

ABSTRACT

LYNN, AMY ELIZABETH. Internal Working Models as Predictors of Social Information Processing in Maltreated Children. (Under the direction of Mary Haskett, Ph.D.).

The purpose of this study was to examine whether children's internal working models predict their social information processing with their peers. Specifically, the study examined if the self representations, parent representations, and attachment themes of maltreated children predicted their attributions of intent or response generation. Participants were a sample of 65 maltreated children who were in preschool, kindergarten, or first grade at the time of the assessment. The MacArthur Story Stem Battery was used to assess children's internal working models and the Home Interview with Children was used to assess social information processing. A number of significant correlations were found between children's representations of themselves, their representations of their parents, and their expressed attachment themes. Findings also indicated that only children's positive self representations predicted their response generation, in that children who represented themselves positively had fewer aggressive responses. However, negative self representations, parent representations and attachment themes did not significantly predict attributions of intent or response generation.

Internal Working Models as Predictors of Social Information Processing in Maltreated
Children

by
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A thesis submitted to the Graduate Faculty of
North Carolina State University
In partial fulfillment of the
Requirements for the degree of
Master of Science

Psychology

Raleigh, North Carolina

November 2008

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Internal Working Models as Predictors of Social Information Processing in Maltreated
Children

Introduction

The National Child Abuse and Neglect Data System (NCANDS, 2006) reported that 867,253 children across the country experienced abuse in 2006. If this rate were to remain constant it would mean that one out of every 84 children in our country experience reported abuse every year. Reports (NCANDS, 2006) also show that younger children (i.e., infancy through the preschool years) tend to have the highest rates of victimization. It is these younger children that are more prone to experience the negative effects that have been associated with abuse (Erikson, 1989). The effects of child abuse and neglect are serious and impact not only the children but society as a whole.

Many investigators have examined the consequences of maltreatment and documented negative effects on children's physical, cognitive, psychological, and social functioning (Cicchetti, 1990; Springer, Sheridan, Kuo, & Carnes, 2007). Negative outcomes include high rates of delinquent behavior (Lewis, 1989), depression (Sternberg, Lamb, Guterman, & Abbott, 2006), risk for substance abuse (Kilpatrick, Acierno, Saunders, Resnick, Best, & Schnurr, 2000), and risk for continuing the cycle of abuse by abusing future generations of children (Herrenkohl, Herrenkohl, & Egolf, 1983). Of particular relevance to the present study, abused children tend to display many indicators of social incompetence, including high rates of aggression during interactions with peers (George & Main, 1979; Herrenkohl & Herrenkohl, 1981; Hoffman-Plotkin & Twentyman, 1984). The ultimate goal

of exploring the effects of abuse is to prevent these potential negative outcomes from occurring among children who have experienced abuse by shaping intervention practices. One major way to aid prevention of negative outcomes is to understand more completely the precursors that influence the negative outcomes. Leventhal (2005) has suggested that there is a need for improvement in the area of preventing child abuse and neglect and the resultant negative outcomes; one major task is to revise and strengthen models of how negative outcomes develop in order to investigate new intervention approaches.

Research has shown that quality of children's attachment to their caregivers is one of the major predictors of social competence in children. Children who experience sensitive and responsive care tend to develop secure attachments to their caregiver. Secure attachments are thought to reflect confidence in the mother's emotional availability and responsiveness and to promote children's positive orientation toward their mother, themselves, and the world (Belsky & Pasco-Fearon, 2002). Secure attachment has been shown to result in optimal outcomes for children (Belsky & Pasco-Fearon, 2002; Bohlin, Hagekull & Rydell, 2000; Simpson, Collins, Tran, & Haydon, 2007). Insecure attachment, in contrast, is associated with a host of negative outcomes in childhood and adolescence (Crittenden & Ainsworth, 1989; Egeland & Sroufe, 1981; George & Main, 1979). These negative outcomes include poor psychological and social functioning (Cicchetti, 1990; Springer, Sheridan, Kuo, & Carnes, 2007) as well as increased rates of delinquent behavior (Lewis, Mallouh, & Webb, 1989) and continuing the cycle of abuse by abusing future generations of children (Herrenkohl, Herrenkohl, & Egolf, 1983). Unfortunately, children who have experienced

abuse, often by their caregiver, are frequently characterized as having an insecure attachment to their caregivers (Baer & Martinez, 2006; Cicchetti & Barnett, 1991) and are therefore at risk for problematic social relationships with caregivers as well as other adults and peers (Seuss, Grossman, & Sroufe, 1992; Verschueren & Marcoen, 1999).

