children's acquisition of emotion regulation skills (Morris, Silk, Steinberg, Myers, & Robinson, 2007). Quite possibly, parents' use of responsive parenting could affect the emotional climate of the home (Morris et al., 2007). That is, responsive parents may model positive emotion and well controlled responses to frustration. Parents' appropriate responses to emotions may model how to respond to emotional situations and thus make emotionally laden situations less threatening for children (Davidov & Grusec, 2006; Eisenberg, Cumerbland & Spinrad, 1998). For instance, Davidov and Grusec (2006) found that parents' responsiveness to distress was related to effective regulation of distress during early childhood. Parents' responsiveness to non-distress also seems to be important in that mothers who are more responsive to children's positive emotion have children with lower levels of negative emotional expression (Feng, Shaw, Skuban, & Lane, 2007). Parents who comfort their children in times of distress and share opportunities for positive emotion are more likely to have preschool children who are emotionally competent and display more positive



emotion during interactions with peers (Denham, 1997; Denham, Mitchell-Copeland, Standberg, Auerbach, & Blair, 1997). Taken together, the way parents' respond to children's distress plays an important role in helping children develop emotional competence

Conversely, high levels of harsh parenting, or parenting that is emotionally negative or controlling, interferes with children's ability to regulate their emotions (Scaramella & Leve, 2004). That is, parents who rely on harsh parenting may respond to negative emotions by matching or intensifying children's emotional state and are more likely to increase children's distress to levels which make it too difficult for children to self regulate; moreover, such parents lose opportunities to teach children constructive strategies for decreasing emotional arousal (Scaramella & Leve, 2004). Consistent with this expectation, Fabes, Leonard, Kupanoff, and Martin (2001) found that parents who used high levels of harsh parenting in response to children's negative emotional reactions had preschool children who experienced more difficulty controlling their negative emotions in other situations. Thus, responsive parenting, rather than harsh parenting, may promote children's acquisition of emotion regulation strategies that enable them to autonomously control their negative emotions.

Acquiring basic skills to regulate emotions during early childhood is critically important because difficulties regulating emotions have been implicated in many forms of childhood problem behaviors, including externalizing problems, and psychopathology (Cicchetti, Ackerman, & Izard, 1995). Interestingly, definitions of externalizing problems often include an inability to regulate negative emotional reactions, such as aggression, angry outburst, and verbal expressions of frustration such as whining (Gilliom & Shaw, 2004; Miner & Clarke-Stewart, 2008; Pierce, Ewing, & Campbell, 1999). By definition, then, children with externalizing problems have difficulty controlling their negative emotions (Batum & Yagurlu, 2007; Eisenberg

et al., 2001). Lacking requisite emotion regulation skills may place children on a trajectory for externalizing problems because this deficit affects the way in which they perceive social situation and are perceived by their peers (Frick & Morris, 2004). Consistent with this expectation, preschool-aged children who have developed skills to appropriately control their emotions have been found to exhibit fewer externalizing problems (Gilliom et al., 2002; Hill, Degnan, Calkins, & Keane, 2006).

To summarize, responsive parenting may reduce children's risk for developing externalizing problems, in part, because such parenting seems to promote children's development of competent and autonomous emotion regulation. Children who learn to control their emotions during the preschool years are expected to be better at managing frustrating experiences that typify early childhood. One goal of the current study was to evaluate the extent to which emotion regulation fully or partially mediates the expected negative association between responsive parenting and child externalizing problems (see Figure 1, paths c and d).

#### *The Relationship between Child Language Development and Emotion Regulation*

Children's language and emotion regulation skills do not develop in isolation; instead the development of each skill is dependent on the development of both skills (e.g., Kopp, 1989). As children's language develops, for instance, children are better able to communicate their emotional states, to solicit information and to seek help from others during distressing situations. Similarly, the process by which children regulate their emotions relies heavily on language skills. Children's ability to ask for information about a frustrating event has been found to effectively reduce emotional distress (e.g., Gilliom et al., 2002). Language also provides a mechanism by which children can think how to deal with a frustrating event, communicate their understanding of emotions and discuss situations involving emotions (Gallagher, 1999).

Very little empirical research has examined links between language development and emotion regulation. Using a sample of 6 to 13 year old children, Fujiki, Brenton, and Clarke (2002) found that children with a selective language impairment received lower emotion regulation scores from teachers than their normal language developing peers. In addition, Stansbury and Zimmerman (1999) evaluated the extent to which mothers' socialization of emotion regulation influenced children's use of emotion regulation strategies and preschool-aged children's behavior problems. Children's receptive and expressive language skills were found to affect how mother's socialized emotion regulation. Mothers of children with less sophisticated language skills were less involved and effective in helping their children regulate distress and their children spent more time in distress (Stansbury & Zimmerman, 1999). In contrast, mothers of children with more sophisticated language skills were more likely to socialize children using developmentally appropriate emotion regulation strategies and children spent less time in distress (Stansbury & Zimmerman, 1999). Given the interdependence of language and emotion regulation skills, the possibility that both emotion regulation and language skills, rather than either in isolation, mediates associations between responsive parenting and externalizing problems was evaluated.

*Socioeconomic Disadvantage as a Risk Factor for Less Responsive Parenting, Language Delays, and Poor Emotion Regulation*

One important limitation of empirical research examining the impact of responsive parenting on children's adjustment is that these studies often rely on middle class samples and rarely consider the impact of responsive parenting among more at risk children (e.g., Miner & Clarke-Stewart, 2008; Tamis-LeMonda, Bornstein, Baumwell, & Damast, 1996). In contrast, studies of socially disadvantaged children often evaluate the role of harsh parenting on children's

adjustment, while excluding more positive parenting practices (e.g., Dodge et al., 1992; Kimonis et al., 2006; Strassberg et al., 1994). While socially economically disadvantaged children are at increased risk for experiencing harsh parenting (e.g. emotionally negative or controlling), such children also are at risk for experiencing a range of adjustment problems, including behavior problems (Kaiser, Cai, Hancock, & Foster, 2002) and language delay and impairment (Hoff, 2003; Kaiser, Hancock, & Cai, 2000). Since socioeconomically disadvantaged families are often the target of intervention efforts (e.g. Reid, Webster-Stratton, & Beauchaine, 2001), clarifying the process by which responsive parenting practices reduces risk for children's development of problem behaviors may enhance prevention and intervention efforts.

Responsive parenting likely influences children's development in similar ways across various socioeconomic circumstances. Low-income mothers have been found to be less responsive, to speak to their children less often, to respond contingently to their children less often, to show less verbal and physical affection to their children, and to use more corporal punishment than more affluent mothers (Bradley, Corwyn, McAdoo, & Coll, 2001). When low-income parents maintain a responsive interaction style, children's risk for behavior problems is reduced (Bradley, Corwyn, McAdoo, & Coll, 2001; Koblinsky, Kovalanka, & Randolph, 2006) and children's language skills (Tamis-LeMonda, Shannon, Cabera, & Lamb, 2004) and social competence improves (Koblinsky et al., 2006; McGroder, 2000). Taken together, preliminary evidence suggests that responsive parenting may demonstrate the same positive effects on children's adjustment among socially disadvantaged as in more socially affluent groups. The current study will seek to add to this work by considering how mechanisms by which responsive parenting diminishes children's risk for externalizing problem behaviors during the

preschool period among a sample of very socioeconomically disadvantaged mothers and children.

