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THE ASSOCIATION BETWEEN EMPATHY AND PROSOCIAL STORY THEMES AND  
INTERNALIZING SYMPTOMS IN PRESCHOOL-AGED CHILDREN

by

SARAH E. GARCIA

Under the Direction of Erin C. Tully, Ph.D.

ABSTRACT

Little is known about the association between empathic and prosocial tendencies (caring) and internalizing psychopathology in young children. Associations between caring and internalizing problems (INT) were examined in young children ( $N = 63$ ). Children's caring was measured using a developmentally appropriate story narrative task about mothers in distress; narratives were rated for themes of caring. No general associations between caring and INT were found. A marginally significant, negative quadratic relation between themes of empathy and INT was found in boys (low levels of INT were related to both high and low levels of empathy). Children's concern reactions were marginally, negatively associated with INT in children of nondepressed mothers. Overall, findings indicate that associations between caring and INT in preschool-aged children are present only under specific conditions, highlighting the importance of gender and maternal psychopathology in elucidating the role of caring in complicated risk cascades that may result in INT .

INDEX WORDS: Internalizing problems, Empathy, Prosociality, Children

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INTERNALIZING SYMPTOMS IN PRESCHOOL-AGED CHILDREN

by

SARAH E. GARCIA

A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of

Master of Arts

in the College of Arts and Sciences

Georgia State University

2013

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Sarah E. Garcia  
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INTERNALIZING SYMPTOMS IN PRESCHOOL-AGED CHILDREN

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## 1. INTRODUCTION

The emergence of empathic responding and prosocial behavior in young children is an important milestone for healthy social and emotional development. Children primarily learn these interactive behaviors through early mother-child relationships, and thus it is important to examine them within this context (Zahn-Waxler & Smith, 1992). Empathic and prosocial behaviors have implications for various social and emotional outcomes such as positive social functioning (Eisenberg, Fabes, & Spinrad, 2006) and the development of conscience (Hoffman, 1983). Indeed, a fairly large literature documents low levels of prosocial behavior and empathic responding in children with high levels of externalizing behaviors (e.g., physical and verbal aggression, Strayer & Roberts, 2004b). However, few studies have addressed the association between empathic and prosocial behavior and internalizing symptoms, especially in young children. This may be due, in part, to the challenges of measuring these constructs in young children. The paucity of research, methodological challenges, and mixed findings in the limited available research leave questions about the relation between empathic and prosocial behavior and internalizing symptoms in young children without satisfactory answers. The aim of this study is to use a developmentally sensitive measure, a story completion task, to measure children's use of empathic and prosocial themes in stories about children's interactions with their mothers to investigate the relationship between prosocial and empathy development and children's psychological functioning.

### 1.1. Development of Empathy and Prosocial Behavior

Empathy and prosocial behavior are related yet distinct constructs. Empathy is an observer's *affective* response to the perception and comprehension of another's emotional or psychological state that is similar to what the other person is perceived to be feeling (Eisenberg, Spinrad, & Sadovsky, 2006; Radke-Yarrow, Zahn-Waxler, Richardson, Susman, & Martinez, 1994; Zahn-Waxler, Robinson, & Emde, 1992). Prosocial behavior is voluntary *behavior* enacted with the intent of benefiting others, including helping, sharing, comforting, and caring (Eisenberg, Fabes, et al., 2006). Prosocial acts are often behavioral responses to empathic feelings (Eisenberg & Eggum, 2008), but prosocial acts can occur in the absence of empathy and empathy does not always lead to prosocial acts.

Rudimentary signs of empathy are evident as early as the first year of life, with findings that infants cry in response to another infant's cries (e.g., Sagi, Hoffman, & Puka, 1994). Around 14 months of age, children begin to express obvious signs of empathy and engage in prosocial acts that are clearly intended to benefit others, with prosocial responses to distress increasing in number and sophistication over the second year of life (Zahn-Waxler, Radke-Yarrow, & King, 1979; Zahn-Waxler, Radke-Yarrow, Wagner, & Chapman, 1992) and throughout childhood (for review see: Eisenberg & Fabes, 2006). Importantly, 3½ year-old children's understanding of emotions is positively related to parents' report of prosocial orientation concurrently and one year later (Ensor & Hughes, 2005). Furthermore, children's tendencies toward prosocial behavior during the preschool years predict prosocial behavior during young adulthood (Eisenberg et al., 1999), suggesting the significance of such behaviors during this early period. These developmental increases in prosocial tendencies may be due both to enhanced emotional

development and additional opportunities to develop and display such behaviors afforded through increased peer interactions as children enter school. In sum, these research findings indicate that the preschool period is an important stage in which to examine the development of a caring orientation and the impact it has on current and future functioning.

**1.1.1. Role of mothers.** Previous research suggests the importance of mothers in children's emotional development (Denham & Kochanoff, 2002; Denham, Zoller, & Couchoud, 1994), including children's prosocial and empathy development (Eisenberg, Fabes, et al., 2006; Hastings, Rubin, & DeRose, 2005; Zahn-Waxler & Smith, 1992). Although most of this research has not included fathers, likely due, in part, to practical difficulties of involving fathers in research, studies that compared the roles of mothers and fathers in children's emotional development suggest some associations are specific to mothers. Negative expressivity of mothers, but not fathers, was negatively associated with children's emotion regulation (Valiente, Fabes, Eisenberg, & Spinrad, 2004); positive mother-child, but not father-child, relationships predicted positive socio-moral development longitudinally (Kochanska, Aksan, & Joy, 2007); and maternal socialization was more strongly predictive of children's prosocial behaviors than was paternal socialization (Hastings, McShane, Parker, & Ladha, 2007). Mothers are typically the first and most prominent demonstrators of prosocial behaviors for young children (Denham, 1997). They often attend to children's prosocial behaviors closely, thus providing opportunities to influence prosocial development (Grusec, Goodnow, & Cohen, 1996). Indeed, mother-child emotional discourse, specifically mothers' explanations of emotions, positively predicts children's teacher-rated cooperativeness and empathy with peers (Denham, 1997; Garner, Dunsmore, & Southam-Gerrow, 2008). It is within these early mother-child interactions that

children often encounter initial opportunities to respond with empathy and prosocial behavior and are encouraged to do so. Therefore, the mother-child relationship is an appropriate context within which to examine factors relating to early prosocial and empathy development.

(Although not the focus of the present study, research on the role of father's in young children's social-emotional development is also very important, particularly given the paucity of research on this topic.)

**1.1.2. Impact of maternal depression.** Children of depressed mothers are at risk for a variety of negative outcomes including emotional and behavior problems, poor social competence, and higher rates of psychopathology, especially anxiety disorders and depression (Beardslee et al., 1993; Cummings & Davies, 1994; Goodman & Gotlib, 1999; Lieb, Isensee, Hoefler, Pfister, & Wittchen, 2002). Depressed mothers have higher levels of depressotypic affect, negative parenting styles, disengagement, and lower levels of positive behavior (Lovejoy, Graczyk, O'Hare, & Neuman, 2000; Goodman & Tully, 2008), and these factors have been found to adversely affect aspects of children's socio-emotional development, such as emotion regulation (Chang et al., 2003). A study examining mother-child interactions found that depressed mothers of toddlers attended less and displayed less sensitivity to their toddlers during interactions than nondepressed mothers, and the toddlers of depressed mothers were less likely to maintain engagement with their mothers during semi-structured play interactions than the toddlers of nondepressed mothers (Jameson, Gelfand, Kulcsar, & Teti, 1997). These detrimental parenting styles and missed opportunities for social learning through interaction may combine to create an environment in which empathy and prosociality develop differently. Children of depressed mothers likely have greater exposure to situations that would be expected to elicit

empathy and prosocial behavior and they may develop overly empathic and/or prosocial tendencies, especially towards their depressed mothers. However, clinical depression is likely resistant to children's caring attempts, and children's repeated, unsuccessful prosocial attempts may diminish their empathic and prosocial responses over time, and thus may impede the children's social-emotional development or cause an internalization of guilt or shame feelings. Indeed, studies have found both that children of depressed mothers demonstrate lower levels of empathy (Frankel et al, 1992) and prosocial behavior (Jones, Field, & Davalos, 2000; Zahn-Waxler et al., 1990) and higher levels of empathy (Zahn-Waxler et al., 1990) and prosocial behavior (Radke-Yarrow et al., 1994; Zahn-Waxler, Cole, Welsh & Fox, 1995) than children of nondepressed mothers. These mean level differences in the development of prosocial and empathic tendencies, as well as the association between maternal depression and children's internalizing symptoms, suggest that maternal depression may moderate the relation between caring orientation and internalizing problems in young children. Thus, although clear predictions about how the association may differ in children of depressed and nondepressed mothers cannot be gleaned from this research, the increased risk of developing internalizing problems conferred by having a mother with depression, likely through complicated risk cascades (Goodman & Gotlib, 1999), suggests the association may be stronger in children of depressed mothers.

**1.1.3. Role of child's gender.** The gender-role of women as caregivers is reinforced by parents early in development. For example, mothers discuss emotions, especially sadness, an emotion likely to elicit empathy, more frequently with daughters than sons (Fivush, 1991; Fivush, Brotman, Buckner, & Goodman, 2000; Leaper & Bornstein, 2002). Furthermore, girls are reinforced for taking interpersonal approaches to negative emotions in others (e.g., offering

comfort; Banerjee, Rieffe, Terwogt, Gerlein, & Voutsina, 2006), whereas boys are encouraged to use problem-solving approaches (e.g. offering advice; Banerjee et al., 2006; Fivush, 1991). As follows, some studies have found that young girls' play themes tend to be more interpersonally-oriented than boys' play themes (Maccoby, 2002; Nicolopoulou, 1997). Girls' focus on interpersonal relationships and parents' encouragement of caretaking behaviors in their daughters suggest young girls may display more empathy and prosocial behavior than young boys.

Empirical evidence for such a gender difference is mixed. For example, Zahn-Waxler and colleagues (Zahn-Waxler, Park, Essex, Slattery, & Cole, 2005; Zahn-Waxler, Park, et al., 2008) found a gender difference in the story narratives of young children (aged 5-7), with girls using more caring themes (prosocial, affiliation, reparation) in their story narratives than boys. Parents have also been found to rate 4-6 year-old girls as more empathic than boys (Dadds et al., 2008). On the other hand, a study of 4-year-olds found no gender difference in ratings of prosocial behavior toward mothers or an experimenter in a laboratory paradigm (Hastings et al., 2005), and another study of 2- to 5-year-old children found no gender difference in teacher-reports of prosocial behavior or observer-coded frequency of prosocial behavior during same-sex peer playgroups (Hastings et al., 2007). Thus, although research on socialization of emotional responses in young children suggests there is likely a gender difference in caring orientation in young children, findings are mixed and may be complicated by the use of a variety of methodologies and samples that span important developmental periods.

## **1.2. Empathy, Prosocial Behavior, and Psychological Functioning**

Children's tendencies to display empathy and prosocial behavior have been linked to the achievement of various developmental milestones, such as higher-level moral reasoning (Carlo,

Koller, Eisenberg, Da Silva, & Frohlich, 1996; Miller, Eisenberg, Fabes, & Shell, 1996), good emotion regulation abilities (Eisenberg et al., 1995; Eisenberg, Hofer, Vaughan, & Gross, 2007; Fabes, Eisenberg, Karbon, Troyer, & Switzer, 1994), academic achievement, and enhanced social standing with peers (Chen, Li, Li, Li, & Liu, 2000; Miles & Stipek, 2006), and empathy has been theorized to be necessary for the development of conscience (Hoffman, 1983). For example, 2- to 4-year old children's empathic concern about mother's feigned distress and pain, coded from children's facial, verbal, and behavioral expressions of concern, predicted adaptive functioning at age 7 across a variety of outcomes, such as peer relations and school engagement (Kochanska, Koenig, Barry, Kim, & Yoon, 2010). Accordingly, typical development of empathy and prosocial behavior in early childhood appears vital for optimal functioning in a variety of areas.

Likewise, underdevelopment of these capacities has been linked to problems, particularly aggression and behavior problems in children (Diener & Kim, 2004; Hastings, Zahn-Waxler, Robinson, Usher, & Bridges, 2000; Hay & Pawlby, 2003; Hughes, White, Sharp, & Dunn, 2000; Strayer & Roberts, 2004a, 2004b). For example, Strayer and Roberts (2004b) found a composite empathy score (parent- and teacher-report and researcher observation) to be negatively related to physical and verbal aggression in 5-year-olds. In a longitudinal study, concern reactions to laboratory distress paradigms at age 4-5 were found to predict decreases in externalizing behaviors from age 4-5 to 6-7 and from age 6-7 to 9-10 (Hastings et al., 2000). Therefore, low levels of empathy and prosocial behavior are linked to lower adaptive functioning and higher levels of externalizing behaviors in young children.

**1.2.1. Internalizing Problems.** Whether empathy and prosocial behavior are linked to internalizing symptoms in young children is unclear. Development of a caring orientation is indicative of adaptive functioning; in fact, empathy and prosocial behavior require a certain level of emotional development and social skills. However, the idea that high levels of empathy and prosocial orientation in certain contexts may be related to internalizing symptoms has become a topic of both theoretical and research interest (e.g., Zahn-Waxler & Van Hulle, 2012). Some theorists describe internalizing disorders, particularly depression, as disorders rooted in ‘concern for others’ (O'Connor et al., 2007). This concern for others, when combined with pathogenic guilt and overinvolvement in or misplaced responsibility regarding others’ distress, may result in depression (Zahn-Waxler & Van Hulle, 2012). Zahn-Waxler (2012) suggested that high levels of empathy, in the presence of other risk factors such as genetic predispositions and difficult family environments, may contribute to the development of internalizing disorders in children. On the other hand, low levels of empathic and prosocial tendencies may be associated with high levels of internalizing symptoms given the links between underdeveloped empathic and prosocial tendencies and poor outcomes and the frequent co-occurrence of internalizing and externalizing problems (Lavigne et al., 1996). In other words, there may be a middle range of healthy empathic and prosocial development with extremes on either end of this range being associated with internalizing problems for different reasons or under different circumstances (i.e., an upward-curving quadratic relation).

Research on older children and adolescents provides empirical support for associations between high levels of caring orientation and high levels of internalizing symptoms. These studies tend to focus on empathy and its correlates, rather than measures of prosocial tendencies.

A study of young adolescents (mean age of 12.6 years) examined responses to questions asking what the adolescent did, akin to prosocial behavior, and how the adolescent felt, akin to empathy, when his/her parent was feeling down. Cluster analysis was used to classify the adolescents into four groups: Indifferent, Active Empathy, Emotional Overinvolvement, and Avoidance. Adolescents classified as Emotionally Overinvolved reported feeling down when their mothers were unhappy, and they had the highest number of internalizing symptoms of all groups (Solantaus-Simula, Punamäki, & Beardslee, 2002). A study by Schonert-Reichl and Beaudoin (1998) examined a sample of 12-19 year-olds and found a positive correlation between depressive symptoms and empathic distress. Similarly, a study of 7<sup>th</sup>, 9<sup>th</sup>, and 11<sup>th</sup> graders found that identification with a friend's discomfort was positively correlated with subsequent depressive symptoms after controlling for demographic variables and prior levels of depressive symptoms, though identification with friend's sadness and happiness were unrelated to depressive symptoms (Rosenfield, Vertefuille, & McAlpine, 2000). As the authors suggest, discomfort is a more subtle emotion than either sadness or happiness, and empathy for discomfort would indicate a better-developed, more highly attuned sense of empathy, which may be related to depressive symptoms. This research suggests that adolescents who experience empathy in a more self-focused and affective manner and who have less defined boundaries between their own emotions and the emotions of others may be at risk for symptoms of depression. There is also limited support for an association between low levels of caring orientation and internalizing symptoms in adolescents. In the study by Solantaus-Simula et al. (2002), adolescents classified as Avoidant tended to remain uninvolved and unaffected by their parent's low mood (exhibiting seemingly low levels of empathy and prosocial tendencies) and

reported more depressive symptoms than the Active Empathy and Indifference groups, thus supporting a negative association between empathy and internalizing problems. Thus, there is evidence of an association between internalizing problems and both high and low levels of caring orientation in adolescents.

Little research has focused on the association between empathic and prosocial tendencies and internalizing problems in children, and the limited available research is mixed, likely owing in part to diverse operational definitions of empathy and prosocial behavior. In one of the few studies in children, Hay and Pawlby (2003) found no significant associations between children's researcher-observed cooperativeness during a laboratory task at age 4 or prosocial behavior (a composite score consisting of child-, mother-, and teacher-reports) at age 11 and internalizing symptoms at age 11. However, bolstering support for the association between a caring orientation and internalizing problems in children, Zahn-Waxler et al. (2005) investigated the predictive relationships among caring themes, including prosocial concern (e.g., acts of helping, sharing, comforting, and other attempts to relieve another's distress), reparation (e.g., prosocial behaviors where the perpetrator attempts to make amends or repair a relationship), and affiliation (e.g., behaviors such as giving or sharing not directly related to conflict or distress, reflective of affection) in children's story narratives at age 7 and symptoms of anxiety and depression at age 13. They found that each of the three caring themes was related to subsequent mother-reported anxiety symptoms, with prosocial concern themes predicting later anxiety symptoms for girls and not boys. Similarly, Woolgar et al. (2001) found a positive correlation between young children's use of prosocial themes in narrative stories and maternal ratings of children's internalizing symptoms. However, the researchers operationalized prosocial themes in terms of

an aggregate score that comprised affection, positive maternal representations, and lack of aggression themes. This broad construct encompasses more than simply a caring orientation; thus it has limited utility for informing about the link between prosocial behavior and internalizing problems. Finally, a sadness factor from a measure of negative affectivity was positively correlated with empathy in a sample of 6- to 7-year-olds, even after controlling for other temperament components such as surgency and effortful control (Rothbart, Ahadi, & Hershey, 1994).