Links between quality of attachment to caregivers and later social competence are likely mediated by children's "internal working models" of relationships (Bowlby, 1973). That is, during early relationships, children create mental representations of people and relationships and these representations form their internal working models. Over time, these internal working models create "knowledge structures" in order for the child to understand current and future relationships (Bowlby, 1982). Children's knowledge structures, based on their internal working models, create foundations for the relationships they will have throughout their lives. Shields, Ryan, and Cicchetti (2001) examined the relationship between children's representations of their caregivers and their emotion dysregulation, aggression, and peer relationships. Shields and colleagues found that negative representations were associated with problematic peer relationships, suggesting that the mental representations children have of their caregivers impact the children's peer relationships.

Given their risk for insecure attachment, it follows that many abused children will develop working models of harsh, insensitive, unpredictable relationships. Indeed, prior research indicates that maltreated children's working models differ from those of non-maltreated children. (Toth, Cicchetti, Macfie, & Emde, 1997; Toth, Cicchetti, Macfie, Maughan, & Vanmeenen, 2000; Waldinger, Toth, & Gerber, 2001). Specifically, maltreated

children have been shown to display significantly more negative representations of self and parent compared to the representations of their non-maltreated peers (Toth et al., 1997). Maltreated children also have exhibited fewer positive parent representations (Toth, Cicchetti, Macfie, Maughan, et al., 2000) and more conflictual themes (Toth, Cicchetti, Macfie, Rogosch, & Maughan, 2000) than their non-maltreated peers.

As noted above, cognitive representations of relationships, including internal working models, contribute to children's knowledge structures. These structures are subsequently used during children's processing of social information in interactions with peers. In fact, knowledge structures are at the core of Crick and Dodge's (1994) social information processing model, a framework for understanding children's social behavior that is well-supported by decades of research. Crick and Dodge (1994) proposed that working models of relationships constitute an important component of children's social knowledge. They further proposed that "...working models have an impact on behavior by guiding future on-line processing" (p. 79). In spite of the obvious theoretical links between working models of relationships and social information processing operations, there have been no direct empirical tests of the associations between these two constructs. The proposed study was designed to determine whether physically abused children's representations, formed on the basis of their internal working models of relationships, predicted their approach to processing social information.

Purpose of the Study

It is clear from many decades of research that children's early relationships with their parents predict many aspects of children's peer relationships (Anthonysamy & Zimmer-Gembeck, 2007; Kaufman & Cicchetti, 1989; Waldinger, Toth, & Gerber, 2001). The present study built on this literature by exploring whether internal working models, developed during early relationships with parents, predict children's social information processing in peer problem situations. The present study explored if specific aspects of the internal working models (e.g., representations of parents and self) predicted the processing of social information for abused children, specifically how these children viewed the actions of their peers and how children responded to peer interactions. Understanding what might increase the risk for maltreated children to have problematic social information processing and high rates of aggression can inform intervention practices for children who have experienced abuse. The knowledge of what may contribute to the social problems of maltreated children may help provide specific areas to target with intervention.

Literature Review

The following sections contain an introduction to attachment theory, followed by a discussion of literature related to attachment of abused children. Internal working models, developed through attachment relationships, will then be explored in terms of typical development and differences that exist between models for abused and non-abused children. Information on internal working models will lead into research on social relationships and how children typically process social information. The model of social information processing proposed by Crick and Dodge (1994) will then be described followed by an explanation of social information processing of abused children. These sections will conclude with a discussion of research that examines a link between attachment and social information processing.

Attachment and Internal Working Models

The theory that children form attachment relationships with their caregivers based on their early experiences is well established. This theory, known as attachment theory, started with the work of John Bowlby in the 1950s and 60s. According to Bretherton (1992), the goal of Bowlby's work was to understand what led a child to grow up "mentally healthy," and Bowlby concluded that infants/young children needed to experience a warm, intimate, and continuous relationship with their mother. The deepened understanding of attachment relationships within current research is often attributed to Mary Ainsworth. Her work led to an understanding of the attachment relationship as a very specific type of relationship consisting of an affectional bond to a specific individual that endures over time and distance

(Ainsworth, Blehar, Waters, & Wall, 1978). In her work, Ainsworth used the “Strange Situation” task to identify various patterns in attachment relationships, and two broad categories were identified: Secure and Anxious/Insecure. The anxious/insecure category has been further divided into three categories: Anxious-avoidant, Anxious-ambivalent, and Disorganized.