### *Consideration of Bidirectional Effects*

Although responsive parenting may indirectly influence externalizing problems by affecting language and emotional control skills, alternatively children's characteristics may elicit certain parenting styles (e.g. Shaw, Bell, & Gilliom, 2000). Bidirectional theories propose that in addition to parent effects, children's characteristics, such as negative emotionality, irritability, and aversive behaviors influence the level of parent responsiveness during early childhood (Shaw et al., 2000). Consistent with a bidirectional approach, preschool children's level of language development, emotion regulation skills, and externalizing problems may affect the level of responsive parenting they receive.

Interestingly, empirical research examining bidirectional parent-child influences tend to focus on temperamental characteristics of children and parenting styles. In contrast, very little empirical research has considered the effects of children's emotion regulation on parenting. While parenting seems to be correlated with children's emotion regulation, none of this work seems to test whether parenting affects children's emotion regulation or vice versa (e.g., Power 2004). As Power (2004) argues, children who use constructive coping strategies are easier to parent, as they express more positive and less negative emotion. Parents may find it more reinforcing and less aversive to interact with children that display high levels of positive emotion and be avoidant of children who display high negative emotion, and thus be more responsive to emotionally regulated children.

Similar processes may be in operation with regard to the role of children's language skills and parenting. Children with more sophisticated language skills seem to be more responsive to

their mothers' efforts and mothers in turn seem to interact with their children more sensitively (Bornstein, Hendricks, Haynes, & Painter, 2007). Bornstein and colleagues (2007) argue that language gives mothers and children a clear means of interaction and the ability to extend interactions. Quite possibly, parents find interactions with children with more language development to be reinforcing and thus are more eager and able to interact with children who are able to reciprocate their efforts.

### *Goals of the Current Study*

The goal of the current study was to empirically evaluate the theoretical model presented in Figure 1. Specifically, two processes were expected to explain the association between responsive parenting and levels of externalizing problems. First, responsive parenting was expected to reduce children's risk for problem behaviors by enhancing children's language development. Second, responsive parenting was expected to promote emotional regulatory competence because such parenting creates an environment that is not overly distressing for children. Children who use effective emotion regulation strategies were expected to exhibit fewer externalizing problems. An alternative hypothesis was also considered; namely, that both language and emotion regulation skills mediate the relationship between responsive parenting and level of externalizing problems among preschool-aged children and that these two facets of development are positively related.

### *Methods*

#### *Participants*

This study was approved by the Institutional Review Board at the University of New Orleans (Appendix A). Participants in the current study come from the Mothers and Preschoolers Study (MAPS), a longitudinal study of 167 mothers, their Head Start enrolled, preschool-aged

child, and a 2-year old sibling. Families were recruited from 13 Head Start Centers located in the Orleans and Jefferson Parishes in Louisiana. Only families with a Head Start enrolled child and a child who would turn 2 years of age during the study period were eligible to participate. All preschool-aged children were enrolled in Head Start at the time of data collection. Families participate in three annual assessment within two months of the youngest children's second, third and fourth birthday. Only data from the mothers and their preschool-aged children collected when the youngest children were 2 years of age are used in the current study.

Participating mothers averaged 25.33 years of age at the time of their first assessment. Preschool-aged children average 3.5 years of age and 57.5 percent of the children were female. Families are primarily African American (90.8%), followed by White (6.2%). Average reported per capita income at the first assessment was \$4, 547.

### *Procedures*

Recruitment for the study took place at Head Start parent orientation meetings and when parents registered their children for Head Start. All interested mothers completed a brief recruitment screener in order to determine eligibility. Mothers with eligible children and who indicated their willingness to participate were contacted by project staff and the study was explained to them in greater detail. Interviews were scheduled for interested mothers. Interviews mainly took place in the families' homes, but a few were conducted in a lab setting or at Head Start centers at mother's requests. Interviews lasted approximately 2.5 hours. Interviews consisted of three parts: a videotaped structured interview, a questionnaire completed by mothers, and a language assessment of the preschool-aged child. Mothers received \$100 for participating and each child received a small toy worth about \$5.

The structured interview included a number of observational tasks, two of which are relevant for the current study. First, the *locked box task* involves presenting the preschool-aged child with a clear, locked box that is filled with small, attractive toys. Children were given a set of keys and were instructed to use the keys to open the box and pick one toy to keep. Interviewers left children alone for three minutes and mothers were instructed not to interact with their children. None of the keys unlock the box. After three minutes, interviewers returned, apologize for the error, and give children the correct keys. Interviewers provided any help children need to open the box. Once the box was opened, children picked out a toy to keep. This task was designed to elicit frustration and negative affect and is used to measure emotion regulation (see also Calkins, Gill, Johnson, & Smith, 1999).

Second, the *matching game* involves mothers and both participating children. The game began with mothers and their 2-year old children. Mothers were instructed to teach their 2-year old children how to play the matching game. The matching game consists of a plastic jar filled with 12 pretend Oreo cookies. The cookies come apart with one side consisting of only a chocolate cookie and the other has the cream filling. On the cream side of the cookie, a shape is cut out while the cookie side has a raised shape. The two halves fit together to create a whole Oreo cookie. Interviewers first separated the cream filled sides were divided between the two players, with each receiving 6 cookie halves. The cookie sides were placed in the jar. Players take turns selecting a cookie and making matches. A match occurs when the player selects a cookie shape that fits within one of their cream shapes. When players do not have a match, the cookie goes back in the jar and the next player takes a turn. Mothers have three minutes to teach their 2-year old children how to play.



After three minutes, the preschool-aged child joins the game. Mothers are instructed to teach their preschool-aged children how to play the game and then to let the two children play together for three minutes. Mothers moderate the play and keep score. Since the game is much easier for the preschool-aged child as compared to the 2-year-old younger sibling, managing the play between the two children of different developmental levels is challenging for mothers. Mothers' behaviors towards their preschool-aged child were coded for responsive parenting and the preschool-aged children's expressive language.

Two independent teams of trained undergraduate observational coders rated all interactions. One team of coders rated children's emotion regulation strategies and a separate team rated mothers' responsive parenting and children's expressive language abilities. All coders were blind to the identity of families and to study hypotheses.

Emotion regulation coding procedures are based on the work of Gilliom and colleagues (2002; see Appendix C for list of codes). Like the present study, Gilliom and colleagues (2002) measured emotion regulation among socially-economically disadvantaged preschool aged children. Adding to the usefulness of the Gilliom and colleagues (2002) coding procedures, the emotion regulation codes predicted externalizing problems. Emotion regulation behaviors and definitions used by Gilliom and colleagues (2002) provided the basis for the current coding system. Modifications from the Gilliom and colleagues (2002) procedures were based on unique task characteristics. For instance, a code for *help-seeking* was added because the task was designed so that children could not complete the demands of the task and mothers were in the home. Thus, the unique demands of the task increased the probability that children would solicit help from mothers.

Both the occurrence (event) and duration of an emotion regulation behavior were coded. Duration codes were used to measure the amount of time children spent using each emotion regulation strategy and event codes were used to mark the exact occurrence of behaviors. For duration codes, behaviors less than three seconds were not coded. Duration codes include: *physical help-seeking, distraction, and passive waiting*. Event Codes include: *verbal help-seeking and information gathering*. Coding was completed using Noldus Observer 7.0 (Noldus Information Technology, 2007).

Prior to coding, each emotion regulation coder received a minimum of 20 hours of training and achieved an average inter-rater reliability estimate of .70 on pilot interactions. Twenty-five percent of all tasks were double coded to estimate inter-rater reliability. To monitor ongoing adherence to the coding procedures, coders attended weekly reliability meetings, and disagreements in coding were resolved.