Therefore, several studies have investigated various measures of internalizing problems (anxiety symptoms, internalizing problems, and sadness) in young children in relation to various measures that are broadly related to the construct of a caring orientation. Overall, findings tend to support an association between a caring orientation and greater internalizing problems. There seems to be more evidence of such a relationship when the construct measured taps something closer to empathy than prosocial behavior, but the diversity of measures makes it difficult to draw conclusions about these findings. For example, some measures, such as parents' and teachers' reports of cooperation and helping behaviors, assess children's own displays of caring or prosocial *behavior*, while other measures, such as children's use of prosocial or empathy themes in story narratives, tap children's tendencies toward caring thoughts or orientation but perhaps not their behavioral tendencies.

Furthermore, many of these measures combine different constructs in one scale, which likely complicates interpretation of the findings. For example, research consistently links behavioral inhibition and internalizing symptoms in children as well as adults (e.g., Sportel, Nauta, de Hullu, de Jong, & Hartman, 2011), and other research has demonstrated that

behavioral inhibition is negatively linked to behaviorally-coded expressions of empathy and prosocial behavior in a sample of 2-year-olds (Young, Fox, & Zahn-Waxler, 1999). In other words, various factors, including behavioral inhibition, may prevent empathically prone children from behaving prosocially, which suggests that combining measures of empathy and prosocial behavior may confound or mask associations between these constructs and internalizing problems. Additionally, findings may be mixed because a relationship with higher levels of internalizing problems exists, for different reasons, for children at both high and low levels of caring orientation.

***1.2.2. Role of gender in the caring orientation-internalizing association.*** The suggestion of a gender difference in the development of prosocial orientation and empathy and an established gender difference in the prevalence of internalizing symptoms suggests the association between prosociality/empathy and internalizing symptoms may differ for girls and boys. Beginning around the preschool age, girls suffer from higher levels of anxiety than boys (Zahn-Waxler, Shirtcliff, & Marceau, 2008), and strong gender differences in the rates of depression emerge in adolescence— girls report two to three times more symptoms than boys (Nolen-Hoeksema, 1990) and rates of increase of both self-reported depressive symptoms and clinical depression diagnoses are steeper for girls than for boys after age 13 (for review see: Hankin, Wetter, & Cheely, 2008). Although some researchers have suggested that associations between empathy and internalizing symptoms may be stronger for young girls than young boys (Zahn-Waxler & Van Hulle, 2012), empirical tests of these associations have only been conducted in older samples of adolescents. Bandura, Caprara, Barbaranelli, Gerbino, and Pastorelli (2003) found that self-perceived empathic efficacy positively predicted depressive

symptoms two years later in adolescent girls but not adolescent boys. Gore, Aseltine, and Colten (1993) found that, in the context of high family stress, adolescent girls, but not adolescent boys, who had a stronger interpersonal caring orientation or who were involved in their mother's problems experienced higher levels of depressive symptoms. They found that the higher levels of interpersonal caring orientation and involvement in the problems of significant others (mothers, fathers, and friends) accounted for approximately 25% of the sample's gender difference in self-reported depressive symptoms. Similarly, Rosenfield, Vertefuille, and Mealpine (2000) found that the gender difference in depressive symptoms in their sample of adolescents decreased by 25% to a nonsignificant level after controlling for gender differences in empathy for a friend's discomfort. Furthermore, interpersonal stressors have been found to make a unique contribution to the development of anxiety and depression in female adolescents (Zahn-Waxler, Race, & Duggal, 2005)

Consistent with gender differences in empathy, in the study by Solantaus-Simula et al. (2002), more female adolescents than male adolescents were classified as Emotionally Overinvolved (i.e., the group characterized by negative emotions in response to mothers' unhappiness and the group with the highest number of internalizing symptoms). Boys were more likely than girls to report not getting involved, trying not to worry, and feeling unaffected by mothers' low mood. However, the Avoidance group, which comprised predominantly boys, had the second highest number of depressive symptoms. These findings suggest that boys and girls may be differentially affected by experiencing mother's sad mood and the nature of the relationship between empathy and depression may be different for girls than boys. It is important to note that these studies with adolescents are limited by a heavy reliance on self-report measures

for both empathy and internalizing symptoms, and overly negative reporting by depressed individuals may confound associations between these variables.

In conclusion, review of the available literature offers some support for a positive relation between a caring orientation and internalizing symptoms. Research in adolescent samples (Gore et al., 1993; Rosenfield et al., 2000) suggests that this association is likely moderated by gender with the association present only for girls or at least stronger for girls than boys. Since gender differences in both empathic responding and anxiety symptoms are emerging during childhood, this finding might extend downward to younger children and further research of this relationship in young children is needed.

### **1.3. The Measurement of Caring Orientation in Young Children**

A major issue that likely contributes to the somewhat disparate findings regarding the nature of the association between empathy/prosocial behavior and internalizing problems in young children is the challenge of measuring constructs such as empathy proneness and a prosocial or caring orientation. Even within a single study, ratings of prosocial behavior by different informants (e.g., parents and teachers) have yielded conflicting reports (e.g., Hay & Pawlby, 2003), indicating that the measurement of empathy and prosocial orientation in very young children presents a considerable challenge. Children may have prosocial and empathic skills, but may refrain from exhibiting such responses because of situational factors, such as rules that limit behavior or the presence of a supervising adult, or personal characteristics, such as behavioral inhibition. Indeed, temperamental fearfulness and attachment security have been found to temper toddlers' empathic concern, as indicated by facial expressions, approaching the victim, and verbalizations toward strangers in distress (Van der Mark, Van Ijzendoorn, &

Bakermans-Kranenburg, 2002). Therefore, a paradigm that allows children to convey their internal tendencies toward empathy and prosocial orientation without the influences of real-life social context and pressure for action may yield more sensitive results.

The current study used the MacArthur Story Stem Battery (MSSB; Bretherton & Oppenheim, 2003), a child-informant narrative measure, to assess empathy and prosocial orientation. This method provides measurements of young children's understanding and representation of socio-emotional themes. In this paradigm, the child uses dolls to narrate endings to emotionally evocative story stems about family situations and interpersonal conflicts. The narratives are videotaped for later rating. Assessments of children's narratives, particularly through the MSSB, have been successfully used in previous studies to tap into young children's thoughts and feelings across a number of different contexts. As reviewed by Robinson (2007), the MSSB has been used to obtain information about a variety of different developmental areas ranging from attachment theory to social-emotional functioning. The MSSB has been used successfully with samples that vary on a number of characteristics, including African-American children, children in non-US cultures, and clinically-referred children (Robinson, 2007). A substantial number of past studies have used the MSSB to look at parental representations in maltreated children (for review see: Holmberg, Robinson, Corbitt-Price, & Wiener, 2007), and they have also been used to examine correlates of internalizing and externalizing behaviors and other child outcomes (Warren, Emde, & Sroufe, 2000; Warren, Oppenheim, & Emde, 1996; Zahn-Waxler, Schmitz, Fulker, & Robinson, 1996). As discussed above, Woolgar et al. (2001) found a positive correlation between themes of prosociality expressed in MSSB narratives and maternal ratings of child's internalizing symptoms. Luby et al. (2009) found that gender, age,

and depression severity predicted expressions of shame in preschoolers' narratives. Belden, Sullivan, and Luby (2007) found a link between negative maternal representations, as measured by the MSSB, and depression in preschoolers. Narratives have also been used to examine links between parents' depression and children's representations of guilt (Zahn-Waxler, Kochanska, Krupnick, & McKnew, 1990). In conclusion, there is a growing literature to support the use of children's narratives, especially the MSSB, as a tool for investigating the socio-emotional development of young children and its impact on various child outcomes.

The mother-child relationship is one of the first contexts in which children learn about and have the opportunity to use empathy and prosocial behavior. Indeed, some studies have found that young children respond with less empathy and prosocial behavior toward strangers and/or experimenters than their mothers (Zahn-Waxler, Radke-Yarrow, et al., 1992). Thus, in order to examine children's tendencies toward empathy and prosocial behavior in a developmentally appropriate context, unimpeded by situational factors, stories in which the mother character experiences distress were used in this study.

#### **1.4. Overview of Study**

*1.4.1. Summary.* In conclusion, despite somewhat mixed findings, research generally supports an association between proneness toward a caring orientation and more internalizing problems in children. The use of diverse measures and operational definitions of empathy and prosocial orientation likely contribute to the mixed nature of these findings. In particular, a more empathic, caring orientation appears to be more consistently associated with internalizing problems than are prosocial *behaviors* in young children; the former association is more consistent with research on adolescents that links greater empathy (and related constructs) with

higher levels of depression. However, this question has not been well-researched in preschool-aged children. The constructs of empathy and a prosocial orientation are difficult to measure, particularly in children so young, and the story stem batteries provide a developmentally sensitive method to access these constructs in preschool-aged children. Various factors, such as the child's gender and mother's history of depression, as well as the possibly quadratic nature of the relation between internalizing problems and caring orientation may further complicate understanding of this association. Tapping into these constructs as they are just emerging has the potential to inform about risk factors for internalizing problems at the very beginning of the developmental risk trajectory, which may have important implications for understanding how to thwart developmental risk cascades.

**1.4.2. Innovations of the proposed study.** The purpose of the current study was to investigate the association between a caring orientation, as demonstrated by empathy and prosocial themes in stories about mother-child interactions, and internalizing problems in young children. The study focused on the preschool age, when socio-emotional development is at a critical stage, and findings regarding the relationship between a caring orientation and internalizing symptoms are decidedly unclear. Because the measurement of constructs such as empathy and prosocial orientation in children so young can pose a challenge, this study used a story completion task. The story stems presented dilemmas in which a young child's mother was in distress. Two of these stories were selected from the MSSB and two additional stories were developed for this study. Lastly, by separately evaluating the constructs of empathy and prosocial orientation, the current study attempted to elucidate whether empathy, prosocial orientation, or both are related to internalizing symptoms.

**1.4.3. Hypotheses.** As follows, this study tested one main hypothesis and three exploratory hypotheses. The *core hypothesis* was that greater use of empathy themes and greater use of prosocial themes would be related to more internalizing problems. Although there is conflicting evidence about the relationship between a caring orientation and internalizing problem in young children, overall the available research supports the prediction that empathy and prosocial behavior would be related to internalizing problems; though there is less evidence to support the association between internalizing problems and prosocial behavior.

The *first exploratory hypothesis* tested whether the association between caring orientation and internalizing problems in the core hypothesis was better characterized by a curvilinear, specifically quadratic, relation. That is, we predicted that high and low levels of caring orientation would be linked to higher levels of internalizing problems. We also tested whether relations in the two subsequent exploratory hypotheses were better characterized by a quadratic relation. The *second exploratory hypothesis* was that the association between tendencies toward a caring orientation and internalizing problems would be stronger for girls than for boys, a finding that would be consistent with research demonstrating stronger relationships between empathy/prosocial behavior and internalizing problems in adolescent girls than adolescent boys. Lastly, in light of the theoretical model of risk for internalizing problems in children of depressed mothers that posits risk through exposure to her negative cognitions, emotions, and behaviors (Goodman & Gotlib, 1999), the *third exploratory hypothesis* was that the relation between caring themes and internalizing problems was hypothesized to be stronger for children of depressed mothers than for children of nondepressed mothers.

## 2. METHOD

### 2.1. Participants

Participants were a subsample ( $N = 63$ ) of mothers and their preschool-aged (range = 48-74 months;  $M = 59$  months;  $SD = 5.8$  months) children from a larger study ( $N = 90$ ). Children included in this study completed the story stem battery, which was added after the larger study began and was missing for some participants due to recording malfunctions ( $n = 8$ ). Of the children in this subsample, 32 were girls (51%). The majority of the children in the sample came from two-parent households (88%). The ethnicity of the sample was as follows: 81% Caucasian not of Hispanic origin, 8% African-American, 5% biracial, 3% Asian-American, and 3% Hispanic. The median household income for the sample was in the 100,000-109,000 range. The majority of mothers (89%) and fathers (71%) had at least a college degree.

Women and children were recruited from a list of potential research participants for university studies ( $n = 53$ ) and from health clinics at a large local health maintenance organization (HMO) with multiple facilities in the metropolitan Atlanta area ( $n = 10$ ). The university list was a compilation of families who either (1) responded to a mailing, stating that they agree to be contacted about participation in research studies, or (2) participated in or were determined ineligible for other university studies. Participants recruited from the university list were first identified as having a 4- or 5- year-old child and then contacted by telephone to explain the study and schedule a time for data collection at the research offices. Families recruited from the HMO were identified by the HMO's research department as having a child in the targeted age range. A recruitment letter was sent to the families. Families who responded to the letter were then contacted by telephone to describe the study in detail and to schedule an

appointment for the mother and the child to come to the research offices to participate in the study.

## **2.2. Procedure**

The measures used for this study were part of the battery for a larger study for which participants engaged in a variety of activities during an approximately two-hour visit to the research laboratory. After mothers had given informed consent, mothers and children participated in behavioral observation interactions, children completed structured assessments and interviews, and mothers completed interviews and questionnaires. The primary measure for the current study, the story stem paradigm, was the last activity completed by the child participants. Story narratives were videotaped for later rating.

## **2.3. Measures**

**2.3.1. Demographic information.** Mothers provided basic information regarding family demographics (e.g., child's age, gender, and race, family income, and parents' marital status) on a form developed for the main study. Child's age was included as a covariate in the analyses. Child's gender was included as either a covariate or a moderator in the analyses.

**2.3.2. Language ability.** Children's expressive language abilities may affect the content, elaboration, and coherence of their narratives. Therefore, the Expressive Language subtest of the Test of Early Language Development-Third Edition (TELD-3; Hresko, Reid, & Hammill, 1999) was administered to assess oral communication, or the ability to construct and produce meaningful speech. The TELD-3 has excellent internal consistency, test-retest and inter-rater reliability, and content and criterion-prediction validity (Hresko et al., 1999). Standard scores ( $M = 100$ ,  $SD = 15$ ) were used, with higher scores indicating better expressive language abilities.

Because of the impact that expressive language ability may have on story-telling ability, it was included as a covariate.

**2.3.3. Maternal depression.** Mothers' lifetime and current diagnoses of Major Depressive Disorder (MDD) and/or Dysthymic Disorder were made using the mood disorders section of the Structured Clinical Interview for symptoms of DSM-IV Axis I Disorders-Research Version, Non-Patient Edition (SCID-I/NP; First, Spitzer, Gibbon, & Williams, 2002). As part of the interview, mothers also self-reported the number of months each depressive episode lasted and the number of separate depression episodes they experienced. All interviews were conducted by a master's level clinical psychologist who had extensive prior training on diagnosis of depression with the SCID, including administering at least 20 SCID interviews for diagnosis of depression that were reviewed by a licensed clinical psychologist. The SCID has been found to be both reliable and internally consistent. A variable was constructed to classify participant children as having a mother who either experienced *at least one episode of MDD or Dysthymic Disorder within the child's lifetime* or had *no diagnosis of MDD or Dysthymic Disorder within the child's lifetime*. Thus, children whose mothers had experienced their only episodes of MDD before the child was born were included in the *no diagnosis* group. This binary depression diagnosis variable was included as a moderator in applicable analyses.

The Major Depressive Disorder scale of the Psychiatric Diagnostic Screening Questionnaire (PDSQ; Zimmerman & Mattia, 2001b), a self-report instrument, was used to assess current levels of maternal depression symptoms. Items are symptoms of DSM-IV disorders and phrased as yes/no questions. The PDSQ yields continuous scores, with higher scores indicating greater pathology. The PDSQ has good to excellent internal consistency and

test-retest reliability and discriminant, convergent, and concurrent validity (Zimmerman & Mattia, 2001a). The Major Depressive Disorder scale was also used as a moderator variable as well as a covariate in analyses not testing the moderating effect of maternal depression.

**2.3.4. Children's internalizing problems.** Mothers completed the parent version of the Child Behavior Checklist (CBCL; Achenbach & Edelbrock, 1995). The CBCL is a 118-item measure for children aged four to eighteen years that assesses the presence of emotional symptoms and behavioral problems during the previous six months. The responses are given on a three-point rating scale, ranging from *Not True* to *Very True*. The responses yield scores on eight subscales that are summarized into two empirically-derived scales, the Internalizing Scale (i.e., depressed, anxious, inhibited) and the Externalizing Scale (i.e., aggressive, undercontrolled); *T*-scores from the Internalizing Scale will be used for this study. *T*-scores of <65 fall in the average range and *T*-scores of > 70 are considered clinically significant. The CBCL has well-established reliability and validity for preschool-aged children (Achenbach & Edelbrock, 1995).