Ainsworth and colleagues (1978) suggested that children with secure attachments to their caregivers functioned with a beneficial balance between attachment and freedom for exploration. This style of secure attachment develops when caregivers are sensitive and responsive to their children (Ainsworth et al.; Ainsworth, 1979). Securely attached infants are confident in their exploration and mastery of their environments because they are certain of the sensitivity and availability of their caregivers (Weinfield, Sroufe, Egeland, & Carlson, 1999). However, infants who have anxious/insecure attachments have not had the same sensitive caregiver experiences. The caregivers of anxiously attached children tended to be angrier and more avoidant, and had more restricted affect than mothers of securely attached children (Ainsworth). These caregivers may have been indifferent or responded inconsistently to bids for attention by their infants (Ainsworth et al.). Due to their interactions with insensitive caregivers, anxiously attached infants tend to be apprehensive about availability of caregivers, fearful of ineffective responses, and may also exhibit anger towards the caregiver because of the caregiver’s lack of responsiveness (Weinfield et al.).

Differences between securely attached children and children with insecure attachments are not only evident in the immediate caregiver relationship, but differences are

evident in various other aspects of children's lives. Of particular relevance is the fact that peer relationships of children are related to the quality of their attachment to their caregiver. Specifically, research indicates that securely attached children are more socially competent and have stronger friendships in later childhood (Elicker, Englund, & Sroufe, 1992) and adulthood (Kobak & Sceery, 1988) compared to the social relationships of children with insecure attachment to their early caregivers.

The mechanisms through which quality of early child-caregiver relationships predicts quality of children's peer relations have been the focus of a great deal of research. Within an attachment framework, the primary mechanism by which early family relationships are linked to later peer relationships is children's own construction of "internal working models" of relationships. That is, child-caregiver attachments are thought to be the prototype for children's subsequent relationship experiences (Elicker et al., 1992). Internal working models of parent-child relationships consist of the knowledge that a person has about the relationship and the way it functions. Bowlby (1973) added that within an individual's working model of relationships exist working models of the self and of the caregiver. These models of self and caregiver are considered the main components of children's internal working models. It is generally agreed that these models consist of mental structures, rules, and postulates that result from experiences with attachment figures and that these experiences form a collective perceptual record of the affective and behavioral components of child-caregiver interactions (George & Solomon, 1989). Based on their models of self and caregivers, children develop expectations about the self and others; the self is viewed as either worthy or unworthy of care

and protection and others are viewed as available or unavailable to provide care and protection (Bowlby).

During the preschool years children become more involved in social relationships outside the family and begin to depend more heavily on their mental representations than on their actual attachment relationships to assist in understanding new social interactions (Crittenden & Ainsworth, 1979). It is at this time that the models become increasingly important and influential for a child. Dodge (2001) and others have agreed with the work of Bowlby, and propose that a child's early relationship experiences become internalized in the form of expectations about how one is likely to be treated by others. That is, children will expect from peers what they have learned to expect from their caregivers. Specifically, children who experienced trustworthy, available caregivers and had secure attachments would expect peers to be available and trustworthy, whereas children who experienced uncertain and unavailable caregivers would expect peer relationships to be uncertain as well (Cicchetti, Lynch, Shonk, & Manly 1992).

Children's expectations or models are hypothesized to affect an individual's social adjustment by influencing how the individual encodes, interprets, and responds to others' behavior (Du Rocher, Schudlich, Shamir, & Cummings, 2004). In fact, Rudolph, Hammen, and Burge (1995) found children's negative representations of self, family, and peers were significantly associated with higher levels of peer rejection and lack of social competence, supporting the notion that general cognitive representations of relationships and social experiences with peers are interrelated. It can then be assumed that children will use their

preexisting internal models when assessing novel social situations or new relationships.