Responsive parenting coding procedures were based on the NICHD Early Childcare coding system for responsive parenting (NICHD ECCRN, 1999). Global codes were used to measure how characteristic a specific behavior is of mothers during the entire three minute matching game. Three global codes were used to measure responsive parenting: *sensitivity/supportive presence, intrusiveness* (reverse scored), and *detachment/disengagement* (reverse scored). In addition, coders also rated preschool-aged children's expressive language abilities. Parenting and language coders received a minimum of 40 hours of training and had to achieve an average inter-rater reliability estimate of .80 on training interactions before coding the matching task. In order to monitor the inter-rater reliability of the parenting/language coders, 25 percent of interactions were coded by two independent raters. Twenty-five percent of all tasks were double coded to estimate inter-rater reliability. Reliability was monitored throughout

coding to ensure that all coders maintained acceptable ( $ICC > .80$ ) reliability and adhered to coding guidelines.

In general, higher inter-rater reliability estimates were expected for global as compared to event and duration coding procedures. Global ratings incorporate both the quality and quantity of behaviors. Consequently, scores for all global codes are assigned for every task regardless of the frequency of behavior. In contrast, micro-social event and duration coding is dependent on the frequency of actual behaviors observed. The cost of ‘missing’ one behavior is much greater in tasks with very little child behavior as compared to tasks with a high rate of child behavior.

### *Measures*

*Responsive parenting.* Responsive parenting is operationally defined as parents’ well-timed, non-intrusive, and contingent responses to children’s cues for assistance (Whitside-Mansell et al., 2003). Three global codes were used to measure responsive parenting (see Appendix B for a description codes). First, the *sensitivity/supportive presence* code measures mothers’ behaviors that are child-centered rather than mother-centered. The code includes evidence of mothers’ awareness of their children’s needs, moods, interests, and capabilities as well as mothers’ contingent responses to children’s distress and non-distress. Second, *intrusiveness* measures mothers’ over controlling behaviors that are mother-centered rather than child-centered. Intrusiveness includes mothers’ extreme concern over completing the task and not allowing their children to explore and set the pace for the task. The *detachment/disengagement* code measures the degree to which mothers appear emotionally uninvolved or unaware of their children’s needs for interaction. Scores for *sensitivity* were found to be correlated with both *intrusiveness* ( $r = -.47, p < .001$ ) and *detachment* ( $r = -.65, p < .001$ ).

Scores for *intrusiveness* and *detachment* were no found to be significantly correlated ( $r = .11$ , n.s.).

To create the responsive parenting score, the intrusiveness and detachment/disengagement codes were reverse scored. Then, an overall responsive parenting score was computed by averaging across the three codes. The average of the three scores was used in analyses.

Inter-rater reliability computed for the three codes was very good with inter-class correlation coefficients of .82 for *sensitivity/supportive presence*, .83 for *intrusiveness*, and .82 for *detachment/disengagement*. The means and standard deviations for the responsive parenting score can be found in Table 1. The average responsive parenting score for this sample is 4.20 ( $SD = 1.05$ ) indicating modest levels of responsive parenting and good variability around the mean

*Language development.* Children's language development was assessed using a standardized measure of receptive vocabulary and an observational measure of expressive language. Children's receptive language development was measure using The Peabody Picture Vocabulary Test-III (PPVT-III; Dunn & Dunn, 1997). Receptive language, or children's comprehension of spoken words, was assessed by asking the respondent to identify the picture that corresponds to the word spoken by the administrator. The words the children need to identify become progressively harder. The PPVT-III is easily interpreted and there are published norms available. The PPVT-III raw scores were converted to the age appropriate standardized PPVT-III score. The age standardized scores were used in the analyses.

The PPVT-III is a valid and reliable measure of receptive vocabulary in preschool-aged children with moderate to high correlations with other measures of vocabulary (Gray, Plante,

Vance, & Henrichsen, 1999) and satisfactory test-retest reliability (Dunn & Dunn, 1997).

Washington and Craig (1999) found the PPVT-III to be an appropriate measure of receptive vocabulary for low-income, at-risk African American children.

Expressive language, or children's amount of spoken language, was measured using observer ratings of children's verbal dialogue during the matching task. The *expressive language* code measures the degree to which the children use words to express intentions, desires, and observations as well as the sophistication of these utterances. Expressive language scores are rated on a 7-point Likert scale ranging from no evidence of any verbal expression (1) to fluent and sophisticated speech marked with frequent complex sentences (7).

Means and standard deviations for receptive and expressive language scores are reported in Table 1. The PPVT-III is normed such that a score of 100 represents the average score for children. The standard deviation for this measure is 15 indicating that the majority of children's scores fall between 85 and 115. A score one standard deviation below the mean represents mild impairment with a score two standard deviations below the mean indicating moderate impairment. In the current sample of preschool-aged children, the average PPVT-III score was 84.92 with a standard deviation of 12.27. Thus, most of the children's scores ranged from mild impairment to normal average ( $SD = 12.27$ ). Although Washington and Craig's (1999) study reported average PPVT-III scores among their low-income, African American children at 91, this score was still within the normal average. The children participating in the present study had scores that fell slightly below the average cutoff indicating greater language deficits.

Interestingly, while the PPVT-III scores indicated that most children were delayed in their receptive vocabulary skills, the observed expressive language scores indicated that children were able to construct complex sentences. That is, the mean expressive language score was 6.25

with a standard deviation of 1.04. No significant relationship was found between children's receptive and expressive language ( $r = .12$ ). Due to the ceiling effect, the low variability in the expressive language scores, and the lack of relationship with receptive language, expressive language scores were not used in the main analyses but were evaluated in alternative analyses.

*Child emotion regulation.* Emotion regulation measures the proportion of time children use strategies which generally decrease their frustration. Two event codes and three duration codes were coded. Event codes include: *verbal help-seeking* and *information gathering*. *Verbal help-seeking* measures each instance in which children ask for help while *information gathering* measures each instance in which children ask questions about the task. Duration codes include: *physical help-seeking*, *distraction*, and *passive waiting*. *Physical help-seeking* measures the amount of time children spend physically seeking help to complete the frustrating task.

*Distraction* measures the length of time in which children have focused their attention away from the frustrating object (the locked box) and occupied their attention with some other behavior.

*Passive waiting* measures the amount of time children spend sitting or standing quietly not engaged in any activity.

Event codes and duration codes were scored differently. Scoring the event codes involved converting the overall frequency of a *verbal help-seeking* and *information gathering* into a score that reflected the rate-per-minute a child used *verbal help seeking* or *information gathering*. The rate-per-minute score was computed by dividing the summed total of the overall frequency each behavior occurred by the task length. Since both verbal help-seeking and information gathering measured children's task related inquiries, the *verbal help-seeking* and *information gathering* scores were summed and a rate-per-minute score was computed for the combined score (*help-seeking/information gathering*). Duration scores were computed by dividing the amount of time

children spent in *physical help-seeking*, *distraction*, and *passive waiting* by the task length. Separate duration scores were computed for each of the three codes.

Inter-rater reliability estimates indicated that the emotion regulation codes were highly reliable. Cohen's kappa coefficient was computed to estimate inter-rater reliability and the kappa averaged .72 across all codes. Additionally, the work of Gilliom and colleagues (2002) indicates that these items are a valid measure of emotion regulation in preschool-aged children. For instance, Gilliom and colleagues (2002) found that information gathering, distraction, and passive waiting were significantly associated with decreases in expressed negative affect. Relevant to the present study, Gilliom and colleagues (2002) demonstrated that higher scores on information gathering, distraction and passive waiting were associated with lower externalizing behaviors as predicted in the current study. Gilliom and colleagues (2002) also demonstrated the long term predictive utility of these behaviors as use of distraction and passive waiting was found to be related to be negatively related to externalizing problems at age six.