**2.3.5. MacArthur Story Stem Battery (MSSB): Measure of empathy and prosocial tendencies.** A story completion task was used to provide measures of children's tendencies to use empathy and prosocial themes during pretend play. This technique was chosen because it is cognitively and emotionally accessible to preschoolers and allows insight into their representation of their socio-emotional world (Holmberg et al., 2007). For this paradigm, the child was told the beginning of five scripted stories (story stems) using dolls and toy props to help narrate the story (scripts are provided in Appendix A). The first stem presented a benign story about a birthday party and was used to teach the task to the child. Each subsequent story

stem presented the child with a dilemma. Once the stem was finished, the child completed the story. Depending on the child's responses, the examiner responded once with a scripted prompt to clarify the child's response or remind the child of elements in the original stem. Aside from the scripted prompts, the examiner did not give the child specific feedback during the child's narrative. Non-directive encouragement such as smiling or head nodding was used as needed to elicit the narratives. After completion of the narrative, the examiner praised the child's effort in order to encourage continued effort. All stories were presented in the same order to each participant.

Other than the first stem, 'Susan's/George's Birthday' that was used to introduce the task to the child, all story stems used for this study presented interpersonal dilemmas between a child of the same gender as the participant child and a mother, who experiences a negative emotion (i.e., pain, sadness, irritability, anger) in each story. Two story stems from the original MSSB, 'Mother's Headache' and 'Lost Keys,' were administered. Two additional story stems created for this study, 'Dinner' and 'Family Game,' were also administered. These stories were selected or created to provide the children with the opportunity to demonstrate empathy and prosocial themes within the context of the mother-child relationship (where children learn to behave empathically and prosocially). The scripts for the warm-up story stem and each of the experimental four story stems are included in the appendix. The narratives were videotaped for later rating.

## **2.4. Reliability**

**2.4.1. Rating system.** The rating system used for this study was loosely adapted from the original coding system developed for use with the MSSB (Robinson, Mantz-Simmons, MacFie,

Kelsay, & the MacArthur Narrative Working Group, 2002). Ratings were selected and adapted to encompass a full range of empathic and prosocial responses. The rating system was refined through a rigorous revision process in which two investigators of the current study iteratively rated narratives using the system, discussed the limitations of the system, and modified the system to capture the prosocial and empathy themes in the four selected stories. Examples of decisions made by the researchers were whether rating the presence/absence of themes or the degree of theme representation was more appropriate and how to word the anchors for rating of the themes. The resulting rating system consisted of two broad areas, content and performance, and a single rating for the participant child's concerned reaction to the negative interpersonal elements (mother's emotion or behavior) of the story stem (the rating manual is provided in Appendix B).

Within the content area, stories were rated for prosocial and empathy themes. Specifically, these content themes were each rated on a scale of 0-4, with 0 indicating no sign of the theme and 4 indicating that the theme was clearly present and elaborately or strongly represented. The definitions for the prosocial and empathy themes were derived from Zahn-Waxler's (e.g., Zahn-Waxler & Radke-Yarrow, 1990) and Eisenberg's (e.g., Eisenberg, Fabes, et al., 2006) writings on prosocial behaviors and empathy. *Prosocial themes* were defined as helping, sharing, or comforting behavior enacted by the child character in the story towards the mother character. Examples include the story child offering to help the mother (e.g., "I'll help look for the keys."), sharing something with his/her mother (e.g., giving mother his/her drawing), or comforting his/her mother (e.g., saying, "Don't be sad." or "It's okay."). *Empathy themes* were defined as instances of the story child experiencing the same or similar negative emotion to

the mother character, seemingly as a result of the mother character's emotion. Examples include the story child voicing an emotion that matches the mother character (e.g., "I'm sad too.") or behaviorally matching the mother character (e.g., the story child no longer wishes to play the game after the mother has indicated her lack of interest and turned away from the table). *Child's Concerned Reaction* was a rating of the participant child's behaviors and verbalizations indicating that he or she experienced distress, discomfort, or concern in response to the emotional content of the presented story stem. The child's concern reaction was rated on a scale of 0-3, with 0 indicating no concern reaction and 3 indicating a clearly observable reaction that was strong or elaborate. Examples include a concerned facial expressions (e.g., raised brows and enlarged eyes) or concerned verbalizations (e.g., "Why is the mom sad?"). *Performance ratings* captured the participant child's engagement with the examiner, the coherence of the child's story, and the degree of embellishment in the story. All performance ratings were rated on a scale of 0-2, with 0 indicating that the performance skill was lacking and 2 indicating that the skill was adequately demonstrated. The performance ratings were used to ensure each story met a minimum standard.

**2.4.2. Training and reliability of raters.** Children's responses were rated by four trained raters who were blind to the study's hypotheses, the child's CBCL scores, and all other information about the children. Raters trained by reading the manual and meeting with the primary investigator (PI), who served as the master rater, to talk through all of the ratings, discuss examples, and ask questions. The raters then watched a training tape (each tape presented one participant telling four stories) with the PI and reviewed the rating of each thematic or performance area. Raters then watched and rated the initial training tape on their own and met

with the PI to review all ratings and reconcile any discrepant ratings. Next, raters were given one new training tape at a time to rate on their own. They met to discuss each tape until acceptable reliability across all thematic ratings was attained.

Data on inter-observer reliability in past studies using story narratives are somewhat difficult to interpret as a variety of methods have been used to calculate reliability and the low incidence of certain ratings makes certain statistics difficult to interpret. However, general estimates are in the moderate to high range (Holmberg et al., 2007). For our study, individual raters were required to achieve a training reliability threshold of .65 in order to progress from the training stage. A value of .65 is within the range of reliability estimates reported in published studies using thematic coding of narratives (see Holmberg et al., 2007). A stricter threshold of .80 was set for the reliability of the averaged ratings (described below) used in analyses.

To calculate reliability a single score for each thematic rating (child's concern reaction, prosocial themes, and empathy themes) was calculated for each tape by averaging the ratings across all four stories. To determine when raters were ready to rate independently, an intraclass correlation coefficient, indicated as an appropriate measure of inter-rater reliability by a review of past research using similar rating schemes (Holmberg et al., 2007), was calculated as an initial estimate of reliability for each individual rater (Table 1). Each rater achieved at least the minimum reliability (.65;  $M = .85$ ) with the PI on a set of ten tapes. The two lowest initial reliabilities of .65 and .68 were achieved by two raters on thematic ratings (Empathy and Child's Reaction respectively) that had low frequencies of occurrences on the raters' respective sets of tapes. These were anomalies as all other initial reliability estimates were above .80.

Table 1

*Reliabilities (Intraclass Correlation Coefficients) for Rated Theme Variables*

Rated Variables	Rater 1		Rater 2		Rater 3		Rater 4		Rater-pair Averages	Final Variables
	Initial	Drift	Initial	Drift	Initial	Drift	Initial	Drift		
Child's Reaction	.83	.84	.93	.94	.68	.91	.81	.78	.89	.91
Prosocial	.90	.88	.97	.76	.93	.90	.92	.99	.93	.93
Empathy	.89	.72	.84	.53	.87	.69	.65	.83	.82	.82

*Note.* Initial and Drift reliabilities were calculated using ratings averaged across all four stories, separately for each rater. Rater-pair averages = the reliability calculated using ratings averaged across all four stories and across rater-pairs. Separate initial and drift reliability estimates are not presented for rater-pairs because raters' sets of initial and drift reliability tapes could not overlap completely. Final Variables refers to the variables as used in analyses i.e., the average of two raters, averaged across all stories retained after factor analysis.

Raters were initially assigned 3 and then 4-5 tapes to rate at a time. Whilst rating each set, raters obtained assistance from the other raters or the PI/master rater when audio quality made the discernment of dialogue difficult, but they did not get assistance with ratings. After completing a set of tapes, the rater met with the PI/master rater to review the ratings for a randomly selected tape to minimize observer drift (i.e., the implicit change in code definitions made by observers over time; Kazdin, 1977; Smith, 1986). Reliability for observer drift was calculated for at least 25% of each rater's tapes, subsequent to the ten tapes used to calculate initial reliability (Table 1). The PI served as the reliability rater for initial reliability as well as for drift reliability.

Each tape was rated separately by two raters. Reliabilities of the rated variables were maximized by averaging the thematic ratings for each tape (which were averages of ratings across story stems) across the two raters. Ratings averaged across stories and raters were used in hypothesis tests. Intraclass correlation coefficients were calculated for 45% of the tapes (i.e., the tapes previously rated by the PI for the purposes of calculating individual initial and drift reliability) using the averaged ratings (across stories and across two raters) in combinations proportionally representing the four rater-pairs (Table 1).

Due to limited variability in the performance rating variables (i.e., few children receiving low performance ratings), percentage agreement was calculated as a measure of reliability for these ratings. Percentage agreement was defined as agreement regarding whether a performance skill was demonstrated (i.e., a rating of 1 or 2) or not demonstrated (i.e., a rating of 0). Reliability was found to be high (Child Engagement with Examiner: 95.7%; Story Coherence: 97.4%; Story Embellishment: 89.7%).

**2.4.3. Power Analyses.** Power for the proposed statistical analyses was computed using G\*Power version 3.1 (Erdfelder, Faul, & Buchner, 1996). Although no studies matched the proposed study extremely well in terms of operational definitions of empathy and prosocial behavior, methods of measuring caring orientation, and/or sample age, studies best fitting the current parameters were used to provide an estimate of expected effect sizes. A study examining the association between empathy and negative affect parent-rated empathy and parent-rated negative affect in 6- and 7-year-olds found an effect size of  $f^2=0.25$  (Rothbart et al., 1994). This effect size was used as an estimate of the association between prosocial/empathy themes and internalizing problems in the core hypothesis. In this analysis, the power with three covariates and an alpha of .05 is 0.88. As previously stated, the exploratory hypotheses are underpowered. Thus, for analyses examining the moderating effect of gender or maternal depression on the linear relation between story theme averages and internalizing problems, we probed those that approached significance ( $p \leq .10$ ) and cautiously interpreted the effects.

Analyses of moderating effects on quadratic relations between story themes and internalizing problems involve three-way interactions. As these tests are even more underpowered, we examined the quadratic effects separately within each subgroup (i.e., boys and girls, children of depressed mothers and children of nondepressed mothers) for all quadratic moderation analyses. For quadratic analyses testing moderation by the continuous MDD scale of the PDSQ, a median split was used to create high maternal depression and low maternal depression groups and analyses were run separately in these two groups. We then reported and cautiously interpreted the magnitude and direction of the effect sizes for analyses in which the betas differed by at least .50.

### 3. RESULTS

#### 3.1. Data Reduction

All analyses were conducted using the statistical package PASW (PASW Statistics 18, Release Version 18.0.0; SPSS, Inc., 2009, Chicago, IL, [www.spss.com](http://www.spss.com)). Means, standard deviations, and ranges for story theme ratings of individual stories are presented in Table 2. For each theme, correlations between ratings for each individual story (averaged across two raters) and ratings averaged across all four stories and across two raters were calculated to examine the pattern of association of the ratings (see Table 2). These correlations were generally significant and moderate to strong in magnitude with the exception of the rating of Child's Reaction in the Headache story, which was nearly zero and nonsignificant. Additionally, a principal components factor analysis of the four ratings from the individual stories was calculated for each theme to examine the underlying structure of the ratings for individual stories. The factor analysis of ratings of Child's Reaction revealed one factor with an eigenvalue of greater than one (1.82) that accounted for 45% of the variance, and a second factor with an eigenvalue of about one (1.04) that accounted for 26% of the variance. See Table 2 for factor loadings. The ratings for three stories (Game, Dinner, and Keys) had loadings of .67 or higher on the first factor, and the rating for the Headache story had a small, negative loading on this factor. The rating for the Headache story had a very large loading on the second factor, and the rating for the Keys story had a moderate loading on this factor. The factor analysis of ratings of Empathy revealed one factor

Table 2

*Descriptive Statistics and Factor Analysis of Story Theme Ratings: Means, Standard Deviations, Ranges, Factor Loadings, Correlations, and Alphas*

Story theme	<i>M</i> ( <i>SD</i> )	Range	Factor loadings		Correlation <sup>a</sup>	Alphas <sup>b, c</sup>
			First factor	Second factor		
Child's Reaction						.58
Headache	.02 (.11)	0-0.5	-.17	.93	.03	<b>.66</b>
Game	1.17 (1.21)	0-3	.79	-.20	.70**	.40
Dinner	.92 (1.13)	0-3	.85	.09	.87**	.25
Keys	.42 (.70)	0-3	.67	.36	.62**	.50
Empathy						.27
Headache	.39 (.82)	0-3.5	.70	.10	.59**	.12
Game	.48 (.90)	0-4	-.25	.93	.39**	<b>.43</b>
Dinner	.30 (.64)	0-2.5	.63	-.11	.46**	.19
Keys	1.12 (1.32)	0-4	.71	.33	.79**	-.04 <sup>d</sup>
Prosocial Orientation						<b>.44</b>
Headache	1.92 (1.16)	0-3.5	.64	-	.63**	.35
Game	.70 (1.1)	0-3.5	.72	-	.66**	.29
Dinner	1.61 (1.1)	0-3.5	.43	-	.52**	.46
Keys	1.59 (1.28)	0-4	.63	-	.65**	.38

<sup>a</sup>Refers to the correlation between the story theme rating of an individual story and the average of all 4 individual story ratings for the theme. <sup>b</sup>Alphas in **bold** typeface are the alpha values for the story theme averages as they were used in tests of hypotheses. <sup>c</sup>Alpha corresponding to an individual story is the alpha calculated if that story is OMITTED (i.e., higher values indicate that inclusion of the story worsens the internal consistency of the factor theme. Alphas corresponding to themes include all four stories. <sup>d</sup>The negative value of this alpha is due to a negative average covariance among items, suggesting that this item is important to the overall structure of the construct.

\*\*  $p < .01$ .

with an eigenvalue of greater than one (1.46; 37% of the variance) and a second factor with an eigenvalue of exactly one (25% of the variance). Three stories (Headache, Dinner, and Keys) had moderate to strong loadings on the first factor; the rating for the Game story had a small, negative loading on the first factor. This rating for the Game story loaded very strongly onto the second factor, and the rating for the Keys story had a moderate loading on this factor. Finally, the factor analysis of the Prosocial Orientation story ratings revealed one factor with an eigenvalue of greater than one (1.52), which accounted for 38% of the variance. The factor loadings of all four stories on this factor were moderate to strong ( $\geq .43$ ).

Decisions about how to aggregate ratings across stories to create story theme averages were based on the results of these factor analyses as well as the correlations to averages and changes in internal consistency reliabilities when ratings for individual stories were removed. These statistics clearly converged to support one score computed by averaging across all four stories for the Prosocial Orientation theme. The eigenvalues of the factor analysis suggested the possibility of two Child's Reaction factors, one including the ratings for the Game, Dinner, and Keys stories and one including the ratings for the Headache and Keys stories. The correlations to averages and improvement in internal consistency with the removal of the rating for the Headache story support averaging ratings for the Game, Dinner and Keys stories, but not the Headache story, to create the Child's Reaction theme score. The internal consistency reliability for the second factor that included ratings for only the Headache and Keys stories was  $\alpha = .02$  indicating the factor should not be used. Similarly, the factor analysis suggested the possibility of a second Empathy factor, but the correlations to averages and, especially, the improvement in internal consistency reliability when the rating for the Game story was removed supported

averaging across the Headache, Dinner, and Keys stories only for the Empathy theme score. The internal consistency reliability for the second factor that included ratings for only the Game and Keys stories was  $\alpha = .03$  indicating a weak factor that was therefore not used in subsequent analyses. These averaged themes, that is ratings of themes across two raters and then across the stories as described here, will be used for the remainder of the analyses and referred to as story theme averages.

**3.1.1. Data cleaning.** Stories were checked to ensure they obtained minimum performance ratings (scored higher than a '0' on ratings of Child Engagement with Examiner, Story Coherence, and Story Embellishment that had been averaged across two raters). No stories were excluded for insufficient story content. A total of seven individual stories were missing across four participants because the stories were not initially completed (i.e., one participant had one story, one participant had two stories, and two participants had three stories each). Any child with fewer than two adequate stories was excluded from analysis. Due to the missing stories and the stories omitted from the Child's Reaction and Empathy story theme averages, one participant was dropped from all analyses (the participant with only one story) and one participant was dropped from analyses involving the Child's Reaction and Empathy story theme averages; thus sample size was reduced to 61 for analyses involving these two variables and 62 for analyses involving the Prosocial Orientation variable.

## **3.2. Descriptive Statistics**

Means, standard deviations, and ranges for all continuous variables (including story theme averages) are presented in Table 3. The distribution of internalizing problems, the dependent variable, was examined using the Kolmogorov-Smirnov test of normality and did not

Table 3

*Descriptive Statistics of Continuous Variables: Means, Standard Deviations, and Ranges*

Measured variables	Range	<i>M (SD)</i>				
		Overall Sample	Depressed		Nondepressed	
			Boys	Girls	Boys	Girls
Internalizing problem scores <sup>a</sup>	29-76	49.27 (10.34)	54.60 (10.62)	55.50 (6.16)	46.24 (9.45)	46.21 (11.43)
Exp. lang. <sup>b</sup>	82-118	99.23 (9.29)	96.40 (8.15)	101.25 (11.87)	96.67 (8.55)	102.26 (8.20)
Child's Age (in months)	48-74	59.48 (5.80)	59.80 (7.60)	60.17 (6.58)	59.71 (5.59)	58.63 (4.76)
Depression sx.	0-13	2.73 (2.90)	4.50 (3.50)	4.75 (4.16)	1.57 (1.54)	1.79 (1.47)
Rated variables: Story theme averages						
Child's Reaction	0-3	0.85 (0.83)	0.88 (0.94)	0.60 (0.46)	0.87 (0.89)	0.97 (0.90)
Prosocial Orientation	0-3.13	1.45 (0.71)	1.38 (0.92)	1.55 (0.73)	1.48 (0.67)	1.44 (0.69)
Empathy	0-3	0.60 (0.66)	0.70 (0.71)	0.65 (0.95)	0.64 (0.63)	0.47 (0.46)

*Note.* <sup>a</sup>T-scores. <sup>b</sup>Standard scores. Exp. lang. = Expressive Language scale of the Test of Early Language Development-Third Edition; Depression sx. = Depression symptoms as measured by the Psychiatric Diagnostic Screening Questionnaire.

differ significantly from a normal distribution. Correlations between continuous variables are displayed in Table 4 and are discussed below. Descriptive information about the categorical independent and covariate variables is also presented in the text below.