Laible, Carlo, Torquati, and Ontai (2004) have shown that there are consistent links between children's internal models, expressed as representations of relationships, and their social behaviors, with positive representations of relationships related to higher levels of social competence. These findings support the belief that different attachment styles and internal working models will lead to differences in social relationships.

In sum, research indicates that children's early attachment relationships contribute to the formation of internal working models of social relationships. These working models are largely based on representations of the self and a caregiver, but predict other future social relationships with peers. Due to the importance of the caregiver relationship in the formation of internal working models, the type of relationship a child has with his or her caregiver will influence the models of relationships that are developed. As a result of the importance of attachment and its influence on future relationships, a large amount of research has examined how attachment and internal working models may differ between maltreated and non-maltreated children. The following section will discuss differences that have been found in the attachment relationships of maltreated children.

Attachment in maltreated children. One major difference between abused and non-abused children is in the quality of the attachments they form with their caregivers. As noted above, research suggests that a higher proportion of maltreated children than non-maltreated children exhibit insecure attachment (Baer & Martinez, 2006; Cicchetti & Barnett, 1991; Egeland & Sroufe, 1981). Specifically it has been found that many children who have

experienced maltreatment display insecure attachments of the disorganized type, in that they show a lack of clear attachment behavior and often appear confused, avoidant, or apprehensive (Carlson, Cicchetti, Barnett, & Braunwald, 1989). The percentage of maltreated children with insecure attachment styles is much higher than the percentage of non-abused children with insecure attachments (Egeland & Sroufe). Lynch and Cicchetti (1991) also suggested that these insecure attachments were still evident when maltreated children were in their school-age years. Thus, differences in the attachment styles of maltreated and non-maltreated children are not temporary. As previously indicated, attachment relationships contribute to the development of internal working models and because maltreated children often develop insecure attachments, a discussion of their internal working models is warranted.

The dialogue about differences in internal working models between maltreated children and non-maltreated children stems from the concept that maltreated children have a model of a distorted reality rather than a distorted model. This conclusion suggests that when a child experiences an altered reality, the alteration becomes the basis for their internal working model. Thus it is not their model that is distorted, but rather it is an accurate representation of the harsh reality on which the model is based (Crittenden, 1990). It is this concept that is often applied to the internal working models of children who experienced maltreatment. Many abused children do not experience a warm and reciprocal pattern of early relationships and therefore their relationships are likely to be represented as untrustworthy, unavailable, or disappointing. According to Rogosch, Cicchetti, Shields, and

Toth (1995) the abuse of children involves extreme distortions of the caregiving environment in which internal models initially develop. Children then use these altered environments and relationships to develop their initial internal working models of themselves and others. In fact, a number of studies have found differences in the expression of internal models between maltreated children and their non-maltreated peers (Toth, Cicchetti, Macfie, & Emde, 1997; Toth, Cicchetti, Macfie, Maughan, & Vanmeenen, 2000; Waldinger, et al., 2001). A summary of these studies is provided in the following section.

Representations of maltreated children. A number of studies have been conducted to examine whether representations of maltreated children differ from those of non-maltreated children. Narrative measures such as the McArthur Story Stem Battery have frequently been used to assess children's representations of both self and caregiver. A number of investigators have assessed the representations of maltreated children using the story stem battery and presented the results for specific case examples (Buschbaum, Toth, Clyman, Cicchetti & Emde, 1992; Hodges & Steele, 2000). These authors found that the narrative story stems are a useful way of assessing themes about family relationships in young children. The case examples also indicated that maltreated and non-maltreated children showed differences in the themes that were present in their representations. A number of researchers have also observed representations for groups of maltreated children and compared them to groups of non-maltreated children. The following studies, conducted by the most prolific research team (i.e., Toth and Cicchetti), are samples of the most

methodologically sound studies designed to examine various aspects of the representations of maltreated children within the current literature.

Toth and colleagues (1997) used a story stem completion task to examine maternal and self representations of maltreated and non-maltreated comparison children. This study included a sample of 107 preschool children between 3 and 6 years old, 62% of which were male. Forty-seven percent of the participants were from minority groups, including African American and Hispanic children. The maltreated group included 80 children designated by the Department of Social Services as in need of intervention. The maltreated group was further divided by subtype of maltreatment, including neglect, physical abuse, and sexual abuse. The comparison group consisted of 27 children whose families were receiving federal Aid to Families with Dependent Children. Maltreated and non-maltreated children were comparable on variables such as age, minority status, gender, and receptive vocabulary.