Descriptive statistics for emotion regulation scores are reported in Table 1. The average rate per minute for *verbal help-seeking/information gathering* was .34 (SD = .71) indicating that children used these behaviors relatively infrequently. Similarly, children spent very little time using each regulatory strategy. On average children spent 4.38 percent of the task time using *physical help-seeking* (SD = 8.62) and only .923 percent of the task using *distraction* (SD = 18.65) and 2.25 percent of the task in *passive waiting* (SD = 8.22). Only approximately 33 percent of children used the strategy *verbal help-seeking/information gathering*, while 36 percent used *physical help-seeking*, 40 percent used distraction, and only 16.6 percent used *passive waiting*. *Verbal help-seeking/information gathering* was positively correlated with children's use of *distraction* and *passive waiting* (see Table 2). No statistically significant correlations emerged

among duration codes, which was not surprising since the amount of time using one strategy restricts the amount of time available to use another strategy.

*Externalizing behavior problems.* Children's externalizing problems include elevated levels of aggression, impulsiveness, defiance, hyperactivity, inattention, whining, and non-compliance (Gilliom & Shaw, 2004; Miner & Clarke-Stewart, 2008; Pierce, Ewing, & Campbell, 1999). Externalizing behavior problems were measured using mothers' reports on the Child Behavior Checklist (CBCL; Achenbach, 1991). Mothers rate 26 items on a three point Likert scale (0 = not true, 1 = sometimes/somewhat true, 2 = very true/mostly true) indicating how much each statement describes their children's behavior during the past 2 months. Externalizing scores were computed by summing across the 26 items.

The CBCL is a widely used measure of child behavior problems that has been shown to have good reliability in measuring young children's behavior problems and has been extensively validated with Cronbach's alpha coefficients ranging from .89 to .96 for the externalizing, and total scales (Achenbach, 1991). For the current study, internal consistency was found to be excellent with a Cronbach's alpha coefficients of .91. Descriptive statistics for children's externalizing problems scores can be found in Table 1. The average externalizing score for the current sample was 14.02 (SD = 9.07). Approximately 28% of children were reported to have sub-clinical or clinical range behavior problems.



Table 1

*Means, Standard Deviations, Ranges, Skew, and Kurtosis for all Measures (n = 167)*

	<i>M (SD)</i>	Range	Skew	Kurtosis
Child Age	49.39 (7.51)	35.97-67.90	.34	-.61
Responsive Parenting	4.20 (1.05)	1.67-6.67	-0.16	-.67
Children's Externalizing Problems	14.02 (9.07)	0.00-41.00	.72	.07
Receptive Language Development	84.92 (12.27)	58.00-116.00	-0.21	.22
Expressive Language	6.25 (1.04)	1.00-7.00	-2.22	6.37
Verbal Help-seeking/Information Gathering	.34 (.71)	0.00-3.69	-0.21	6.87
Physical Help-seeking (Duration)	4.38 (8.62)	0.00-48.33	2.88	9.48
Distraction (Duration)	9.23(18.65)	0.00-97.7	2.63	7.09
Passive Waiting (Duration)	2.25 (8.22)	0.00-56.84	5.05	27.17

## Results

### *Data analytic plan*

The first step in analyzing the data was to compute a set of preliminary analyses to evaluate the data for univariate skew, multivariate skew, missing data, and outliers. In addition, means, standard deviations, and ranges were examined for all constructs to ensure that all variables have scores within the expected ranges. Although gender and age were not expected to be related to study constructs, the effect of these potential confounds was empirically evaluated. Next, study hypotheses were tested using linear regression. Correlations among study constructs were evaluated before linear regression equations were computed. Responsive parenting was

expected to be statistically significantly and negatively related to children's externalizing problems and statistically significantly and positively related to children's emotion regulation and language skill. Given a statistically significant correlation between responsive parenting and externalizing problems, regression equations were used to empirically test for mediation. Specifically, both language and emotion regulation scores were expected to mediate the relationship between responsive parenting and children's externalizing problems. The following section first describes the results of the preliminary data analysis, followed by a discussion of the hypothesis testing.

### *Preliminary Data Analyses*

Means, standard deviations, ranges, levels of skew, and levels of kurtosis are reported in Table 1. Responsive parenting met assumptions of normality. While child receptive language development had acceptable levels of skew, one univariant outlier emerged (i.e., a score of 40 on receptive language). However, the results did not differ when the outlier was included or excluded. In order to maximize sample size, the outlier was included in analyses. The emotion regulation strategies did not meet normality assumptions, which is not surprising given the manner in which these strategies were coded. Traditional coding methods typically use global ratings which have a predefined range (i.e., 1 to 7) and measure how much a specific code characterizes an individual or activity. In contrast, event or duration codes measure the frequency of actual observed behavior or the amount of time an individual was engaged in a specific act. Since behaviors are rare events, individual differences in the occurrence of specific behaviors or actions are preserved. However, one drawback of event and duration coding is that the scores are likely to be skewed and kurtotic. In the present study, *passive waiting* had unacceptable levels of skew and all emotion regulation strategies were found to be highly kurtotic. In order to preserve

the interpretability of the scores, no transformation was performed. Externalizing problems were found to have acceptable levels of skew and kurtosis. Finally, five cases were found to have multivariate skew. Analyses were computed with and without these cases and results did not change; consequently, the five cases were retained in the sample.

Due to the fact that duration scores for emotion regulation (Physical Help-Seeking, Distraction, and Passive Waiting) did not meet assumptions of normality, two separate set of analyses were completed. The first set of analyses used the duration scores. In an alternative set of analyses, the scores for Physical Help-Seeking, Distraction, and Passive Waiting were dichotomized where a score of zero indicated that score was not used and a score of one meant the score was used. Correlations between dichotomized variables emotion regulation variables and other study constructs can be found in Table 2. Using the dichotomized variables did not change results. Therefore, the following reported analyses were done with the duration scores for all emotion regulation variables.

#### *Effects of Children's Age and Gender*

The effects of age were examined by correlating children's age with all study constructs. Two statistically significant associations emerged, age was significantly correlated with *physical help-seeking* ( $r = -.25, p < .01$ ) and receptive language development ( $r = .23, p < .01$ ). Since age was significantly correlated with two study constructs, regression analyses were computed in two ways, both controlling for age and not controlling for age. Controlling for children's age did not change the results of the regression equations and the results presented do not include age as a statistical control. Gender effects were evaluating by computing a series of t-tests to evaluate whether the means for boys and girls were significantly different from one another. Of the six t-tests computed, only one gender difference emerged; responsive parenting was observed to be

significantly higher for girls ( $M = 4.50$ ;  $SD = 0.99$ ) and than for boys ( $M = 3.83$ ,  $SD = 1.00$ );  $t$  [160] =  $-4.24$ ,  $p < .01$ ). Analyses were computed in two ways, one in which gender was included as a control and one in which gender was not included as a statistical control. No differences in the results of the regression equations emerged. Since gender differences were not hypothesized and were not the focus of the study, final analyses do not control for gender.