**3.2.1. Child's age.** Child's age was significantly, positively correlated with Prosocial Orientation. Age was also negatively correlated to expressive language, which may be the result of several older children not reaching a ceiling on the TELD-3.

**3.2.2. Maternal depression.** Children's internalizing scores were significantly, positively correlated with mother's current depressive symptoms. Children of mothers with a diagnosis of MDD during the child's lifetime had significantly higher internalizing scores ( $M = 55.09$ ,  $SD = 8.27$ ) than children of mothers with no MDD diagnosis during the child's lifetime ( $M = 46.23$ ,  $SD = 10.30$ ),  $t(60) = -3.47$ ,  $p = .001$ . The two groups did not vary on expressive language abilities,  $t(60) = 0.11$ ,  $p = .91$ , age,  $t(60) = -0.52$ ,  $p = .61$ , or any of the rated variables: Child's Reaction,  $t(59) = .87$ ,  $p = .39$ , Prosocial Orientation,  $t(60) = -0.06$ ,  $p = .95$ , or Empathy,  $t(59) = -0.62$ ,  $p = .54$ . The group of mothers with a diagnosis of MDD during the child's lifetime had a mean of 1.5 ( $SD = 0.85$ ) episodes of MDD and a mean of 19.14 ( $SD = 20.78$ ) months spent depressed during the child's lifetime.

**3.2.3. Gender differences.** Boys and girls did not differ significantly in mean levels of internalizing problems,  $t(60) = -0.33$ ,  $p = .75$ , age,  $t(60) = 0.35$ ,  $p = .73$ , or on any of the rated variables: Child's Reaction,  $t(59) = 0.25$ ,  $p = .80$ , Prosocial Orientation,  $t(60) = -0.19$ ,  $p = .85$ , and Empathy,  $t(59) = 0.68$ ,  $p = .50$ . Boys and girls did not differ significantly on mother's current depression symptoms,  $t(60) = -0.57$ ,  $p = .57$  or mother's depression diagnosis during the

Table 4

*Correlations between Continuous Variables*

	1.	2.	3.	4.	5.	6.	7.
1. Child's Reaction	-	-.13	.07	-.20	.01	.05	-.21
2. Prosocial Orientation		-	.18	-.08	-.05	.45**	.01
3. Empathy			-	-.06	.25	-.01	.06
4. Internalizing problem scores				-	-.18	-.22	.55**
5. Exp. lang.					-	-.28*	-.19
6. Child's age						-	-.17
7. Depression sx.							-

*Note.* Exp. lang. = Expressive Language scale of the Test of Early Language Development-Third Edition; Depression sx. = Depression symptoms as measured by the Psychiatric Diagnostic Screening Questionnaire.

\* $p < .05$ . \*\*  $p < .01$ .

child's lifetime,  $X^2(1, 62) = 0.28, p = .60$ . Boys' and girls' scores of expressive language abilities did differ significantly,  $t(60) = -2.32, p = .02$ , although the mean scores for boys ( $M = 96.58, SD = 8.29$ ) and girls ( $M = 101.87, SD = 9.61$ ) were both within a few points of the overall mean score for the normative group ( $M = 100, SD = 10$ ).

**3.2.4. Administration differences.** Average ratings of Child's Reaction, Prosocial Orientation, and Empathy did not differ significantly for children who had all four stories and those who were missing one or two stories:  $t(59) = 0.59, p = .56$ ;  $t(60) = 1.34, p = .19$ , and  $t(59) = 1.37, p = .18$ , respectively. There were also no significant differences in average theme scores by experimenter (i.e., Dr. Tully vs. an undergraduate research assistant as the story stem administrator) on any of the rated variables: Child's Reaction:  $t(59) = -1.01, p = .32$ , Prosocial Orientation:  $t(60) = -0.59, p = .56$ , Empathy  $t(59) = -1.74, p = .09$ .

### 3.3. Data Analysis

**3.3.1. Statistical approaches.** 1) The *core hypothesis* was tested with separate hierarchical linear regression models for each of the predictor variables (Child's Reaction, Empathy, or Prosocial Orientation) with internalizing problem scores as the outcome variable and potentially confounding variables (i.e., age, expressive language abilities, gender, and mother's depression) as covariates.

2) Exploratory moderation analyses were conducted using hierarchical linear regression, according to the steps for moderation testing recommended by Baron and Kenny (1986) and Holmbeck (1997). As recommended by Aiken and West (1991), continuous independent variables and moderators were centered before testing the interactions to eliminate problematic multicollinearity effects between the independent variables and the moderators.

- a) The *first exploratory hypothesis* was tested by conducting analyses to examine possible curvilinear, specifically quadratic, associations between each of the story theme averages and internalizing scores. For each story theme average, a quadratic term was calculated by squaring the mean-centered story theme average. Analyses were then conducted by entering the quadratic term in the third step of the regression model. A significant quadratic term would indicate that the association between the story theme average and internalizing problems was better characterized as quadratic, as opposed to linear. A negative effect for the quadratic term would indicate the curve turned downwards at the ends (lower internalizing problems at high and low levels of prosocial/empathic behavior); a positive effect would indicate that the curve turned upwards at the ends (higher internalizing problems at high and low levels of prosocial/empathic behavior, as predicted).
- b) For the *second exploratory hypothesis*, gender was tested as a moderator of the association between empathy and prosocial themes and internalizing problems. A dummy-coded gender variable was multiplied by the mean-centered story theme average to create the interaction term, which was entered in the third step of the regression. In the absence of significant moderating effects, linear trends ( $p \leq .10$ ) will be probed and cautiously interpreted. Gender was also tested as a moderator of the association between quadratic story theme terms and internalizing problems. Here, the interaction term was created by multiplying the dummy-coded gender variable with the quadratic story theme average, described above, in the third step of the regression. Due to limited power but the importance of this research question, in the absence of significant interactions, the

quadratic associations were examined separately for girls and boys and differences in effect sizes of .50 or greater were reported and cautiously interpreted (considered a strong effect; Acock, 2008).

- c) The *third exploratory hypothesis* tested the moderating influence of maternal depression using two separate variables: current symptom count as a continuous moderator and presence or absence of an MDD diagnosis during the child's lifetime as a dichotomous moderator. For the diagnosis variable, the interaction term was calculated according to the steps described for gender. The continuous PDSQ variable was mean-centered before multiplying it by the mean-centered story theme average to create the interaction term. In the absence of significant moderating effects, linear trends ( $p \leq .10$ ) will be probed and cautiously interpreted. The moderation of maternal depression was also tested on the association between the quadratic story theme terms and internalizing problems, according to the procedures described above.

3) The procedures for investigating the nature of post-hoc moderational effects recommended by Holmbeck (2002) were followed. Effects that were probed used dichotomous moderator variables, and so a value of zero was assigned to one variable group. To probe the effect, the dichotomous variable was reverse-coded, the interaction term recalculated, and the regression re-run to provide statistics for the second variable group.

**3.3.2. Testing of regression assumptions.** Tolerance values were examined to assess the assumption of lack of multicollinearity in analyses using linear terms for the independent variables. Tolerance values of  $< .10$  (Cohen, West, & Aiken, 2003) were assumed to indicate a potential problem with collinearity. No problems were found. Tolerance values were not

examined in analyses using quadratic terms for the independent variables in the final step because these terms are necessarily highly correlated with the linear term included in previous steps and this collinearity does not usually present a problem (Jaccard & Turrisi, 2003).

To check the assumption of homoscedasticity, the standardized residuals were plotted against the predicted values of Y. There were no discernible patterns in any of the plots, therefore constant error variance was assumed. To check for independence of residuals, the residuals of each regression were plotted separately by case number (an indication of temporal sequence of data collection), recruitment source, and experimenter. No patterns were apparent. Examination of Q-Q plots of the residuals revealed no notable deviations from the expected linear line, thus indicating normality of residuals. Additionally, Kolmogorov-Smirnov tests of normality were run on the residuals from each of the regression models. The results indicated that none of the regressions yielded residuals that differed significantly from a normal distribution.

The Cook's D statistic was calculated for the studentized residuals to identify outliers that may exert undue influence on the statistical tests. Cook's D combines information about the residuals and leverage and measures the effect of deleting individual data points. As per the recommendation of Fox (1991), residuals with Cook's D values of greater than 0.072 [calculated as  $4/(n-k-1)$ ] were flagged for further examination. DFBetas were then calculated for all flagged residuals. DFBeta is a measure of the difference in the regression coefficients when a particular case is included compared to that particular case being excluded from the analysis. DFBeta values smaller than two indicate the data point was not causing undue influence, and DFBeta values that exceed two indicate the data point has undue influence on the outcome of statistical

tests and should be removed (Belsey, Kuh, & Welsch, 1980). No DFBeta values of greater than two were found.

**3.3.3. Core Hypothesis.** Results from the regression analyses of internalizing problems on the story theme averages are displayed in Table 5. Of the covariates, mother's depression symptoms predicted significantly higher levels of children's internalizing problems. Contrary to the hypothesis, none of the story theme averages was a significant predictor of internalizing problem scores above the effects of age, gender, expressive language abilities, and mother's current depression symptoms<sup>1</sup>.

**3.3.4. Exploratory analyses.** Using scatterplots, child's internalizing problem scores and the regression residuals were each plotted against each of the story theme averages and the predicted value of Y from the regression model to test for indications of a quadratic relationship between internalizing scores and the story theme averages. Plots were then fit with a loess line. For the regression involving Child's Reaction as the independent variable, the loess line did not appear to deviate significantly from the horizontal line at the zero value for the residuals, thus indicating that a linear relationship between Child's Reaction and internalizing scores best characterized the relationship. Therefore, Child's Reaction was dropped from subsequent exploratory analyses testing a quadratic relationship between story theme averages and internalizing scores. The Prosocial Orientation and Empathy plots indicated a possible curvilinear relationship between internalizing scores and story theme averages, and quadratic relationships between these story theme averages and internalizing problems were tested in subsequent exploratory analyses.

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<sup>1</sup> Regressions were run excluding mother's current depression symptoms as a covariate and still failed to produce significant predictor effects for any story theme averages.

Table 5

*Hierarchical Regression of Internalizing Scores on Story Theme Averages with Age, Gender, Expressive Language, Mother's Depression as Covariates*

Predictor	Story theme								
	Child's Reaction			Prosocial			Empathy		
	$\Delta R^2$	$\beta$	$p$	$\Delta R^2$	$\beta$	$p$	$\Delta R^2$	$\beta$	$p$
Step 1	.34		.00	.34		.00	.34		.00
Age		-.18	.13		-.18	.12		-.18	.13
Gender		.07	.57		.04	.70		.07	.57
Exp. lang.		-.17	.17		-.16	.20		-.17	.17
Depression sx.		.48	.00		.48	.00		.48	.00
Step 2	.01		.42	.00		.88	.00		.67
Story theme		-.09	.42		-.02	.88		-.05	.67

*Note.* Exp. lang. = Expressive language scale of the Test of Early Language Development-Third Edition; Depression sx. = Depression symptoms as measured by the Psychiatric Diagnostic Screening Questionnaire.

Regression analyses were run to test whether the association between internalizing scores and Prosocial Orientation and Empathy was curvilinear in nature (see Table 6). In terms of covariates, mother's depression was a significant predictor of internalizing scores. Neither of the quadratic story theme averages were a significant predictor of internalizing scores above the effects of mother's depression, age, gender, and expressive language abilities.

**3.3.4.1. Moderation by gender.** Results from the regression analyses testing the moderating effect of gender on the association between the story theme averages and internalizing problems are displayed in Table 7. Again, contrary to the hypothesis, none of the interactions between child's gender and the story theme averages were significant above the effects of the mother's depression, age, and expressive language abilities.

Results from the analyses testing the moderating effect of gender on the curvilinear regression of internalizing scores on story theme averages can be found in Table 8. The interactions between gender and quadratic story theme averages predicting internalizing scores above the effects of mother's depression, age, and expressive language abilities were not significant. However, as previously stated, due to the limited power for detecting this interaction, regardless of the significance of the interaction terms, internalizing scores were regressed on each of the quadratic story theme averages separately for boys and girls to explore potential gender differences in this effect. The difference in magnitude between the betas of boys and girls for the regression of internalizing problems on quadratic Prosocial Orientation themes was less than .50. For Empathy, the associations for boys and girls were in opposite directions and the betas differed by a magnitude of .58; a strong effect size (Table 9; Acock, 2008). For boys, the curvilinear association between internalizing scores and Empathy approached significance

Table 6

*Hierarchical Curvilinear (Quadratic) Regression of Internalizing Scores on Story Theme Averages with Age, Gender, Expressive Language, and Mother's Depression as Covariates*

Predictors	Story theme					
	Prosocial			Empathy		
	$\Delta R^2$	$\beta$	$p$	$\Delta R^2$	$\beta$	$p$
<i>Step 1</i>	.34		.00	.34		.00
Age		-.18	.12		-.18	.13
Gender		.04	.70		.07	.57
Exp. lang.		-.16	.20		-.17	.17
Depression sx.		.48	.00		.48	.00
<i>Step 2</i>	.00		.88	.00		.67
Story theme		-.02	.88		-.05	.67
<i>Step 3</i>	.02		.20	.00		.87
Story theme <sup>2</sup>		.15	.20		-.03	.87

*Note.* Exp. lang. = Expressive Language scale of the Test of Early Language Development-Third Edition; Depression sx. = Depression symptoms as measured by the Psychiatric Diagnostic Screening Questionnaire. Story theme<sup>2</sup> = quadratic story theme average.

Table 7

*Hierarchical Regression of Internalizing Scores on Story Theme Averages with Age, Expressive Language, and Mother's Depression as Covariates Moderated by Gender*

Predictor	Story theme								
	Child's Reaction			Prosocial			Empathy		
	$\Delta R^2$	$\beta$	$p$	$\Delta R^2$	$\beta$	$p$	$\Delta R^2$	$\beta$	$p$
Step 1	.34		.00	.33		.00	.34		.00
Age		-.18	.14		-.18	.13		-.18	.14
Exp. lang.		-.15	.21		-.14	.22		-.15	.21
Depression sx.		.49	.00		.49	.00		.49	.00
Step 2	.01		.62	.00		.92	.01		.78
Story theme		-.09	.42		-.02	.88		-.05	.67
Gender		.07	.58		.04	.71		.06	.64
Step 3	.00		.83	.00		.83	.01		.41
Story theme x Gender		-.03	.83		-.03	.83		-.14	.41

*Note.* Exp. lang. = Expressive Language scale of the Test of Early Language Development-Third Edition; Depression sx. = Depression symptoms as measured by the Psychiatric Diagnostic Screening Questionnaire.

Table 8

*Hierarchical Curvilinear (Quadratic) Regression of Internalizing Scores on Story Theme Averages with Age, Expressive Language, and Mother's Depression as Covariates Moderated by Gender*

Predictors	Story theme					
	Prosocial			Empathy		
	$\Delta R^2$	$\beta$	$p$	$\Delta R^2$	$\beta$	$p$
<i>Step 1</i>	.33		.00	.34		.00
Age		-.18	.13		-.18	.14
Exp. lang.		-.14	.22		-.15	.21
Depression sx.		.49	.00		.49	.00
<i>Step 2</i>	.02		.61	.01		.91
Story theme		-.04	.72		-.03	.84
Gender		.05	.65		.06	.64
Story theme <sup>2</sup>		.15	.20		-.03	.87
<i>Step 3</i>	.00		.94	.03		.29
Story theme x Gender		-.01	.94		-.38	.13
Story theme <sup>2</sup> x Gender		-.06	.75		.65	.18

*Note.* Exp. lang. = Expressive Language scale of the Test of Early Language Development-Third Edition; Depression sx. = Depression symptoms as measured by the Psychiatric Diagnostic Screening Questionnaire. Story theme<sup>2</sup> = quadratic story theme average.