The authors used data from the McArthur Story Stem Battery to answer their research questions and hypotheses. The McArthur Story Stem Battery is a story stem completion task in which children use dolls to act out the end of story stems read to them by experimenters. Children were presented with a total of 10 story stems and were asked after each story stem to “show me and tell me what happens now.” The authors coded the children’s stories to assess both maternal and self representations. Representations of caregiver and self were coded as positive and negative representations. The authors hypothesized that maltreated children would provide narratives with higher rates of negative maternal and self representations, as well as fewer positive maternal and self representations. The authors also

wanted to examine if maltreated children who had experienced different subtypes of abuse showed unique patterns of representations.

The authors initially examined how different representations (i.e., positive and negative parent and self representations) correlated with each other. These correlations showed that positive maternal representations were significantly correlated with positive self representations ($r = .38, p < .001$) and negative maternal representations were significantly correlated with negative self representations ($r = .50, p < .001$). These correlations provide further support for the theory that representations of self and caregiver are related. Results indicated that maltreated children had significantly more negative maternal representations than the non-maltreated children, $F(1, 105) = 8.30, p < .01$. Additionally, results revealed that maltreated children had significantly more negative self representations than their non-maltreated peers, $F(1, 105) = 13.21, p < .001$. The authors also found that physically abused children had the highest number of negative maternal and self representations compared to the other subtypes of maltreatment. Given the association between representations and future relationships, the higher rates of negative representations may lead to increased negative social outcomes for physically abused children, although such outcomes were not measured in this study. Toth and colleagues (1997) concluded that relationships that could be potentially positive may be adversely affected by the relationship expectations of maltreated children, and this could be especially true for physically abused children.

A major strength of this study was that the authors chose to examine representations in terms of group differences. Previous studies examined representations of maltreated

children; however, results were typically presented as case examples rather than group differences. In spite of this strength, there were limitations to the study. The authors stated that because each narrative story contained information about both the self and caregiver, separating caregiver and self representations was slightly difficult. However, the stories were said to be a valid measure because they were expressions of the inner worlds of the children where the caregiver and self affect each other, thus making the stories a more accurate representation of the children's inner worlds than stories that did not include both the self and caregiver. Another limitation of this study was that the researchers examined representations at only one time point, thus nothing was learned about the stability of children's representations. Finally, the study did not address possible links between the narrative representations and outcomes such as social competence.

Toth, Cicchetti, Macfie, Maughan, and Vanmeenen (2000) also conducted a study designed to examine differences in narrative representations between maltreated and non-maltreated children. This study furthered previous research by examining the stability of representations over a one-year period of time. The sample consisted of 56 maltreated children and 37 non-maltreated children. The mean age for the Time 1 assessment was 3 years 10 months and 4 years and 9 months for the Time 2 assessment. Maltreated and non-maltreated children were comparable on age, gender, minority status, and socioeconomic status. The MacArthur Story Stem Battery was also used in this study to assess positive and negative representations of caregiver and self. The authors hypothesized that maltreated children would have more negative and fewer positive parental and self representations than

maltreated children. It was also hypothesized that maltreated children would portray parents as more controlling and less likely to use positive discipline than would non-maltreated children. However, the authors made no specific hypotheses about the stability of representations over time, as there were no previous studies that examined the stability of representations for maltreated children.

As expected, maltreated children had significantly more negative representations of self and parent compared to the representations of their non-maltreated peers, $t(90.56) = 3.03$, $p < .05$, which is analogous to the results found by Toth and colleagues (1997). Findings also showed that maltreated children had fewer positive parent representations than did non-maltreated children, $t(54.88) = 2.45$, $p < .05$. Representations of parent remained stable over time for both abused and non-abused children. Although positive and negative self representations remained stable over time, grandiose self representations (i.e., the child is portrayed to have over-inflated abilities) rose marginally between Time 1 and Time 2. In the discussion it is suggested that the self continues to change through the developmental process and that the pre-school period may be particularly fluid in terms of self representations.