### *Correlational Analyses*

Before testing the hypotheses with linear regression, bivariate correlations were computed among study constructs to evaluate the pattern of associations. Results of these correlations are presented in Table 2. Consistent with expectations, responsive parenting and children's externalizing problems were significantly and negatively correlated ( $r = -.27$ ,  $p < .01$ ). In contrast with expectations, responsive parenting and children's externalizing problems were not significantly correlated with children's language or emotion regulation scores. The lack of statistical significance among the parenting and externalizing behavior scores and the language and emotion regulation scores reduces the likelihood that language or emotion regulation skill mediates the association between responsive parenting and externalizing behavior problems.

Table 2

*Correlations among Child's Age, Responsive Parenting, Children's Externalizing Problems, Language Development and Emotion Regulation*

	1	2	3	4	5	6	7	8	9	10	11	12
1. Child Age	-----											
2. Responsive Parenting	.08	-----										
3. Children's Externalizing Problems	-.08	-.27**	-----									
4. Receptive Language Development	.23**	.11	-.13+	-----								
5. Expressive Language	.22*	.10	-.02	.12	-----							
6. Verbal Help-Seeking/Information Gathering	.17*	.09	-.04	.08	.19*	-----						
7. Physical Help-seeking (Duration)	-.25**	-.11	-.03	-.16*	-.00	.03	-----					
8. Distraction (Duration)	.06	.00	.00	.08	-.10	-.17*	-.10	-----				
9. Passive Waiting (Duration)	-.11	-.06	-.03	-.00	-.14	-.09	-.12	.06	-----			
10. Physical Help-Seeking (Dichotomized)	-.15+	-.70	.05	-.12	.01	.07	.71**	-.15+	-.16*	-----		

11. Distraction (Dichotomized)	-.06	-.03	.01	-.04	-.12	-.06	.04	.63**	.06	-.01	-----	
12. Passive Waiting (Dichotomized)	-.07	-.06	.10	-.01	-.16+	-.07	-.15	.27**	.74**	-.19*	.11	-----

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Note. +  $p < .10$ ; \*  $p < .05$ ; \*\*  $p < .01$

### *Hypothesis Testing: Linear Regression Analyses*

The methods of Baron and Kenny (1986) were used to empirically evaluate whether children's language and emotion regulation skill mediated the association between responsive parenting and externalizing problems. Consistent with this procedure, mediation is tested by computing four linear regressions and four conditions must be met. First, the relationship between independent variable (responsive parenting) and the outcome variable (externalizing problems) must be established with a statistically significant linear regression. Next, a statistically significant relationship between the independent variable (responsive parenting) and the mediators (receptive language development and emotion regulation) must be demonstrated, as indicated with statistically significant beta coefficients. In the third step, a statistically significant relationship between the mediators (receptive language development and emotion regulation) and the outcome variable (externalizing problems) must be demonstrated, as indicated with statistically significant beta coefficients. If the first three conditions are met, a fourth linear regression is computed estimating the amount of variance associated with outcome variable (externalizing problems) that the independent variable (responsive parenting) explains once the mediator is statistically controlled. Full mediation occurs when the beta coefficient associated with independent variable (responsive parenting) is no longer statistically significant once the variance associated with the mediators has been estimated. Partial mediation occurs when the strength of the beta coefficient associated with independent variable (responsive parenting) has been decreased but remains statistically significant after the variance associated with the mediator has been estimated. Additionally, following the methods of Holmbeck (2002) further testing of mediation was planned by conducting a Sobel test. This test measures whether a mediator variable carries a significant portion of the variance of an independent variable to a

dependent variable. Receptive language development and emotion regulation were examined separately. Results of regression analyses can be found in Tables 3 and 4.

*Step 1: Establishing the statistical relationship between responsive parenting and externalizing problems.* In order to establish the basis for mediation, a linear regression was computed in which children's externalizing problems was regressed onto responsive parenting. The beta coefficient associated with responsive parenting was statistically significant and negative (see Table 2;  $\beta = -.27$ ,  $p < .01$ ). Responsive parenting explained 7.5% of the variance associated with children's externalizing problems.

*Hypothesis 1: Language skill mediates the association between responsive parenting and children's externalizing problems.* Since higher levels of responsive parenting were associated with significantly fewer externalizing problems, the next step was to evaluate whether receptive language skills explained this association. First, children's receptive language was regressed onto responsive parenting; the beta associated with responsive parenting was not statistically significant (see Table 2;  $\beta = .11$ ). Although mediation was not possible without a statistically significant association between responsive parenting and children's receptive language development, the possibility that language skills explained unique portions of the variance associated with externalizing behaviors was considered. In this second step, externalizing behavior scores were regressed onto children's receptive language. In this regression equation, a trend towards statistical significance emerged such that the beta coefficient associated with receptive language skills was marginally significant (see Table 2;  $\beta = -.13$ ,  $p < .10$ ). The lack of statistical significance indicated that receptive language skills did not mediate the relationship between responsive parenting and children's externalizing problems, thus further steps were not taken to demonstrate mediation.



*Hypothesis 2: Emotion regulation mediates the association between responsive parenting and externalizing problems.* Given the statistically significant relationship between responsive parenting and children's externalizing problems, the possibility that children's emotion regulation mediated the association between responsive parenting and children's externalizing problems was evaluated next. Each emotion regulation strategy was estimated separately in relation to responsive parenting and children's externalizing problems using the methods previously described. In the first step to demonstrate mediation, each emotion regulation strategy was regressed onto responsive parenting. In the second step, children's externalizing problems were regressed onto each emotion regulation strategy. Results are presented separately for each strategy. Results of the linear regressions are also presented in Tables 3 and 4.

*Verbal help-seeking/Information gathering.* First, children's use of *verbal help-seeking/information gathering* was regressed onto responsive parenting. Contrary to study hypotheses, no statistically significant relationship was found between responsive parenting and children's use of *verbal help-seeking/information gathering* (see Table 2;  $\beta = .09$ ). Although mediation was not possible, the relationship between children's use of *verbal help-seeking/information gathering* and children's externalizing problems was considered next. In this second step, children's externalizing problems was regressed on children's use of *verbal help-seeking/information gathering*. No relationship was found between children's use of *verbal help-seeking/information gathering* and children's externalizing problems, (see Table 2;  $\beta = -.04$ ). Due the non-significant relationships, further analyses were not computed to test for mediation.

*Physical help-seeking.* Next, the role of *physical help-seeking* was evaluated as a possible explanation of the relationship between responsive parenting and children's externalizing

problems. First, the relationship between responsive parenting and children's *physical help-seeking* was evaluated by regressing children's *physical help-seeking* onto responsive parenting. No statistically significant relationship emerged (see Table 2;  $\beta = -.11$ ). Despite the fact that *physical help-seeking* cannot be a mediator of the relationship between responsive parenting and children's externalizing, the possibility that physical help-seeking explained unique variance in children's externalizing problems was considered next by regressing children's externalizing problems onto children's *physical help-seeking*. No relationship was found between the percent of time children spend in *physical help-seeking* and children's externalizing problems (see Table 2;  $\beta = .12$ ). Further analyses to test for mediation were not computed.

*Distraction.* Children's use of distraction was then evaluated as a possible mediator of the relationship between responsive parenting and children's externalizing problems. As with the previous regression equations, no relationship was found between responsive parenting and the percent of time children spend in Distraction (see Table 2;  $\beta = .00$ ). Next, the relationship between children's use of distraction and children's externalizing problems was evaluated and no statistical relationship emerged (see Table 2;  $\beta = .00$ ). Due to lack of statistically significant findings, further analyses were not computed to test for the meditation.