Table 9

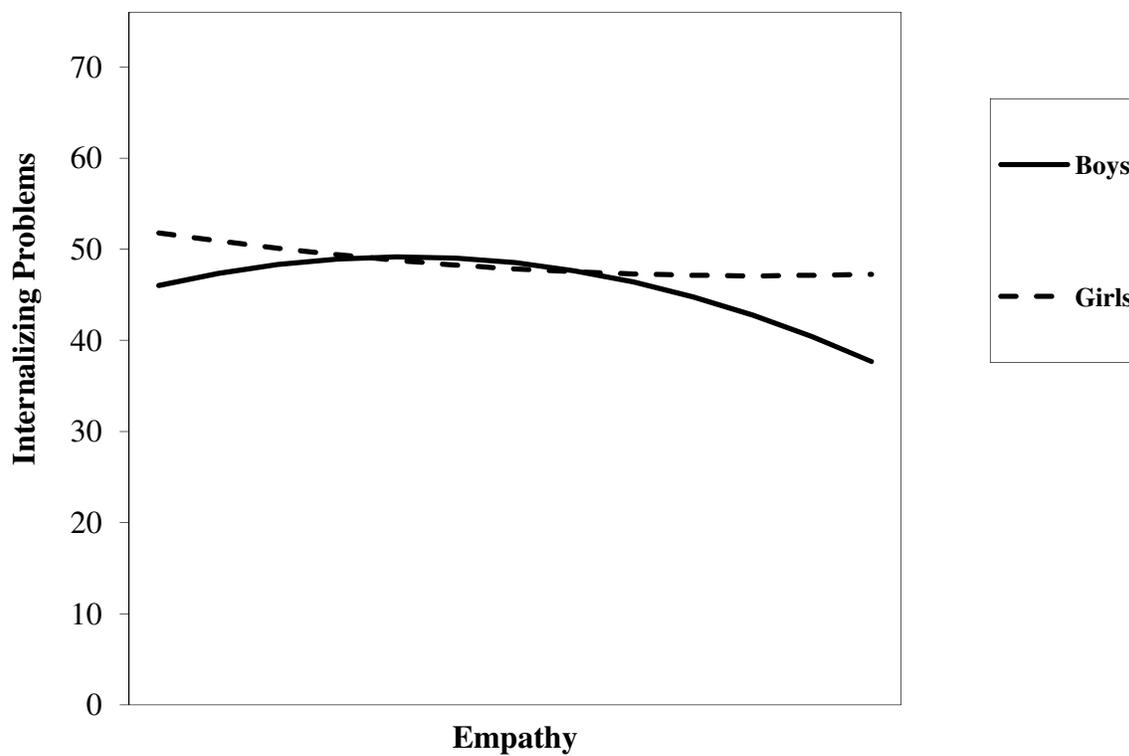
*Hierarchical Curvilinear (Quadratic) Regression of Internalizing Scores on Empathy with Age, Expressive Language, and Mother's Depression as Covariates for Boys and Girls Separately*

Predictors	Empathy					
	Boys			Girls		
	$\Delta R^2$	$\beta$	$p$	$\Delta R^2$	$\beta$	$p$
<i>Step 1</i>	.48		.00	.24		.06
Age		-.27	.10		-.04	.81
Exp. lang.		-.15	.36		-.17	.35
Depression sx.		.53	.00		.42	.02
<i>Step 2</i>	.00		.94	.03		.32
Story theme		.01	.94		-.19	.32
<i>Step 3</i>	.05		.10	.02		.46
Story theme <sup>2</sup>		-.37	.10		.21	.46

*Note.* Exp. lang. = Expressive Language scale of the Test of Early Language Development-Third Edition; Depression sx. = Depression symptoms as measured by the Psychiatric Diagnostic Screening Questionnaire. Story theme<sup>2</sup> = quadratic story theme average.

( $p = .10$ ) and accounted for an additional 5% of the variance. This association was not significant for girls. The curvilinear relationship was plotted separately for boys and girls (see Figure 1). Both low levels of Empathy and high levels of Empathy were associated with relatively low levels of internalizing problems, while medium levels of Empathy were associated with relatively higher levels of internalizing problems. For boys, at low levels of Empathy (one standard deviation below the mean), there was a positive association between empathy and internalizing problems wherein each standard deviation increase in ratings of Empathy was associated with a standard deviation increase in internalizing problem T-scores ( $\beta = 1.00, p = .11$ ). At average levels of Empathy, ( $\beta = .25, p = .23$ ), the positive association decreases in magnitude quite a bit. At higher levels of Empathy (one standard deviation above the mean), Empathy was negatively associated with internalizing scores ( $\beta = -.49, p = .15$ ). For girls, although neither the linear or quadratic terms were not significant, the relationship appeared more linear than quadratic in nature, with increases in Empathy predicting decreases in internalizing scores across all levels of Empathy (low levels of Empathy,  $\beta = -.53, p = .29$ ; average levels of Empathy,  $\beta = -.35, p = .23$ ; high levels of Empathy,  $\beta = -.18, p = .37$ ).

**3.3.4.2. Moderation by maternal depression.** The results from analyses exploring the moderating effect of mother's current depression symptoms on the regression of child's internalizing scores on story theme averages are displayed in Table 10. In terms of covariates, child's age and expressive language abilities were significant predictors of internalizing scores. The interactions between mother's current depression symptoms and the story theme averages predicting internalizing scores above the effects of child's age, gender, and expressive language



*Figure 1.* Curvilinear regression of internalizing scores on Empathy plotted separately for boys and girls.

Table 10

*Hierarchical Regression of Internalizing Scores on Story Theme Averages with Age, Gender, and Expressive Language as Covariates Moderated by Mother's Depression Symptoms*

Predictors	Story theme								
	Child's Reaction			Prosocial			Empathy		
	$\Delta R^2$	$\beta$	$p$	$\Delta R^2$	$\beta$	$p$	$\Delta R^2$	$\beta$	$p$
Step 1	.13		.04	.13		.05	.13		.04
Age		-.30	.03		-.30	.02		-.30	.03
Exp. lang.		-.32	.02		-.30	.03		-.32	.02
Gender		.14	.28		.12	.37		.14	.28
Step 2	.21		.00	.21		.00	.21		.00
Story theme		-.09	.42		-.02	.88		-.05	.67
Depression sx.		.46	.00		.49	.00		.49	.00
Step 3	.03		.14	.00		.86	.03		.14
Story theme x Depression sx.		.25	.14		-.03	.86		.24	.14

*Note.* Exp. lang. = Expressive Language scale of the Test of Early Language Development-Third Edition; Depression sx. = Depression symptoms as measured by the Psychiatric Diagnostic Screening Questionnaire.

abilities were not significant. The interactions between mother's current depression symptoms and the quadratic story theme average terms predicting internalizing scores above the effects of child's age, gender, and expressive language abilities were also not significant (see Table 11). The betas of the regressions of internalizing problems on both Prosocial Orientation and Empathy themes for children of mothers scoring above the median for current depression symptoms and children of mothers scoring below the median for current depression symptoms differed by less than .5.

Results from analyses testing whether mother's depression diagnosis moderated the regression of child's internalizing scores on the story theme averages are displayed in Table 12. The interaction between mother's depression diagnosis and Child's Reaction predicting internalizing problems above the effects of child's age, gender, and expressive language abilities approached significance ( $p = .09$ ) and accounted for 4% of the variance in internalizing scores. The slopes were plotted separately for children of depressed and nondepressed mothers (see Figure 2). For children of mothers who did not have a diagnosis of depression within the child's lifetime, there was a trend for a negative association between Child's Reaction and internalizing problems such that every standard deviation increase in Child's Reaction was associated with a .25 standard deviation decrease in the child's internalizing problem T-score ( $\beta = -.25, p = .06$ ). For children of mothers with a diagnosis of depression during the child's lifetime, there did not appear to be a significant relationship between Child's Reaction and internalizing problems ( $\beta = .19, p = .39$ ).

The interactions between mother's depression diagnosis and Prosocial Orientation predicting internalizing problems above the effects of child's age, gender, and expressive

Table 11

*Hierarchical Curvilinear (Quadratic) Regression of Internalizing Scores on Story Theme Averages with Age, Gender, and Expressive Language as Covariates Moderated by Mother's Depression Symptoms*

Predictors	Story Theme					
	Prosocial			Empathy		
	$\Delta R^2$	$\beta$	<i>p</i>	$\Delta R^2$	$\beta$	<i>p</i>
<i>Step 1</i>	.13		.05	.13		.04
Age		-.30	.02		-.30	.03
Exp. lang.		-.30	.03		-.32	.02
Gender		.12	.37		.14	.28
<i>Step 2</i>	.23		.00	.21		.00
Story theme		-.04	.72		-.03	.84
Depression sx.		.49	.00		.49	.00
Story theme <sup>2</sup>		.15	.20		-.03	.87
<i>Step 3</i>	.00		.91	.03		.27
Story theme x Depression sx.		-.07	.72		.42	.17
Story theme <sup>2</sup> x Depression sx.		.08	.70		-.35	.49

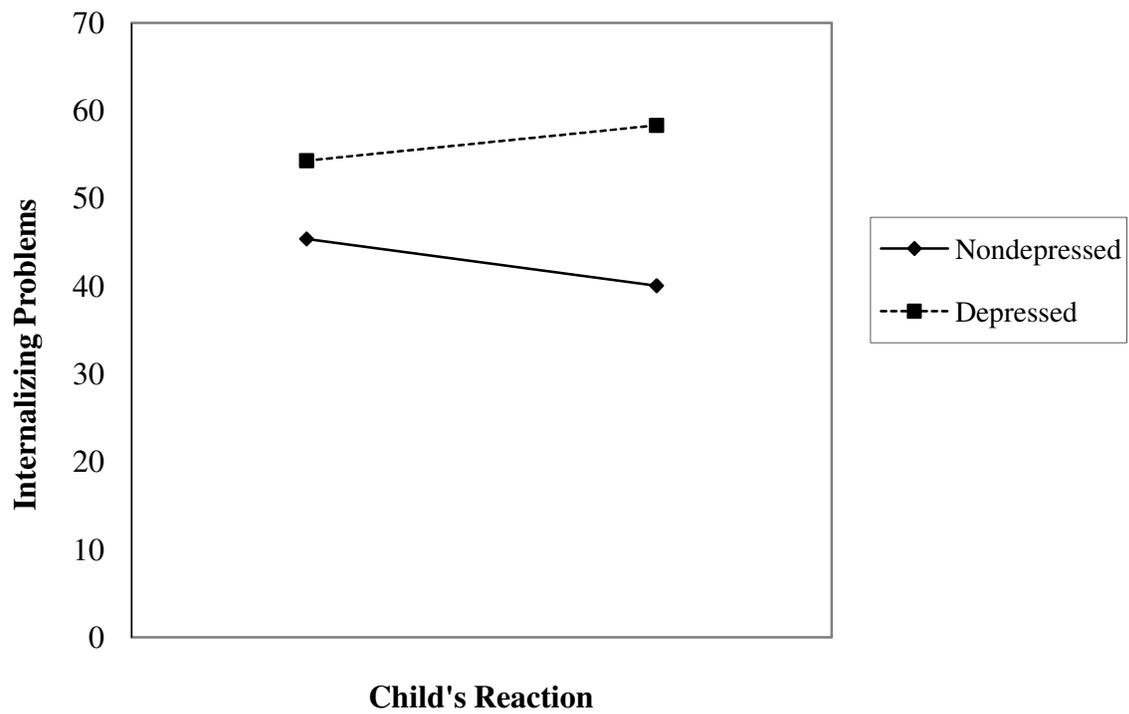
*Note.* Exp. lang. = Expressive Language scale of the Test of Early Language Development-Third Edition; Depression sx. = Depression symptoms as measured by the Psychiatric Diagnostic Screening Questionnaire. Story theme<sup>2</sup> = quadratic story theme average.

Table 12

*Hierarchical Regression of Internalizing Scores on Story Theme Averages with Age, Gender, and Expressive Language as Covariates Moderated by Mother's Depression Diagnosis*

Predictors	Story Theme								
	Child's Reaction			Prosocial			Empathy		
	$\Delta R^2$	$\beta$	$p$	$\Delta R^2$	$\beta$	$p$	$\Delta R^2$	$\beta$	$p$
<i>Step 1</i>	.13		.04	.13		.05	.13		.04
Age		-.30	.03		-.30	.02		-.30	.03
Exp. lang.		-.32	.02		-.30	.03		-.32	.02
Gender		.14	.28		.12	.37		.14	.28
<i>Step 2</i>	.18		.00	.18		.00	.17		.00
Story theme		-.13	.24		.06	.66		-.02	.89
MDD dx.		.40	.00		.42	.00		.41	.00
<i>Step 3</i>	.04		.09	.01		.41	.01		.38
Story theme x MDD dx.		.23	.09		-.13	.41		.15	.38

*Note.* Exp. lang. = Expressive Language scale of the Test of Early Language Development-Third Edition; MDD dx. = Major Depressive Disorder diagnosis.



*Figure 2.* Plot showing the relationship between internalizing scores and Child's Reaction for children of depressed and nondepressed mothers.

language abilities and between mother's depression diagnosis and Empathy predicting internalizing problems above the effects of child's age, gender, and expressive language abilities were not significant. The interactions between mother's depression diagnosis during the child's lifetime and the quadratic story theme averages predicting internalizing scores above the effects of child's age, gender, and expressive language abilities were also not significant (see Table 13). The betas of the regressions of internalizing problems on both quadratic Prosocial Orientation and quadratic Empathy themes for children of mothers with no diagnosis of depression during the child's lifetime and children of mothers with a diagnosis of depression during the child's lifetime differed by less than .50.

In summary, while no effects of ratings of children's caring orientation themes on internalizing problems, whether main effects or moderating effects, were significant, there were two trends in the data that suggest the potential importance of prosocial/empathy themes and should be investigated further in future research. There was a trend for a negative quadratic association between Empathy and internalizing problems in boys. At low levels of Empathy, there was a (nonsignificant) positive association between boys' internalizing problems and Empathy and at high levels of there was a slight (nonsignificant) negative association between internalizing problems and Empathy. There was also a trend for higher levels of internalizing scores to be associated with lower levels of Child's Reaction for children of mothers with no depression diagnosis during the child's lifetime.

Table 13

*Hierarchical Curvilinear (Quadratic) Regression of Internalizing Scores on Story Theme Averages with Age, Gender, and Expressive Language as Covariates Moderated by Mother's Depression Diagnosis*

Predictors	Story Theme					
	Prosocial			Empathy		
	$\Delta R^2$	$\beta$	$p$	$\Delta R^2$	$\beta$	$p$
<i>Step 1</i>	.13		.05	.13		.04
Age		-.30	.02		-.30	.03
Exp. lang.		-.30	.03		-.32	.02
Gender		.12	.37		.14	.28
<i>Step 2</i>	.18		.01	.17		.00
Story Theme		.05	.73		.06	.74
MDD dx.		.41	.00		.43	.00
Story theme <sup>2</sup>		.06	.52		-.63	.53
<i>Step 3</i>	.02		.52	.03		.31
Story theme x MDD dx.		-.09	.56		.27	.31
Story theme <sup>2</sup> x MDD dx.		-.18	.42		.15	.77

*Note.* Exp. lang. = Expressive Language scale of the Test of Early Language Development-Third Edition; MDD dx. = Major Depressive Disorder diagnosis. Story theme<sup>2</sup> = quadratic story theme average.

## 4. DISCUSSION

The association between internalizing problems and caring orientation is not well understood, particularly in young children. This study sought to examine the nature of this association in preschool-aged children using a developmentally sensitive measure of empathic and prosocial tendencies. The study also explored the potential moderating roles of gender and maternal depression on the association. There was no evidence of a general association between caring orientation themes and internalizing problems. However, there were two trends for an association to occur under specific conditions: a negative association between child's concerned reaction and internalizing problems in children of nondepressed mothers but no association in children of depressed mothers and a downward quadratic association between empathy themes and internalizing problems in boys. Before discussing the specific results of the study hypotheses, two general properties of the data are elaborated upon.

### 4.1. Distinct Aspects of Caring Orientation

Although many previous studies have conflated measures of empathic and prosocial tendencies in various ways, evidence from this study indicates that empathy and prosocial orientation are distinct constructs with differing patterns of associations with related variables, and, thus, should be studied separately. The correlations among the three thematic ratings were small and nonsignificant. Additionally, a distinct trend for a quadratic association between internalizing problems and empathy in boys emerged, while no associations between internalizing problems and prosocial orientation were evident. Past conflation of these two constructs may partially explain the somewhat confused state of the research to date.

Moreover, a unique trend was found inversely linking internalizing problems in children of nondepressed mothers to the somewhat experimental variable of 'Child's Reaction', which was defined as a rating of the participant child's verbal, behavioral, and affective reaction to the presentation of the maternal character's negative affect in the story stem. The creation of this variable was driven by observations of the extreme reactions some children had to the story element. This variable is, perhaps, a closer indication of the children's own distress or concern reaction when confronted with another's distress, rather than a demonstration of their repertoire or knowledge of possible responses to a situation as indicated by their narrative themes.

This variable may capture specific aspects of a caring orientation that are more akin to sympathy or personal distress than empathy or prosocial behavior. Eisenberg and colleagues (Eisenberg, 2000; Eisenberg, Spinrad, et al., 2006) argue that both sympathy and personal distress likely result from, but are differentiated from empathy. Sympathy is an other-focused emotion that consists of feelings of concern, as opposed to empathic feelings of the same emotion as another person, whereas personal distress is a self-focused state involving affective over-arousal induced by the emotional state of the other (Eisenberg & Eggum, 2008). The unique finding regarding this variable indicates the potential need to explicate aspects of empathy further and include measures of distinct and precisely operationalized measures of sympathy, personal distress, empathy, and prosocial behavior in future studies.