*Passive waiting.* Finally, children's use of *passive waiting* was considered as a possible mediator of the relationship between responsive parenting and children's externalizing problems. Again, no statistically significant relationship between responsive parenting and the percent of time children spend in *passive waiting* emerged (see Table 2;  $\beta = -.09$ ). To examine the possible relationship between children's use of passive waiting and children's externalizing problems, children's externalizing problems was regressed onto children's *passive waiting*. No statistically significant relationship was found between the percent of time children spend in *passive waiting*

and children's externalizing problems (see Table 2;  $\beta = -.03$ ). Finally, further steps were not taken to test for mediation.

*Hypothesis 3: Language and emotion regulation skill mediate the association between responsive parenting and children's externalizing problems.* Due to the lack of support for the mediational roles of children's receptive language development and emotion regulation skills, further analyses were not computed to evaluate if children's receptive language development and use of emotion regulation skills jointly mediated the association between responsive parenting and children's externalizing problems. However, the relationship between receptive language development and emotion regulation was evaluated using correlational analyses (see Table 2). Of the 4 possible associations, only one statistically significant correlation emerged. Specifically, children's receptive language skills were found to be statistically significantly and negatively correlated with the amount of time they spent in *physical help-seeking*. Higher receptive language scores were associated with less time using *physical help-seeking* (see Table 2;  $r = -.16, p < .05$ ).

## Discussion

Attending preschool puts new cognitive and social demands on children. Successfully transitioning into preschool may require a level of language and emotional competence. Children without language and emotional skills may be at greater risk for developing problem behaviors, like externalizing problems. The current study considered the role that parents play in reducing children's risk for behavior problems by affecting their cognitive and emotional development and empirically evaluated the expectation that children's language development and emotion regulation skills reduced children's risk for externalizing problems. While higher levels of responsive parenting were associated with fewer externalizing problems, no support emerged for

the expectation that children's language and emotion regulation skills explained this association. The following sections will discuss the implications of these findings by first considering the theoretical and methodological issues associated with responsive parenting. Next, methodological challenges associated with receptive language development and emotion regulation will be discussed. Finally, strengths, limitations, and future directions will be presented.

*Theoretical and methodological implications of responsive Parenting for children's adjustment during the preschool period*

As compared to harsh parenting, studies examining the influence of more positive dimensions of parenting, like responsiveness, on behavioral maladjustment are less frequent. Theoretically, harsh parenting is expected to be associated with higher levels of externalizing problems because such parenting models and reinforces externalizing behaviors (e.g., Patterson, Reid, & Dishion, 1992). Less is known regarding the impact of responsive parenting on reducing risk for externalizing problems. Theoretically, responsive parenting includes both parents' awareness of their children's emotional and behavioral states and their ability to respond contingently to their children in ways that still preserves their children's autonomy (e.g., Whiteside-Mansell et al., 2003). Consistent with these expectations, higher levels of responsive parenting was associated with lower levels of child externalizing problems. Importantly, these findings replicate the work of Whiteside-Mansell and colleagues (2003) and Shaw and colleagues (1994). In contrast to expectations, responsive parenting was unrelated to children's receptive language development or their emotion regulation observed during a frustration task.

Reconciling these discrepant findings poses unique theoretical and methodological challenges. Theoretically, responsive parenting is expected to create a climate in which children

are motivated to comply with parental expectations and behave in ways consistent with parents requests (e.g., Kochanska, 1995). Thus, measuring responsive parenting during compliance type situations may increase the probability of finding a statistical association between responsive parenting and child behaviors that involve a level of compliance, but not children's development of specific skills like vocabulary or emotion regulation.

In the current study, responsive parenting was measured by observing mothers' behavior directed to their children during a task in which children had to comply to task demands. Three global codes were used to measure responsive parenting and these codes included mothers' overall level of sensitivity, intrusiveness (reverse scored) and detachment (reverse scored). Mothers who scored high on responsiveness were generally more sensitive, less intrusive and less detached, or more involved. This measure, however, did specifically measure mother's responses to children's linguistic efforts or expressions of emotion. Bornstein, Tamis-LeMonda, Hahn, and Haynes (2008) suggest that responsive parenting may be best conceptualized as a multidimensional, modular, and specific parenting construct. Bornstein and colleagues (2008) argue that mothers' level of responsiveness during one situation may not generalize to other situations. In other words, mothers who are responsive during a compliance type situation may not necessarily be more responsive to their children during situations which evoke language production or different emotional states. While responsive parenting as measured in the present study may have captured one dimension of responsiveness, the measure may not be sensitive enough to assess the impact of mothers' responsiveness on children's language or emotion regulation skill.

Consistent with this idea, previous research examining mother's specific responses to children's vocalization have found that mothers' verbal responses to children's vocalizations was

predictive of children's achievement of language milestones, but not other outcomes (e.g. Tamis-LeMonda, et al., 1996). Similarly, mothers' specific responses to children's emotions have been found to be important in predicting children's emotion regulation. For instance, Davidov and Grusec (2006) as well as Eisenberg and colleagues (1998), found that mothers' responses to children's negative emotions predicted children's emotion regulation abilities. Conversely, Feng and colleagues (2007) found that parents' responses to children's positive emotions were negatively related to children's levels of negative emotional expression. Differences in how these studies examined responsive parenting may account for the inconsistency in the findings of previous studies and the current study.

Future research may benefit from a more comprehensive measurement of responsive parenting. That is, in addition to including general responsiveness as measured in the present study, it may be informative to measure mothers' specific responses to children's vocalizations and displays of emotion. Adding this component may provide critical information regarding the degree to which mothers respond to different behavior at different rates. Furthermore, understanding mother's differential responding may provide more detailed information about how responsive parenting promotes language development or emotion regulation.

*Examination of the Role of Children's Language Development in Reducing Children's Risk for Externalizing Problems: Methodological Considerations*

In order to test the hypothesis that children's language development mediates the association between responsive parenting and children's externalizing problems, the relationship between children's receptive language development and externalizing problems was evaluated. A marginally significant relationship was found between children's receptive language development and externalizing problems suggesting that children with less sophisticated

receptive vocabularies also have more externalizing problems. Kaiser and colleagues (2000) also reported a marginally significant association between language delays and externalizing problems using a similarly disadvantaged sample of Head Start children. Interestingly, Kaiser and colleagues (2000) also measured behavior problems with the parent report version of the CBCL and language development with the PPVT-III. While consistent with the findings of Kaiser and colleagues (2000), including a more comprehensive measure of children's language development may have produced findings more consistent with expectations.

In the current study, only children's receptive language development was included in the analyses. Children's expressive language was assessed using a single global rating of expressive language during a mother-child interactional task. Most children were found to communicate using fairly sophisticated sentences and the measure had little variability. Using standardized assessments of expressive language may have produced a measure with greater sensitivity and variability. The results clearly indicate that receptive language development alone is insufficient in explaining significant portions of the variance associated with externalizing problems during the preschool period.

*Examination of the Role of Children's Emotion Regulation in Reducing Children's Risk for Externalizing Problems: Methodological Considerations*

The current study examined preschool children's use of emotion regulation strategies in relation to responsive parenting and children's externalizing problems. Unexpectedly, children's use of emotion regulation strategies was unrelated to levels of responsive parenting or children's level of externalizing problems. The lack of a statistical relationship between children's observed emotion regulation strategies and externalizing problems is inconsistent with theoretical expectations and previous empirical studies (e.g., Gilliom, et al., 2002; Hill, et al., 2006).