#### **4.2. Lack of Gender Difference in Caring Orientation**

The second general aspect of the data that should be noted is that despite some indication from previous research that rates of prosocial orientation and empathy may be higher in girls

than boys (e.g., Zahn-Waxler, Cole, Welsh, & Fox, 1995), no gender differences were found for any of the rated variables. Our methodology measured children's knowledge of and tendencies to use prosocial and empathic themes in response to a hypothetical dilemma (i.e., no real distress was experienced), and thus there was no real need for response. Perhaps free of situational constraints and expectations (e.g., behavioral inhibition, observer expectations), no differences in knowledge of and tendency toward a caring orientation exist between boys and girls of this age. Additionally, girls may be better at intuiting emotions that might prompt an empathic response (Zahn-Waxler & Smith, 1992), and previous findings of higher levels of empathy in girls might, in part, be due to girls being better able to 'read' emotional situations, rather than being more prone to respond prosocially or empathically. The explicit emotional content of the stories used in this study may have minimized the need to intuit emotions, thereby placing boys and girls on more equal footing regarding their understanding of the situation, and thus they responded with similar levels of prosociality and empathy. Furthermore, the previous studies that found a gender difference in caring themes used a sample of 5- to 7-year-olds (Zahn-Waxler, Park, et al., 2005; Zahn-Waxler, Park, et al., 2008), but their data suggest the difference was driven by the older children in the sample. Taken together with our findings of no gender difference in a sample of 4- to 6-year-olds ( $M = 4$  years, 11 months), this research suggests age 6-7 may be a key developmental period for pinpointing the emergence of purported gender differences in empathy and prosociality.

### **4.3. Caring Orientation and Internalizing Problems**

Contrary to prediction, no significant association (linear or quadratic) between caring orientation themes and internalizing problems in young children was found. This may be because

the risk for internalizing problems from extreme levels of empathic and prosocial tendencies develops over time and the relationship is not yet evident in preschool-age children. Indeed, in one of the only longitudinal studies of this association, Zahn-Waxler, Park, et al. (2005) found caring themes at age 7 to predict mother-reported anxiety symptoms measured later at age 13. Children may begin developing extreme (high or low) levels of caring orientation at a young age, but the risk might be conferred over time through complicated, developmental cascades of risk involving mediating and moderating factors (e.g., gender, genetic predisposition, parental psychopathology, family and peer relationships), so that elevated levels of internalizing problems appear later and only for certain children under certain conditions (Masten & Cicchetti, 2010). This possibility indicates a need for longitudinal studies that adequately elucidate this relationship and bring into focus the age at which extreme levels of caring orientation become predictive of later psychopathology. Even if extreme levels of caring orientation are not detrimental to functioning at this young age, early intervention might be most effective for preventing maladaptive processes that lead to later impairment.

Measurement issues may have contributed to differences between the current study's findings and some past research. Woolgar et al. (2001) found a positive correlation between maternal ratings of internalizing symptoms and a cluster of story narrative themes labeled "prosocial" by the authors. However, their prosocial cluster was an aggregate score of affection, positive maternal representations, and lack of aggression. The scope of what this construct taps appears to be broader than a prosocial orientation. Although a lack of aggression and positive maternal representations are consistent with a prosocial orientation, they are not precisely indicative of prosociality. Additionally, neither lack of aggression nor positive maternal

representation seem to sensibly have a *positive* association with internalizing problems; it is therefore not surprising that the current study did not find evidence consistent with this odd finding. Rothbart et al. (1994) found a measure of negative affectivity was positively related to empathy. Negative affectivity is related to yet distinct from internalizing problems (Gartstein, Putnam, & Rothbart, 2012) and refers to constitutionally-based individual differences in self-regulation and reactivity (Posner, Rothbart, & Sheese, 2007; Rothbart & Derryberry, 1981), and thus the association may be present at early ages before impairing internalizing problems emerge. Rothbart et al. (1994) detected a more subtle relation between empathy and negative affect that may underlie later links between empathy and internalizing problems.

Alternatively, there may indeed be a relationship between caring orientation (prosociality and/or empathy) and internalizing problems in children this young, but the nature of the relationship may be extremely intricate and moderated very specifically by a number of factors including gender, maternal depression, and a quadratic nature of the association between the variables, such that extreme levels of caring orientation are related to internalizing problems only for certain children under certain conditions (Masten & Cicchetti, 2010). This explanation would indicate the need for future research to investigate the association within these specific subgroups.

#### **4.4. Moderation of Link between Caring Orientation and Internalizing Problems by Gender**

While there was no significant gender moderation of a linear relationship between caring themes and internalizing problems, examination of effect sizes revealed a trend for a quadratic

relationship between empathic themes and internalizing problems for boys. Unexpectedly, both low and high levels of empathy were associated with comparatively and normatively low levels of internalizing problems in boys. Average levels of empathy were associated with comparatively higher, although normatively average, levels of internalizing problems in boys. Boys who fall on the high and low extremes of empathy may represent different groups of boys for whom the relation with internalizing problems occurs for different reasons. The Low empathy/ Low internalizing problems group may be comprised of boys who have high levels of externalizing problems. Externalizing problems have been linked to low levels of empathy (e.g., Strayer & Roberts, 2004b), and while there are children who experience problems in both externalizing and internalizing domains (e.g., Hinshaw, Han, Erhardt, & Huber, 1992), this is certainly not true of all children (Oldehinkel, Hartman, De Winter, Veenstra, & Ormel, 2004). Thus, low levels of empathy may characterize a group of boys with low levels of internalizing problems, but high levels of externalizing problems. Low levels of internalizing problems combined with high levels of empathy may characterize a different group of boys for whom higher levels of empathy serve as a protective factor from internalizing problems. It is possible that this relationship is observed distinctly for boys because, as previously discussed, boys may be *expected* to have lower empathic tendencies than girls, and thus might receive more positive attention and reinforcement for displaying such tendencies. A tendency to positively reinforce emotion-related displays in boys may serve as a buffer against internalizing problems for boys.

Neither the quadratic nor the linear association between any of the caring orientation themes and internalizing problems was significant for girls. While this might indicate that no

relationship between caring orientation and internalizing problems exists for girls, it may be that the association develops over time and is subject to complicated risk cascades (Masten & Cicchetti, 2010) involving factors such as maternal depression and interpersonal relationships. Indeed, in the study by Zahn-Waxler et al. (2005), the predictive relation between prosocial concern at age 7 and mother-reported anxiety symptoms at age 13 was significant only for girls. While not currently maladaptive for girls, extreme (high and/or low) levels of caring orientation may become maladaptive later in development. Although low power to detect significant interactions limits the impact of specific findings, there is an indication that gender might be an important factor and should be examined further in subsequent studies of caring orientation and internalizing problems.

#### **4.5. Moderation of Link between Caring Orientation and Internalizing Problems by Maternal Depression**

There was a trend for a negative, linear association between internalizing problems and ratings of the child's reaction to the mother character's distress in the stories in children of nondepressed mothers; stronger, more elaborate reactions were associated with lower levels of internalizing problems. There was no significant relationship between ratings of the child's reaction and internalizing problems in children of mothers who had experienced at least one episode of depression during the child's lifetime.

Children of nondepressed mothers may have adaptive emotion regulation capabilities, which allow them to experience and express concern regarding another's distress (e.g., the fictional mother's negative emotion) without becoming overly distressed or dysregulated.

Indeed, children of nondepressed mothers employ more active emotion regulation strategies (Silk, Shaw, Skuban, Oland, & Kovacs, 2006), and children's constructive coping is inversely related to negative expressivity of mothers (Valiente et al., 2004). Thus, children of nondepressed mothers may be better equipped to cope with the arousal caused by another's distress and reactions of concern to others' distress may be an indication of good social-emotional functioning or even serve as a protective factor against internalizing problems. Conversely, children of depressed mothers tend to engage in more passive emotion regulation strategies (Silk et al., 2006), which are related to internalizing problems in preschool-aged children, particularly girls (Blair, Denham, Kochanoff, & Whipple, 2004). This may partially explain why concerned reactions in children of depressed mothers were not associated with internalizing problems as in children of nondepressed mothers. In naturalistic settings in which the pull to respond empathically to maternal distress is stronger than in these hypothetical stories, displays of empathic concern or distress in children of depressed mothers may positively relate to internalizing problems through these detrimental, passive emotion regulation strategies. Furthermore, although not significant at this stage, the use of passive emotion regulation strategies to cope with empathic distress may lead to internalizing problems over time in children of depressed mothers.

In fact, because the operational definition of the child's reaction variable in this study encompassed the child's *distress* and/or *concern* in reaction to the fictional mother's negative emotions, it is possible that the variable captured something slightly different in the two groups. Children of depressed mothers may be more accustomed to negative maternal emotions and their concern responses may become blunted over time so that expressing a reaction in children of

depressed mothers may be an indication of lingering personal distress (i.e., deleterious). In children of nondepressed mothers, the reaction may be more akin to sympathy (i.e., adaptive).

Thus, in future studies, it will be important to further refine this construct to explicate adaptive (sympathy/concern) reactions from deleterious (distress) ones as described by Eisenberg and colleagues (Eisenberg & Eggum, 2008; Eisenberg, Spinrad, et al., 2006). Multiple methods of measurement (e.g., parent-report, child narrative procedures, and laboratory paradigms) will likely be helpful in this regard, because of the difficulty reliably teasing apart the subtle differences among these constructs of caring orientation will likely pose.

#### **4.6. Limitations**

Several limitations of the study should be noted. First, caring orientation and internalizing problems were measured concurrently in this study. This prevents conclusions regarding the temporal precedence of caring themes and internalizing problems. The sample size limited our power to detect significance in many of the complex interactions that were tentatively examined in the study. The variables of Child's Reaction and Empathy had low means, due to many children receiving scores of '0.' Future studies might consider altering the story completion task in order to increase demonstrations of these themes and improve the variability of the measure, e.g., increase the number of stories administered to provide children with additional opportunities to demonstrate these themes. The sample was a non-clinical, predominantly Caucasian, and middle-class; the parents were, on average, highly educated. Studies with samples of differing characteristics (e.g., low SES) that may influence the associations will be important for understanding the generalizability of our findings. For example, there may indeed

be associations between themes of caring orientation and internalizing problems in children this young who present with more extreme levels of anxious and depressive symptoms. Lastly, studying the association between internalizing problems and children's caring orientation themes is important because it provides unique insight regarding children's internal knowledge and representations of these emotional constructs; however, the hypothetical nature of the tasks does not inform about children's caring *behaviors* in real situations.

#### **4.7. Summary and Future Directions**

In conclusion, we found indications that relations between empathic and prosocial tendencies in preschool-aged children, if present, are subtle and/or complex, may be moderated by factors such as gender and maternal depression status, and may unfold more fully over time. This study indicates several directions for future research. The relationship between caring orientation and internalizing problems should be examined longitudinally, measuring prosocial and empathic tendencies and internalizing problems across childhood and into adolescence when internalizing symptoms are present at higher rates and interacting risk cascades may have begun to unfold. These longitudinal studies may pinpoint ages at which the development of extreme levels of prosocial and empathic orientation contribute to later development of internalizing problems, allowing for the employment of timely intervention strategies.

Further, these studies should be conducted in samples that provide adequate power for the examination of potentially important moderators such as gender and parental depression. The variance and method of measurement of parental depression should allow for the exploration of the impact of such factors as severity, chronicity, and timing of depressive episodes.

Additionally, sampling should include youths who experience anxious and depressive symptoms to a clinically significant degree to allow for examination of the possibility that these relations are only present or are stronger in clinical populations. This study also indicated the importance of employing separate measures of prosocial orientation and empathy (perhaps distinguishing between empathy, sympathy, and personal distress) in subsequent research. To this end, including a variety of methodology, such as parent- and teacher-report, observational and laboratory paradigms, and age-appropriate narrative measures may allow for more precise and robust measurement of these caring tendencies. Finally, story stems related to families were selected to use in this study because of the importance of the mother-child context, especially in the development of a caring orientation during the preschool period. However, there is evidence to suggest that children's prosocial and empathic tendencies may differ as a function of the relationship between the child and the person in distress (e.g., mother, same- or opposite-gender peer, stranger; Spinrad & Stifter, 2006; Young et al., 1999). Future studies should consider how tendencies toward a caring orientation within other contexts, such as peer groups, may moderate the relation to internalizing symptoms, especially over the course of development as peer relationships grow increasingly important.

## REFERENCES

- Achenbach, T. M., & Edelbrock, C. (1995). *Manual for the Child Behavior Checklist and Revised Child Behavior Profile*. Burlington, VT: University of Vermont Department of Psychiatry.
- Acock, A. C. (2008). *A Gentle Introduction to Stata*. College Station, TX: StataCorp LP.
- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.
- Bandura, A., Caprara, G. V., Barbaranelli, C., Gerbino, M., & Pastorelli, C. (2003). Role of affective self-regulatory efficacy in diverse spheres of psychosocial functioning. *Child Development, 74*(3), 769-782. doi: 10.1111/1467-8624.00567
- Banerjee, R., Rieffe, C., Terwogt, M. M., Gerlein, A. M., & Voutsina, M. (2006). Popular and rejected children's reasoning regarding negative emotions in social situations: The role of gender. *Social development, 15*(3), 418-433. doi: 10.1111/j.1467-9507.2006.00349.x
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*(6), 1173-1182. doi: 10.1037/0022-3514.51.6.1173
- Belden, A. C., Sullivan, J. P., & Luby, J. L. (2007). Depressed and healthy preschoolers' internal representations of their mothers' caregiving: Associations with observed caregiving behaviors one year later. *Attachment & Human Development, 9*(3), 239-254. doi: 10.1080/14616730701455395
- Belsey, D. A., Kuh, E., & Welsch, R. E. (1980). *Regression diagnostics: identifying influential data and sources of colinearity*. New York, NY: John Wiley & Sons.

- Blair, K. A., Denham, S. A., Kochanoff, A., & Whipple, B. (2004). Playing it cool: Temperament, emotion regulation, and social behavior in preschoolers. *Journal of School Psychology, 42*(6), 419-443. doi: 10.1016/j.jsp.2004.10.002
- Bretherton, I., & Oppenheim, D. (2003). *The MacArthur Story Stem Battery: Development, directions for administration, reliability, validity, and reflections about meaning*. New York, NY: Oxford University Press (circulating as an unpublished MS since 1990).
- Carlo, G., Koller, S. H., Eisenberg, N., Da Silva, M. S., & Frohlich, C. B. (1996). A cross-national study on the relations among prosocial moral reasoning, gender role orientations, and prosocial behaviors. *Developmental Psychology, 32*(2), 231-240. doi: 10.1037/0012-1649.32.2.231
- Chen, X., Li, D., Li, Z.-y., Li, B.-s., & Liu, M. (2000). Sociable and prosocial dimensions of social competence in Chinese children: Common and unique contributions to social, academic, and psychological adjustment. *Developmental Psychology, 36*(3), 302-314. doi: 10.1037/0012-1649.36.3.302
- Cohen, J. C., West, P., & Aiken, S. (2003). *LS Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed.) Mahwah, NJ: Erlbaum.
- Dadds, M. R., Hunter, K., Hawes, D. J., Frost, A. D. J., Vassallo, S., Bunn, P., . . . Masry, Y. E. (2008). A measure of cognitive and affective empathy in children using parent ratings. *Child Psychiatry And Human Development, 39*(2), 111-122. doi: 10.1007/s10578-007-0075-4

- Denham, S. A. (1997). 'When I have a bad dream mommy holds me': Preschoolers' conceptions of emotions, parental socialisation, and emotional competence. *International Journal of Behavioral Development*, 20(2), 301-319. doi: 10.1080/016502597385351
- Denham, S. A., & Kochanoff, A. T. (2002). Parental contributions to preschoolers' understanding of emotion. *Marriage & Family Review*, 34(3-4), 311-343. doi: 10.1300/J002v34n03\_06
- Denham, S. A., Zoller, D., & Couchoud, E. A. (1994). Socialization of preschoolers' emotion understanding. *Developmental Psychology*, 30(6), 928-936. doi: 10.1037/0012-1649.30.6.928
- Diener, M. L., & Kim, D.-Y. (2004). Maternal and child predictors of preschool children's social competence. *Journal of Applied Developmental Psychology*, 25(1), 3-24. doi: 10.1016/j.appdev.2003.11.006
- Eisenberg, N. (2000). Emotion, regulation, and moral development. *Annual Review of Psychology*, 51, 665-697. doi: 10.1146/annurev.psych.51.1.665
- Eisenberg, N., & Eggum, N. D. (2008). Empathy-related and prosocial responding: Conceptions and correlates during development. In B. A. Sullivan, M. Snyder & J. L. Sullivan (Eds.), *Cooperation: The political psychology of effective human interaction* (pp. 53-74). Malden, MA: Blackwell.
- Eisenberg, N., & Fabes, R. A. (2006). Emotion Regulation and Children's Socioemotional Competence. In L. Balter & C. S. Tamis-LeMonda (Eds.), *Child psychology: A handbook of contemporary issues* (2nd ed., pp. 357-381). New York, NY: Psychology Press.