Theoretically, poor emotion regulation skills increases risk for many forms of childhood problem behaviors, including externalizing problems (Cicchetti, Ackerman & Izard, 1995). Empirically, children who were observed to use less distraction, passive waiting, and information gathering were found to have higher levels of externalizing problems (Gilliom, et al., 2002). Variations in the operational definitions and measurement of emotion regulation may account for the lack of consistency between the current findings and previous theoretical and empirical work.

As argued by Cole, Martin and Dennis (2004), a lack of consensus exists regarding how to conceptualize and measure emotion regulation. The term “emotion regulation” is used to refer to a host of processes. For instance, some investigators measure emotion regulation as specific strategies individuals use to control their emotion while others measure emotion regulation in terms of variations in expressed emotionality (Cole, Martin, & Dennis, 2004). Both approaches are potentially problematic, particularly when studying emotion regulation in young children.

Grolnick and her colleagues (1996) identified strategies that toddlers use to decrease their emotional arousal. Others researchers, including the present investigation, have examined children’s use of emotion regulation strategies identified by Grolnick and colleagues (1996). Measuring emotion regulation in terms of strategy use is often limited to the use of strategies that can be observed (e.g., Grolnick, et al., 1996). For instance, Grolnick and colleagues (1996) found that distraction was the most commonly used strategy during early childhood and that more distraction was associated with less negative emotional arousal. While distraction can be defined and operationalized, cognitive strategies, such as cognitive reframing or minimizing strategies, may effectively reduce expressed emotion but the age of the child may interfere with the ability to measure strategy use. In addition, this approach assumes that the frequency of strategy use is related to effectiveness; the more a strategy is used the more reductions in emotional arousal



occur. However, this assumption may be incorrect. For instance, using a strategy less frequently may mean that the emotion was efficiently regulated. In contrast, children who use a variety of strategies or use a single strategy more frequently to regulate emotions may experience difficulty controlling their emotions.

Operationalizing emotion regulation in terms of variations in expressed emotion is equally problematic. In this case, investigators are defining the outcome of emotion regulation rather than emotion regulation per se. Variations in expressed emotion may occur for a number of reasons that are unrelated to emotion regulation. Low levels of expressed emotion may occur because emotion was regulated or because an event was not distressing and did not trigger an emotional response (Frick & Morris, 2004; Scaramella & Leve, 2004). High levels of expressed emotion may indicate poor emotion regulation or that the strategy used was ineffective in reducing emotional arousal. Without consensus in how to define emotion, distinguishing emotion from regulation is especially difficult (Cole et al., 2004).

In addition to conceptualization problems with emotion regulation, the actual approach used to measure emotion regulation varies widely across empirical studies. Two general approaches are used to measure emotion regulation during early childhood, parents' reports on questionnaires (e.g. Davidov & Grusec, 2006) and observational methods (e.g. Eisenberg et al., 2001). Parent-report measures often provide vignettes of situations and ask parents to rate the likelihood that their child would respond in specific ways. The ecological validity of the approach is questionable as parents may not be good reporters of their children's emotion regulation. Parents may never have observed such a situation or may never have observed their children using any of the strategies listed.

Observational methods are used more frequently. Observational methods create a situation that is expected to elicit frustration. The situations may or may not be frustrating for a variety of reasons. First, the setting in which emotion regulation is measured may affect observed behavior. Some studies used a laboratory setting (e.g. Hill et al., 1999), other studies have observed emotion regulation in the children's home (e.g. Gilliom et al., 2002), and still others have used a school setting (e.g. Garner & Spears, 2000). The same frustrating situation may vary in felt distress depending on the setting. Second, the actual task used may be more or less frustrating. For instance, Grolnick and colleagues (1996) measured emotion regulation using four different waiting tasks and a parent separation task. Two of the waiting tasks consisted of the child waiting to receive a gift and two tasks involved a snack delay. The parent was present in the first of each of these tasks and not present in the second of each of these tasks. Gilliom and colleagues (2002) also used a waiting task where children had to wait for a cookie. In procedures similar to the present study, Hill and colleagues (2006) used a task where an attractive toy was put inside a clear plastic box and children had to wait to get the toy. The number of tasks used to measure emotion regulation is almost equal to the number of studies in which investigators observed emotion regulatory behavior. For instance, children have been observed being restrained in a high chair (Calkins, Gill, Johnson & Smith, 1999; Hill et al., 2006), given a candy which was then taken away (Stansbury & Sigman, 2000), and children receiving a disappointing prize (Eisenberg et al., 2001).

To further complicate an already complicated situation, substantial variability exists in the methods used to observationally code emotion regulation and to score emotion regulation. Two coding methods are used most frequently, an interval and a global rating system. In an interval coding system, children's use of each regulation strategies are rated based on their

occurrence within a specified time frame (e.g. rated every 10 seconds). Gilliom and colleagues (2002) used an interval rating system where the presence or absence of five emotion regulation strategies was rated every 10 seconds. Scoring involved summing the presence scores across all the intervals. In contrast, Hill and colleagues (2006) used a global rating system. In a global rating system, one score is assigned to characterize the entire task. Hill and colleagues (2006), rated children on how regulated they were, how often they used distraction, and how effective their use of distraction was. To create the emotion regulation score, Hill and colleagues (2006) averaged the three global scores. The current study used an entirely different approach and used a micro-social coding system in which the duration of each emotion regulation strategy was marked in real time. Scoring involved summing the durations for each code and the actual amount of time each child used each strategy was used in analyses.

The coding and scoring differences across these studies are not subtle. Interval coding runs the risk of distorting the actual duration of a behavior. For instance, a behavior may have been fleeting or may have taken the entire 10 second interval and both behaviors would receive the same score. Global scores typically weight behaviors so that the presence of more complex behavior is scored higher than frequently occurring, less complex behavior. With micro-social coding, all behaviors are coded as they occur. Since behaviors are rare events, the likelihood that normality assumptions are violated increases. Moreover, differences in coding procedures may account for inconsistencies across studies of emotion regulation.

Taken together, there are many limitations in using a strategies approach to measure emotion regulation. In order to effectively use a strategy approach, a temporal relationship between the experience of an emotion, use of an emotion regulation strategy and the subsequent decrease of emotion must be demonstrated (Cole, Martin & Dennis, 2004). The current study

was unable to demonstrate this relationship, and each emotion regulation strategy coded was only used by only small percent of the children. The coded strategies may have not actually been effective emotion regulation strategies for children in this study in the coded task. It may also be that the task did not elicit enough emotion to warrant the use of emotion regulation strategies. Due to difficulties in measuring emotion regulation strategies, taking this approach may not be the most effective way to measure emotion regulation. It may be most important to measure how much emotion children display. Results of the present study may have differed if children's level of emotionality was evaluated instead of children's use of emotion regulation strategies.

#### *Strengths, Limitation, and Future Directions*

The present study has a number of strengths. First, an observational measure of responsive parenting was used. Observational measures may reduce reporter bias and record parents' behavior in a controlled context. Despite the short duration of the task coded for responsive parenting, an association was still found between responsive parenting and children's externalizing problems, which demonstrates the utility of the observational coding. Second, responsive parenting, a positive parenting style, was examined among a low-income, primarily African-American sample. It is critically important to examine what factors contribute to low-income, primarily African-American children's positive development as these children are at increased risk for behavior problems (Kaiser et al., 2002) and impaired language development (Hoff, 2003; Kaiser et al., 2000). Despite the abundance of research on the relationship between responsive parenting and children's language development, this association has been scarcely been studied in low-income, primarily minority dyads. Additionally, much of the research on children's emotion regulation has been with middle to upper-class, primarily Caucasian families. The current study sought to fill this gap in the research.

Finally, no method overlap occurred across constructs. That is, separate teams of observational coders were used to rate responsive parenting and emotion regulation. Children's language skills were measured by an interviewer administered standardized assessment. Only children's externalizing problems relied on mothers' self reports. Although a clear strength of the study, the results may be more conservative as compared to other studies which relied completely on mothers' self reports (e.g. Davidov & Grusec, 2006).

Despite these strengths, this study is not without limitations. First, while the observational coding of responsive parenting is a clear strength, the measure is limited in that it only included three codes measured during a short interactional task. The global measure may have not been sensitive enough to capture mother's specific responses to children's verbalizations or emotions, which may be critical for children's language development and emotion regulation. Second, only one standardized measure of children's language development was used which measured receptive and not expressive vocabulary. Using a more comprehensive assessment of children's language skills may have generated results more consistent with expectations. Third, the emotion regulation task may have not been frustrating enough to elicit sufficient variability in emotion regulation strategies. Designing tasks that elicit higher levels of frustration may yield more variability in the use of emotion regulation strategies. Alternatively, measuring emotion regulation using a variety of different tasks and approaches may have yielded results more consistent with previous research. Finally, only a parent report measure of children's externalizing problems was used. Adding a teacher report of children's externalizing problems may have altered results.

The current study adds to existing research in finding that mothers high on responsiveness have children with low rates of behavior problems. However, mechanisms that

account for this association are not well understood. Future research should examine mediators of this relationship in order to better understand how parenting practices can reduce children's risks for problem behaviors. Additionally, bidirectional effects of this relationship should be explored. By definition, children with low levels of externalizing problems are more cooperative, compliant, and display less negative emotion. It may be that these children, as compared to children with high levels of externalizing problems, are easier for parents to socialize and thus elicit more responsive parenting. The direction of this effect should be evaluated with longitudinal research.

Finally, Tamis-LeMonda and colleagues (2001) suggest that responsive parenting should be examined as a multidimensional, modular, and specific parenting construct versus a global construct. More comprehensive and specific measures of responsive parenting may clarify the functional utility of responsive parenting in promoting children's language and adaptive emotion regulation development while reducing children's risk for externalizing problems. Understanding mothers' propensity to respond to certain behaviors, and the consequences of this selective responding, could help researchers understand the socialization process at a more micro level and may ultimately help design more detailed and targeted interventions for mothers.

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Appendix A

*University Committee for the Protection  
of Human Subjects in Research  
University of New Orleans*

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*Campus Correspondence*

Principal Investigator: Laura Scaramella  
Date: August 17, 2009  
Protocol Title: A test of the early childhood coercion model  
IRB#: 02apr05

Your request for a one year extension has been approved.

Please remember that approval is only valid for one year from the approval date (i.e., expires 8/17/10). Any changes to the procedures or protocols must be reviewed and approved by the IRB prior to implementation.

If an adverse, unforeseen event occurs (e.g., physical, social, or emotional harm), you are required to inform the IRB as soon as possible after the event.

Best of luck with your project!  
Sincerely,

Best wishes on your project.  
Sincerely,

Robert D. Laird, Ph.D., Chair  
Committee for the Protection of Human Subjects in Research

## Appendix B

### *Global Parenting Codes for Matching Task: Responsive Parenting*

<b>Code</b>	<b>Description</b>	<b>Example</b>
Sensitivity/Supportive Presence	The key defining characteristic of a sensitive interaction is that it is child-centered. The sensitive parent is tuned into the child, manifests awareness of the child's needs, moods, interests, and capabilities. Focuses on how the parent responds to the child's distress as well as his/her non-distress.	<ul style="list-style-type: none"> <li>-Parent responds promptly to child's cues.</li> <li>-Responses are calm and appropriate.</li> <li>-Facilitates, but doesn't over-control play.</li> <li>-Appropriately timing activity.</li> <li>-Interactions appear to be "in sync."</li> </ul>
Intrusiveness	The scale measure the parent's use of intrusive and over controlling behaviors that are parent-centered rather than child centered, regardless of affect or tone. The parent interferes with the child's needs, desires, and interests or actual behaviors.	<ul style="list-style-type: none"> <li>-Unwanted contact</li> <li>-Not allowing the child autonomy in problem solving.</li> <li>-Over-structuring child participation.</li> <li>-Offering a continuous barrage of talk.</li> </ul>
Detachment/Disengagement	This scale measures the degree to which the parent appears emotionally uninvolved or disengaged and unaware of the child's needs for appropriate interaction.	<ul style="list-style-type: none"> <li>-Facing away from the child</li> <li>-Rarely making eye contact</li> <li>-Not responding to child's vocalizations or smiles.</li> <li>-Appearing distracted.</li> </ul>

## Appendix C

### *Micro-social emotion regulation codes for Toy in Locked Box Task*

<b>Code</b>	<b>Description</b>	<b>Example</b>
Information Gathering	Includes questions aimed at learning more about the task. These questions from the child seek clarification regarding the task objects (e.g. the lock box), the rules and structure of the task, or how to complete the task.	-“How do you open this?” -“Do I use these keys?” -“Why won’t this open?”
Verbal Help-Seeking	Verbal Help Seeking includes all statements that request help with the task. Verbal Help Seeking statements communicate the child’s need for assistance to complete the task.	-“Can you help me open it?” -“Somebody needs to help me.” -“Help!”
Distraction	Involves actions and behaviors that indicate that the child has shifted attention or interest away from the lock box and to some other activity. This includes playing with something (including keys) other than the lock box, exploring the room, singing, making faces, dancing around, playing with hair or clothing, or engaging someone in conversation that is not related to the task.	- Child picks up keys and begins tossing them in the air in a playful manner. -Child plays with the buttons on her shirt. -Child plays with a different toy. -Child looks around the room.
Passive Waiting	Passive Waiting is coded when the child is sitting and staring into space. The child makes no attempt to look at the box, open the box, or to interact with others. <u>The child is not engaged in an activity.</u>	-Child sitting quietly, looking at wall. -Staring at a shoe. -Standing in one place, starrng.
Physical Help-Seeking	Help-seeking/ information gathering are goal directed behaviors in which the child is seeking assistance from another person to complete the task (e.g., opening the box). Physical behaviors designed to solicit assistance from another also are included.	-Child picks up box and hands it to someone. -Child holds up the box and the keys to someone. -Child motions for someone to come help. -Child gets up with box or keys and walks over to someone.

## Vita

Kathleen “Lucy” McGoron is originally from Cincinnati, OH. She received her B.S. from Eastern Michigan University in 2006 with a major in Psychology and a minor in Philosophy. During her undergraduate career she worked with children in a local Domestic Violence Shelter, children’s Bereavement group, and worked on several research projects including a project implementing Parent Management training in local community mental health centers. After graduating, she was employed as a Foster Care Worker in Detroit, Michigan. Lucy is currently a 3<sup>rd</sup> year graduate student in Dr. Laura Scaramella’s research lab and does observation coding for Mother’s and Preschoolers Project (MAPS). Additionally, Lucy is completing a practicum at Tulane Infant Team. Lucy’s research interests include parenting practices in high risk populations and child outcomes. In particular she is interested in looking at what parenting practices lead to good outcomes for high risk children, child exposure to violence and trauma, child maltreatment, socialization of emotion regulation, and language, cognitive, and moral development in high risk children. In the future, she would like to develop effective parenting interventions for families involved in the child welfare system and those at risk for engaging in abusive and harsh parenting.