- Eisenberg, N., Fabes, R. A., Murphy, B., Maszk, P., Smith, M., & Karbon, M. (1995). The role of emotionality and regulation in children's social functioning: A longitudinal study. *Child Development, 66*(5), 1360-1384. doi: 10.2307/1131652
- Eisenberg, N., Fabes, R. A., & Spinrad, T. L. (2006). Prosocial Development. In N. Eisenberg, W. Damon & R. M. Lerner (Eds.), *Handbook of child psychology: Vol. 3, Social, emotional, and personality development* (6th ed., pp. 646-718). Hoboken, NJ: John Wiley & Sons.
- Eisenberg, N., Guthrie, I. K., Murphy, B. C., Shepard, S. A., Cumberland, A., & Carlo, G. (1999). Consistency and development of prosocial dispositions: A longitudinal study. *Child Development, 70*(6), 1360-1372. doi: 10.1111/1467-8624.00100
- Eisenberg, N., Hofer, C., & Vaughan, J. (2007). Effortful Control and Its Socioemotional Consequences. In J. J. Gross (Ed.), *Handbook of emotion regulation* (pp. 287-306). New York, NY: Guilford Press.
- Eisenberg, N., Spinrad, T. L., & Sadovsky, A. (2006). Empathy-related responding in children. In M. Killen & J. G. Smetana (Eds.), *Handbook of moral development* (pp. 517-549). Mahwah, NJ: Lawrence Erlbaum Associates.
- Ensor, R., & Hughes, C. (2005). More than talk: Relations between emotion understanding and positive behaviour in toddlers. *British Journal of Developmental Psychology, 23*(3), 343-363. doi: 10.1348/026151005x26291
- Erdfelder, E., Faul, F., & Buchner, A. (1996). GPOWER: A general power analysis program. *Behavior Research Methods, Instruments, & Computers, 28*, 1-11. doi: 10.3758/BF03203630

- Fabes, R. A., Eisenberg, N., Karbon, M., Troyer, D., & Switzer, G. (1994). The relations of children's emotion regulation to their vicarious emotional responses and comforting behaviors. *Child Development, 65*(6), 1678-1693. doi: 10.2307/1131287
- First, M. B., Spitzer, R. L., Gibbon, M., & Williams, J. B. W. (2002). *Structured Clinical Interview for DSM-IV-TR Axis I Disorders, Research Version, Non-patient Edition (SCID-I/NP)* New York, NY: Biometrics Research, New York State Psychiatric Institute.
- Fivush, R. (1991). Gender and emotion in mother-child conversations about the past. *Journal of Narrative & Life History, 1*(4), 325-341. [http://www.clarku.edu/~mbamberg/Pages\\_Journals/journal-narrative.html](http://www.clarku.edu/~mbamberg/Pages_Journals/journal-narrative.html)
- Fivush, R., Brotman, M. A., Buckner, J. P., & Goodman, S. H. (2000). Gender differences in parent-child emotion narratives. *Sex Roles, 42*(3-4), 233-253. doi: 10.1023/A:1007091207068
- Fox, J. (1991). *Regression diagnostics: An introduction*. Newbury Park, CA: Sage.
- Garner, P. W., Dunsmore, J. C., & Southam-Gerrow, M. (2008). Mother-child conversations about emotions: Linkages to child aggression and prosocial behavior. *Social Development, 17*(2), 259-277. doi: 10.1111/j.1467-9507.2007.00424.x
- Gartstein, M. A., Putnam, S. P., & Rothbart, M. K. (2012). Etiology of preschool behavior problems: Contributions of temperament attributes in early childhood. *Infant Mental Health Journal, 33*(2), 197-211. doi: 10.1002/imhj.21312
- Goodman, S. H., & Gotlib, I. H. (1999). Risk for psychopathology in the children of depressed mothers: A developmental model for understanding mechanisms of transmission. *Psychological Review, 106*(3), 458-490. doi: 10.1037/0033-295x.106.3.458

- Gore, S., Aseltine Jr, R. H., & Colten, M. E. (1993). Gender, Social-Relationship Involvement, and Depression. *Journal of Research on Adolescence*, 3(2), 101-125.
- Grusec, J. E., Goodnow, J. J., & Cohen, L. (1996). Household work and the development of concern for others. *Developmental Psychology*, 32(6), 999-1007. doi: 10.1037/0012-1649.32.6.999
- Hankin, B. L., Wetter, E., & Cheely, C. (2008). Sex differences in child and adolescent depression: A developmental psychopathological approach. In J. R. Z. Abela & B. L. Hankin (Eds.), *Handbook of depression in children and adolescents* (pp. 377-414). New York, NY US: Guilford Press.
- Hastings, McShane, K., Parker, R., & Ladha, F. (2007). Ready to make nice: Parental socialization of young sons' and daughters' prosocial behaviors with peers. *Journal of Genetic Psychology*, 168(2), 177-200. doi: 10.3200/GNTP.168.2.177-200
- Hastings, P. D., Rubin, K. H., & DeRose, L. (2005). Links among gender, inhibition, and parental socialization in the development of prosocial behavior. *Journal of Developmental Psychology*, 51(4), 467-493. doi: 10.1353/mpq.2005.0023
- Hastings, P. D., Zahn-Waxler, C., Robinson, J., Usher, B., & Bridges, D. (2000). The development of concern for others in children with behavior problems. *Developmental Psychology*, 36(5), 531-546. doi: 10.1037/0012-1649.36.5.531
- Hay, D. F., & Pawlby, S. (2003). Prosocial development in relation to children's and mothers' psychological problems. *Child Development*, 74(5), 1314-1327. doi: 10.1111/1467-8624.00609

- Hinshaw, S. P., Han, S. S., Erhardt, D., & Huber, A. (1992). Internalizing and externalizing behavior problems in preschool children: Correspondence among parent and teacher ratings and behavior observations. *Journal of Clinical Child Psychology, 21*(2), 143-150. doi: 10.1207/s15374424jccp2102\_6
- Hoffman, M. L. (1983). *Affective and cognitive processes in moral internalization* Cambridge, England: Cambridge University Press.
- Holmbeck, G. N. (1997). Toward terminological, conceptual, and statistical clarity in the study of mediators and moderators: Examples from the child-clinical and pediatric psychology literatures. *Journal of Consulting and Clinical Psychology, 65*(4), 599-610. doi: 10.1037/0022-006x.65.4.599
- Holmbeck, G. N. (2002). Post-hoc probing of significant moderational and mediational effects in studies of pediatric populations. *Journal of Pediatric Psychology, 27*(1), 87-96. doi: 10.1093/jpepsy/27.1.87
- Holmberg, J., Robinson, J., Corbitt-Price, J., & Wiener, P. (2007). Using narratives to assess competencies and risks in young children: Experiences with high risk and normal populations. *Infant Mental Health Journal, 28*(6), 647-666. doi: 10.1002/imhj.20158
- Hresko, W. P., Reid, D. K., & Hammill, D. D. (1999). *The Test of Early Language Development-Third Edition: Examiner's Manual*. Austin, TX: PRO-ED: An International Publisher.
- Hughes, C., White, A., Sharpen, J., & Dunn, J. (2000). Antisocial, angry, and unsympathetic: 'Hard-to-manage' preschoolers' peer problems and possible cognitive influences. *Journal of Child Psychology and Psychiatry, 41*(2), 169-179. doi: 10.1017/S0021963099005193

- Jaccard, J., & Turrisi, R. (2003). *Interaction effects in multiple regression* (2nd ed.). Thousand Oaks, CA: Sage.
- Kazdin, A. E. (1977). Artifact, bias, and complexity of assessment: The ABCs of reliability. *Journal of Applied Behavior Analysis, 10*(1), 141-150. doi: 10.1901/jaba.1977.10-141
- Kochanska, G., Aksan, N., & Joy, M. E. (2007). Children's fearfulness as a moderator of parenting in early socialization: Two longitudinal studies. *Developmental Psychology, 43*(1), 222-237. doi: 10.1037/0012-1649.43.1.222
- Kochanska, G., Koenig, J. L., Barry, R. A., Kim, S., & Yoon, J. E. (2010). Children's conscience during toddler and preschool years, moral self, and a competent, adaptive developmental trajectory. *Developmental Psychology, 46*(5), 1320-1332. doi: 10.1037/a0020381
- Lavigne, J. V., Gibbons, R. D., Christoffel, K. K., Arend, R., Rosenbaum, D., Binns, H., . . . Isaacs, C. (1996). Prevalence rates and correlates of psychiatric disorders among preschool children. *Journal of the American Academy of Child & Adolescent Psychiatry, 35*(2), 204-214. doi: 10.1097/00004583-199602000-00014
- Leaper, C. (2002). Parenting girls and boys. In M. H. Bornstein (Ed.), *Handbook of parenting: Vol. 1: Children and parenting* (2nd ed., pp. 189-225). Mahwah, NJ: Lawrence Erlbaum Associates.
- Luby, J., Belden, A., Sullivan, J., Hayen, R., McCadney, A., & Spitznagel, E. (2009). Shame and guilt in preschool depression: Evidence for elevations in self-conscious emotions in depression as early as age 3. *Journal of Child Psychology and Psychiatry, 50*(9), 1156-1166. doi: 10.1111/j.1469-7610.2009.02077.x

- Masten, A. S., & Cicchetti, D. (2010). Developmental cascades. *Development and Psychopathology*, 22(03), 491-495. doi: 10.1017/S0954579410000222
- Miles, S. B., & Stipek, D. (2006). Contemporaneous and longitudinal associations between social behavior and literacy achievement in a sample of low-income elementary school children. *Child Development*, 77(1), 103-117. doi: 10.1111/j.1467-8624.2006.00859.x
- Miller, P. A., Eisenberg, N., Fabes, R. A., & Shell, R. (1996). Relations of moral reasoning and vicarious emotion to young children's prosocial behavior toward peers and adults. *Developmental Psychology*, 32(2), 210-219. doi: 10.1037/0012-1649.32.2.210
- Nolen-Hoeksema, S. (1990). *Sex differences in depression*. Stanford, CA: Stanford University Press.
- O'Connor, L. E., Berry, J. W., Lewis, T., Mulherin, K., & Crisostomo, P. S. (2007). Empathy and depression: The moral system on overdrive. In T. Farrow & P. Woodruff (Eds.), *Empathy in mental illness* (pp. 49-75). New York, NY: Cambridge University Press.
- Oldehinkel, A. J., Hartman, C. A., De Winter, A. F., Veenstra, R., & Ormel, J. (2004). Temperament profiles associated with internalizing and externalizing problems in preadolescence. *Development and Psychopathology*, 16(2), 421-440. doi: 10.1017/S0954579404044591
- Park, J.-H., Essex, M. J., Zahn-Waxler, C., Armstrong, J. M., Klein, M. H., & Goldsmith, H. H. (2005). Relational and overt aggression in middle childhood: Early child and family risk factors. *Early Education and Development*, 16(2), 233-256. doi: 10.1080/10409289.2005.10472869

- Posner, M. I., Rothbart, M. K., & Sheese, B. E. (2007). Attention genes. *Developmental Science*, 10(1), 24-29. doi: 10.1111/j.1467-7687.2007.00559.x
- Radke-Yarrow, M., Zahn-Waxler, C., Richardson, D. T., Susman, A., & Martinez, P. (1994). Caring behavior in children of clinically depressed and well mothers. *Child Development*, 65(5), 1405-1414. doi: 10.2307/1131507
- Robinson, J., Mantz-Simmons, L., MacFie, J., Kelsay, K., & the MacArthur Narrative Working Group. (2002). *The MacArthur Narrative Coding Manual*. University of Colorado Health Sciences Center, Denver, CO.
- Robinson, J. L. (2007). Story stem narratives with young children: Moving to clinical research and practice. *Attachment & Human Development*, 9(3), 179-185. doi: 10.1080/14616730701453697
- Rosenfield, S., Vertefuille, J., & McAlpine, D. D. (2000). Gender stratification and mental health: An exploration of dimensions of the self. *Social Psychology Quarterly*, 63(3), 208. doi: 10.2307/2695869
- Rothbart, M. K., Ahadi, S. A., & Hershey, K. L. (1994). Temperament and social behavior in childhood. *Merrill Palmer Quarterly: Journal of Developmental Psychology*, 40(1), 21-39. <http://www.merrillpalmerquarterly.com/>
- Rothbart, M. K., & Derryberry, D. (1981). Development of individual differences in temperament. In M. E. Lamb & A. L. Brown (Eds.), *Advances in developmental psychology* (vol. 1, pp. 37-86). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Sagi, A., Hoffman, M. L., & Puka, B. (1994). Empathic distress in the newborn *Reaching out: Caring, altruism, and prosocial behavior*. (pp. 159-160). New York, NY: Garland.

- Schonert-Reichl, K. A., Beaudoin, K., Muuss, R. E., & Porton, H. D. (1998). Social cognitive development and psychopathology during adolescence *Adolescent behavior and society: A book of readings (5th ed.)*. (pp. 368-372). New York, NY: McGraw-Hill.
- Silk, J. S., Shaw, D. S., Skuban, E. M., Oland, A. A., & Kovacs, M. (2006). Emotion regulation strategies in offspring of childhood-onset depressed mothers. *Journal of Child Psychology and Psychiatry, 47*(1), 69-78. doi: 10.1111/j.1469-7610.2005.01440.x
- Smith, G. A. (1986). Observer drift: A drifting definition. *The Behavior Analyst, 9*(1), 127-128. <http://www.abainternational.org/TBA.asp>
- Solantaus-Simula, T., Punamäki, R.-L., & Beardslee, W. R. (2002). Children's responses to low parental mood: Balancing between active empathy, overinvolvement, indifference, and avoidance. *Journal of the American Academy of Child & Adolescent Psychiatry, 41*(3), 278-286. doi: 10.1097/00004583-200203000-00007
- Spinrad, T. L., & Stifter, C. A. (2006). Toddlers' empathy-related responding to distress: Predictions from negative emotionality and maternal behavior in infancy. *Infancy, 10*(2), 97-121. doi: 10.1207/s15327078in1002\_1
- Sportel, B. E., Nauta, M. H., de Hullu, E., de Jong, P. J., & Hartman, C. A. (2011). Behavioral inhibition and attentional control in adolescents: Robust relationships with anxiety and depression. *Journal of Child and Family Studies, 20*(2), 149-156. doi: 10.1007/s10826-010-9435-y
- Strayer, J., & Roberts, W. (2004a). Children's anger, emotional expressiveness, and empathy: Relations with parents' empathy, emotional expressiveness, and parenting practices. *Social Development, 13*(2), 229-254. doi: 10.1111/j.1467-9507.2004.000265.x

Strayer, J., & Roberts, W. (2004b). Empathy and observed anger and aggression in five-year-olds. *Social Development, 13*(1), 1-13. doi: 10.1111/j.1467-9507.2004.00254.x

Valiente, C., Fabes, R. A., Eisenberg, N., & Spinrad, T. L. (2004). The relations of parental expressivity and support to children's coping with daily stress. *Journal of Family Psychology, 18*(1), 97-106. doi: 10.1037/0893-3200.18.1.97

Van der Mark, I. L., Van Ijzendoorn, M. H., & Bakermans-Kranenburg, M. J. (2002). Development of empathy in girls during the second year of life: Associations with parenting, attachment, and temperament. *Social Development, 11*(4), 451-468. doi: 10.1111/1467-9507.00210

Warren, S. L., Emde, R. N., & Sroufe, L. A. (2000). Internal representations: Predicting anxiety from children's play narratives. *Journal of the American Academy of Child & Adolescent Psychiatry, 39*(1), 100-107. doi: 10.1097/00004583-200001000-00022

Warren, S. L., Oppenheim, D., & Emde, R. N. (1996). Can emotions and themes in children's play predict behavior problems? *Journal of the American Academy of Child & Adolescent Psychiatry, 35*(10), 1331-1337. doi: 10.1097/00004583-199610000-00020

Woolgar, M., Steele, H., Steele, M., Yabsley, S., & Fonagy, P. (2001). Children's play narrative responses to hypothetical dilemmas and their awareness of moral emotions. *British Journal of Developmental Psychology, 19*(1), 115-128. doi: 10.1348/0261510011165994

Young, S. K., Fox, N. A., & Zahn-Waxler, C. (1999). The relations between temperament and empathy in 2-year-olds. *Developmental Psychology, 35*(5), 1189-1197. doi: 10.1037/0012-1649.35.5.1189

- Zahn-Waxler, C., Cole, P. M., Welsh, J. D., & Fox, N. A. (1995). Psychophysiological correlates of empathy and prosocial behaviors in preschool children with behavior problems. *Development and Psychopathology*, 7(1), 27-48. doi: 10.1017/S0954579400006325
- Zahn-Waxler, C., Kochanska, G., Krupnick, J., & McKnew, D. (1990). Patterns of guilt in children of depressed and well mothers. *Developmental Psychology*, 26(1), 51-59. doi: 10.1037/0012-1649.26.1.51
- Zahn-Waxler, C., Park, J.-H., Essex, M., Slattery, M., & Cole, P. (2005). Relational and overt aggression in disruptive adolescents: Prediction from early social representations and links with concurrent problems. *Early Education and Development*, 16(2), 259-282. doi: 10.1080/10409289.2005.10472870
- Zahn-Waxler, C., Park, J.-H., Usher, B., Belouad, F., Cole, P., & Gruber, R. (2008). Young children's representations of conflict and distress: A longitudinal study of boys and girls with disruptive behavior problems. *Development and Psychopathology*, 20(1), 99-119. doi: 10.1017/S0954579408000059
- Zahn-Waxler, C., Race, E., & Duggal, S. (2005). Mood disorders and symptoms: The expression and development of depression in girls. In D. J. Bell, S. L. Foster, & E. J. Mash (Eds.), *Handbook of behavioral and emotional problems in girls (Issues in clinical child psychology)* (pp. 25-77). New York, NY: Springer.
- Zahn-Waxler, C., & Radke-Yarrow, M. (1990). The origins of empathic concern. *Motivation and Emotion*, 14(2), 107-130. doi: 10.1007/bf00991639

- Zahn-Waxler, C., Radke-Yarrow, M., & King, R. A. (1979). Child rearing and children's prosocial initiations toward victims of distress. *Child Development, 50*(2), 319-330. doi: 10.1111/1467-8624.ep12421504
- Zahn-Waxler, C., Radke-Yarrow, M., Wagner, E., & Chapman, M. (1992). Development of concern for others. *Developmental Psychology, 28*(1), 126-136. doi: 10.1037/0012-1649.28.1.126
- Zahn-Waxler, C., Robinson, J. L., & Emde, R. N. (1992). The development of empathy in twins. *Developmental Psychology, 28*(6), 1038-1047. doi: 10.1037/0012-1649.28.6.1038
- Zahn-Waxler, C., Schmitz, S., Fulker, D., & Robinson, J. (1996). Behavior problems in 5-year-old monozygotic and dizygotic twins: Genetic and environmental influences, patterns of regulation, and internalization of control. *Development and Psychopathology, 8*(1), 103-122. doi: 10.1017/s0954579400006994
- Zahn-Waxler, C., Shirtcliff, E. A., & Marceau, K. (2008). Disorders of childhood and adolescence: gender and psychopathology. *Annual Review of Clinical Psychology, 4*, 275-303. doi: 10.1146/annurev.clinpsy.3.022806.091358
- Zahn-Waxler, C., & Smith, K. D. (1992). The development of prosocial behavior. In V. B. Van Hasselt & M. Hersen (Eds.), *Handbook of social development: A lifespan perspective*. (pp. 229-256). New York, NY: Plenum Press.
- Zahn-Waxler, C., & Van Hulle, C. (2012). Empathy, guilt, and depression: When caring for others becomes costly to children. In B. Oakley, A. Knafo, G. Madhavan, & D. S. Wilson (Eds.), *Pathological altruism* (pp. 321-344). New York, NY: Oxford University Press.

Zimmerman, M., & Mattia, J. I. (2001a). The Psychiatric Diagnostic Screening Questionnaire: Development, reliability and validity. *Comprehensive Psychiatry*, 42(3), 175-189. doi: 10.1053/comp.2001.23126

Zimmerman, M., & Mattia, J. I. (2001b). A self-report scale to help make psychiatric diagnoses: The Psychiatric Diagnostic Screening Questionnaire. *Archives of General Psychiatry*, 58(8), 787-794. doi: 10.1001/archpsyc.58.8.787

## APPENDICES

### Appendix A

MacArthur Story Stem Battery-selected story stems

(Bretherton & Oppenheim, 2003)

New Depressed Mother Story Stems

#### Introduction of Characters

M = mom

D = dad

G = brother, George

S = sister, Susan

J = baby, Jane

MF = male friend, Dave

FF = female friend, Laura

I = interviewer

**Dump all of the dolls out on the table. (Don't take time placing them on the table.)** Have child choose a mom, dad, brother, sister, and baby. Then, put all other dolls away. (The remaining same-sex child will be the friend). After that, say:

*I: Here's our family. This is Mom; this is Dad; this is the brother and his name is George; this is the sister and her name is Susan; and this is the baby and her name is Jane.*

*I: Who do we have here? (Get child to name each family member, with help if necessary. Make sure the child can name all the family members.)*

*I: We are going to play a game using these dolls. First, I am going to tell you a story about the family. I want you to listen very carefully to my story. When I tell you, I want you to finish the story. So, I will go first and I will tell you when it is your turn.*

Warm-Up: Susan's Birthday

Story theme: Introduction, modeling of narration with family figures

Props: Table (birthday cake side), 4 chairs, highchair, and gifts

Characters: All the family characters

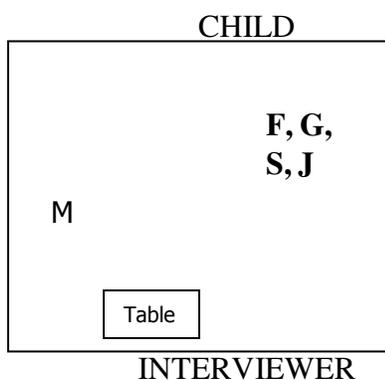
Put out table, chairs, gifts, and mom standing by the table.

I: *You know what? It is Susan's birthday and Mom made her this beautiful cake.*

**Point to cake.** *It's time for a party.*

M: *"Come on Dad, George, Susan, and Jane, it's time to celebrate George's birthday."*

**Put the family around the table (quickly).**



I: *Now it's your turn. You be the family and finish the story. Show me and tell me what happens now.*

Let the child play with the figures or if the child is in need of help tell a story yourself.

Remember, however, the demonstrations or leading prompts for the subsequent story stems should not be used.

Prompts to get the child involved:

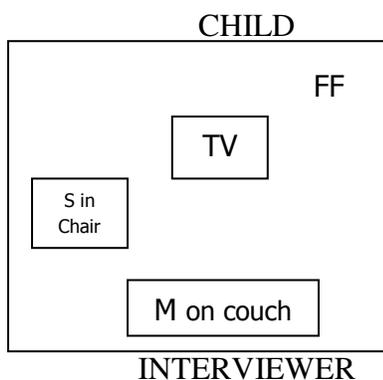
1. *Show me how they eat the cake/blow out the candles.*
2. *What might Susan say about her beautiful cake?*
3. *If the child wants to sing "happy birthday," by all means join her and sing along.*

## Mom's Headache

Story theme: Dilemma about empathy with mother versus loyalty to friend

Props: Couch, television, chair, book

Characters: Mother, Susan, Laura



**Set out couch, TV, and chair – name objects as you set them up. Put mom sitting on couch and Susan sitting in chair.**

I: *We have a couch, a TV, and a chair.*

**Mom and Susan are sitting and watching TV. Mom turns to child,**

M: *“Oh, Susan, I have such a headache! I just have to turn this TV off and lie down!” Mom gets up and turns the TV off. “Susan, can you find something quiet to do for a while?”*

S: *“Okay, mom. I’ll read a book.”*

(Mom lies down on the couch and Susan remains in the chair and reads a book.)

I: *(Ding-dong, make doorbell sound.) It’s Susan’s friend, Laura.*

FF: *“There’s a really neat show on TV, can I come in and watch with you?”*

I: *Now it’s your turn. You be Susan, Laura, and Mom and finish the story. Show me and tell me what happens now.*

Required issue prompt 1: (If Susan doesn’t turn on the TV.)

FF: *“Oh, come on! I know you’ll really like it.”*

Required issue prompt 2: (If Susan or friend turns on the TV.)

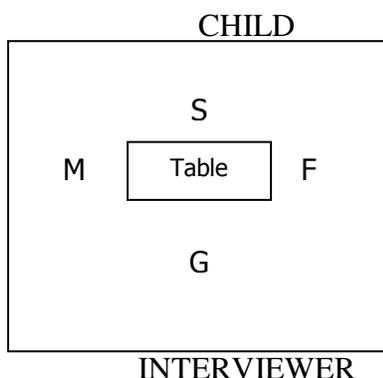
M: *“I have such a headache.”* (expressing mild pain)

### Family Game (New Scenario)

Story theme: Mom's sadness and withdrawal / family's reactions to mom

Props: Table, 4 chairs, game board

Characters: Mother, Father, George, and Susan



**Set out the table (pizza side and game board over pizza) and chairs**

I: *The family is playing a game at the kitchen table.*

**Put the family around the table.**

I: *Here is the family playing the game. It's Susan's turn. Her face looks like this (show the happy face card). **Make Susan lean toward the table.***

S: *"I like this game."*

I: *It's Dad's turn. His face looks like this (show the happy face card). **Make Dad lean toward the table.***

D: *"This is so much fun."*

I: *It's George's turn. His face looks like this (show the happy face card). **Make George lean toward the table.***

G: *"I love playing games."*

I: *It's mom's turn. Her face looks like this (show the sad face card). **Turn mom so her body and head face away from the table.***

I: *You be the family and finish the story. Show me and tell me what happens now.*

Required issue prompt: (If child does not make reference to mom (e.g., taking her turn, losing her turn, leaving the table) or the family deciding to exclude/skip mom or help mom take her turn.)

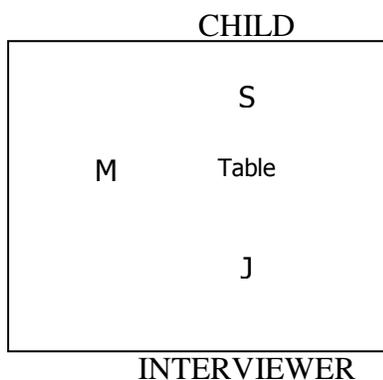
I: *What about mom's turn?*

## Dinner Time (New Scenario)

Story theme: Mom's irritability

Props: Table, 4 chairs, highchair, a tray with plates, picture

Characters: Mother, Jane, and Susan



**Put Susan and Jane sitting at the table (pizza side up), and mom standing by the table with the tray in her hands. Place the picture in front of Susan. As you place the characters in position, list what they are doing.**

I: It is almost time for dinner. Jane is playing in her highchair. Susan is coloring a picture. Mom is setting the table. Mom's face looks like this...*Show angry face card.*

I: Mom drops the plates on the floor. *Make mom drop the tray.*

M: "Ahh!"

I: Then, Jane starts to cry. Mom tries to make Jane stop crying.

M: *Make mom go over to Jane.* "Stop crying, I am trying to make dinner." *Said in an irritated tone.*

I: Susan is finished coloring his picture. She really wants to show mom how nice her picture is.

I: *Now it's your turn. You be Susan, Jane, and Mom and finish the story. Show me and tell me what happens now.*

*Issue prompt: (If child does not address wanting to show mom her picture, giving up on showing mom picture, mom looking at picture, or mom again saying she is too busy to look at picture)*

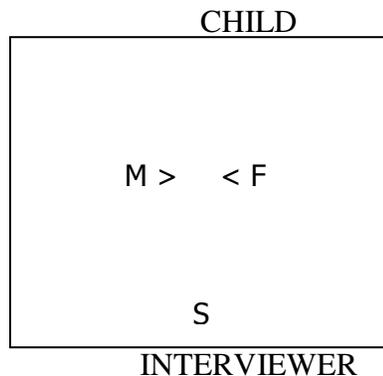
I: *What is going to happen about Susan's picture?*

## The Lost Keys

Story theme: Parental conflict

Props: None

Characters: Mother, Father, Susan



I: *Susan comes into the room and sees Mom and Dad looking at each other like this. Look at my face (show angry expression).*

M: (Angrily) *"You lost my keys!"*

D: (Angrily) *"I did NOT!"*

M: *"Yes you did, you always lose my keys!"*

D: *"I did not lose them this time."*

I: *Now it's your turn. You be Susan, Mom, and Dad and finish the story. Show me and tell me what happens now.*

Issue prompt: (If child does not enact end or resolution of conflict)

I: *What's going to happen about Mom and Dad's argument?*

## Appendix B

### Rating Manual for Caring Orientation Themes in Story Stem Battery

PC = participating child

SC = story stem child (Susan for girls, George for boys)

### A. Rating of PC's Concerned Reaction to Negative Elements of Story Stems

1. This scale is used to rate the PC's **behavioral (observable) concern reaction** to hearing the negative elements of the story stem. The negative elements that are most likely to elicit this type of behavioral response are Mom yelling at Jane (Dinner story) and Mom turning her back on the game (Game story), but other elements of the story may also be rated.
2. The PC's emotion will most likely be displayed immediately following the negative element of the story stem but may be rated at any point during the presentation of the story stem or immediately following the presentation of the story stem **if it is clear that it is a reaction to the negative element of the story** (e.g., PC asks a question about the negative element NOT distressed face because ECG electrodes itch).
3. A **concern reaction** is defined as a change from previous/baseline emotion that indicates:
  - a) worried or troubled affect  
and/or
  - b) heightened alert or surprise (but not happy surprise)
4. This reaction will most likely be evidenced by the following but may be evidenced by other signs of concern:
 

Enlarged eyes, brows raised, mouth opened slightly, mouth turned slightly down, gaze intense or focused downward, increased focus on the story, questions about the negative element.
5. Concern reactions may be verbal, non-verbal and/or physical responses made by the PC (not SC).
6. Only rate changes from previous/baseline emotion.
7. Rate using following scale:

Rating	Description
0	<b>No reaction</b>
1	<b>Concern reaction is very mild, ambiguous, or not clearly present.</b> E.g., A change in facial expression that seems like concern but is ambiguous or vague
2	<b>Concern reaction is clearly present but NOT strong <u>and</u> NOT elaborate.</b> E.g., A worried facial expression without further reaction that indicates concern.
3	<b>Concern reaction is clearly present and strong <u>or</u> elaborate.</b> E.g., Very strong or extreme worried face (with or without elaboration). A clear worried face and a question about the element of the story.

## B. Story Theme Ratings

Story Theme ratings will be used to indicate the degree to which each of the PC's four stories include the following themes: (1) child prosocial behavior and (2) child empathic behavior. Rate story themes based on the PC's entire story. Include all of the PC's statements (narration, each character's dialogue), PC's emotional expressions (e.g., tone of voice, sighs), and the SC's movements/actions. One statement, emotional expression, or movement/action may affect ratings for more than one theme. In other words, you do not need to decide which theme best fits the statement, emotional expression, or movement/action. Consider all story elements before and after researcher's prompts.

All 5-point (0-4) scales in this manual follow the same general format described below.

Rating	Description
0	Not present
1	Vague or unclear
2	Mild
3	Moderate; definitely present
4	Strong, Elaborate, or Extreme

## 1. Child Prosocial Behavior

*Definition.* A prosocial behavior occurs when the SC helps, shares, comforts, defends, and/or protects mother.

Prosocial themes may include prosocial statements (It's okay, Mommy. Can I help you?), direct prosocial behaviors (e.g., getting mom aspirin for headache) or indirect/passive prosocial behaviors (e.g., keeping the T.V. off so as not to disturb Mom). Prosocial behaviors will be a behavior by Susan/George directed toward Mom or intended to help Mom.

Examples of low ratings may include, but are not limited to:

- SC says, "I had a fun day."
- SC gives mother his/her drawing.
- SC sits beside mother but no dialogue accompanies the movement.
- Note. In the headache story, SC's compliance/cooperation in keeping the TV off without additional helping, sharing, etc. would generally be given lower ratings.

Examples of high ratings may include, but are not limited to:

- SC offers to help mother set the table.
- SC says, "Don't be mad at Dad. I'll help you find the keys."
- SC says, "I can't turn on the T.V. Mom has a headache. The noise would make her feel bad."

## 2. Child Empathy

*Definition.* Mother and SC experience the same negative emotion and the onset of the SC's emotion follows the onset of mother's emotion.

Empathy themes may be indicated by SC's spoken words (e.g., "That makes me feel bad too."), SC's tone of voice (sad tone when mother is sad), narrated emotions ("Then, SC felt bad."), or SC's behavior (e.g., crying). Empathy will be rated when displayed by SC and directed toward Mom. This means that mother's emotion must precede the SC's emotion. If prosocial themes are rated, at least low ratings of empathy will also likely be present.

Examples of low ratings may include, but are not limited to:

- Mom is sad during the game and SC appears annoyed (but not clearly so).
- Note: Lower ratings of empathy will often involve mother and SC matching general negative emotions but not sharing the more specific emotion (e.g., sadness, anger).

Examples of high ratings may include, but are not limited to:

- Mom is sad during family game. SC is sad because he/she lost the game.
- SC yells at Jane during dinner story (mom is annoyed during this story, unless PC changes her emotion).
- Mom does not take her turn in the game, and SC says, "I don't want to play anymore (said in angry tone)."
- Mom cries during the game. Then, SC cries.

### C. Performance Ratings

Performance ratings are used to rate the PC's focus on the story stem task and skill in telling a good story.

#### 1. PC's Engagement With The Examiner

This scale assesses the degree of enjoyment and eagerness the PC displays in response to the examiner's prompts to respond to the narrative story stems. Utilize a holistic approach when coding in this category.

**0 = Not Engaged** – for example: PC does not respond to examiner's prompts; no pleasure is seen; gaze is averted away from examiner and materials (e.g., gazing downward).

**1 = Somewhat Engaged** – for example: PC looks infrequently at examiner's face; PC may hesitate or appear reticent but does not refuse to respond; PC occasionally smiles, but affect is primarily neutral.

**2 = Engaged** – for example: PC may readily respond to examiner's prompts; PC smiles frequently and may laugh occasionally; PC gazes toward examiner's face; PC may spontaneously talk to examiner, asks questions.

#### 2. Story Coherence

Addresses the degree to which the PC responds to the story stem with a logical sequence of events. (Refers only to story content, not inaudible narrative etc.) It is possible for a story to be inaudible **and** incoherent, but this rating is referring to coherence. If parts of the story are inaudible, rate what you can hear.

**0 = Not Coherent** - There are fragmented shifts in story line and/or the story is not logical.

**1 = Somewhat Coherent** - Parts of the story are coherent, but the story contains enough incoherent or illogical elements that overall clarity is lacking. For example, it is unclear how some details are related to the overall series of events; the story is coherent at the beginning but ends illogically; the story begins logically but ends incoherently.

**2 = Coherent** - Overall, the story contains a coherent, logical, sequential series of events. There are no major incoherent shifts in the story.

#### 3. Embellishment

Degree to which the PC provides a story and provides novel content.

**0 = No Story, No Embellishment** - PC offers a minimal response, not a complete story.

**1 = Story, No Embellishment** - PC provides a simple story that may include some details and perhaps a resolution to the conflict. Story does not go beyond the elements in the original story and no novel content is provided.

**2 = Story, Embellishment** - The story includes details, emotional content, and/or novel elements (e.g., people, objects, places, events not presented in the original story).