To help ensure the validity of their results, the authors made sure that the maltreated and non-maltreated groups were equivalent on demographic characteristics. The authors also controlled for gender and language ability in case these variables were related to representations. The authors measured language ability because it was seen as essential for completion of the narrative story task. Although receptive language was assessed, expressive language was not, thus any deficits in expressive language were not accounted for. Receptive

language was only assessed at Time 1 but the authors commented that scores on the receptive language assessment have acceptable short term stability, making a reassessment unnecessary. The longitudinal nature of this study was a definite strength in that it attempted to fill a gap in the literature related to the stability of representations. However, a limitation was that the maltreated children were receiving services throughout the one year study. The services may have affected the results in that the maltreated children's internal models may have been altered from the first to second assessments as a result of treatment. The authors argued that because services would be expected to improve child functioning, their findings of more negative representations over time for maltreated children may be an underestimation of the true differences between maltreated and non-maltreated children. Unfortunately, analyses to assess of the impact of services received were not conducted. This further limits knowledge of the potential effects that services may have had on results. Finally, although this study added to the literature by examining stability of representations, the authors did not fully examine all aspects of representations that are present in children's narrative stories, such as representational themes (e.g., affection, empathy, aggression, and verbal conflict). Examining these representational themes could have provided additional information about how maltreated children represent relationships and what types of themes are common among maltreated children. Finally, once again the authors did not correlate representations to children's social competence.

Links between representations and social adjustment. Crittenden (1992) stated that children use their previous experiences of maltreatment to construct "road maps" for future

relationships, and that these road maps predict similar experiences and provide methods for coping with the dangers that are expected from these future relationships. Using models of harsh realities when assessing novel situations and new relationships could hinder the ability of maltreated children to accurately process the situation and develop healthy relationships. Waldinger and colleagues (2001) proposed that because many maltreated children perceive experimenting with new social behaviors as risky, they may be left with fewer responses to new situations and ultimately perpetuate their negative relationship experiences. A number of studies have actually found that maltreated children tend to generalize negative representational models to new situations, increasing the likelihood that they will perpetuate their relationship histories (Toth et al., 1997; Toth & Cicchetti, 1996). These findings suggest that the internal models maltreated children use may distort not only their views of themselves and caregivers, but also their social interactions and peer relationships.

Toth, Cicchetti, Macfie, Rogosch, and Maughan (2000) attempted to further expand the knowledge about representations by examining whether the themes present were related to children's behavior problems. The authors examined this by using the moral-affiliative themes and conflictual themes in the narrative stories of maltreated and non-maltreated preschoolers. The authors stated that the MacArthur Story Stem Battery could be used to assess various relationship themes present within the children's stories, including: affiliation, empathy/helping, compliance, aggression, escalation of conflict, and verbal conflict. The authors combined data from coding of themes to created composite themes for Moral-affiliative and Conflictual themes. The sample included 43 maltreated children and 22 non-

maltreated comparison children. The mean age of the children was 4.8 years, and maltreated and non-maltreated children were comparable on gender, ethnicity, socioeconomic status, and receptive vocabulary.

The authors used the MacArthur Story Stem Battery to assess themes present in narrative stories, and the Child Behavior Checklist – Teacher Report Form (CBCL-TRF) was used to assess behavior problems. The authors hypothesized that the narratives of maltreated children would contain more conflictual themes and fewer moral-affiliative themes than the narratives of their non-maltreated peers. It was also hypothesized that maltreated children would have more externalizing behavior problems than non-maltreated children. Finally, the authors hypothesized that moral-affiliative representations would be negatively correlated with child behavior problems and conflictual representations would be positively correlated with behavior problems.

As was expected, results indicated that maltreated children expressed significantly fewer moral-affiliative themes, $t(63) = 2.67, p = .01$, and significantly more conflictual themes than non-maltreated children, $t(55.03) = 4.57, p < .001$. Consistent with decades of prior research, maltreated children obtained significantly higher scores on internalizing and externalizing behavior problems compared to non-maltreated children. Finally, the authors found significant positive correlations between conflictual themes and internalizing behavior problems ($r = .27, p = .03$) as well as between conflictual themes and externalizing behavior problems ($r = .48, p < .001$). These results suggest that themes present in maltreated children's representations are significantly related to the behavior problems that are often

exhibited by maltreated children. The results also suggest that maltreated children who have higher rates of positive themes than negative themes may be less likely to exhibit the externalizing behaviors common among maltreated children.

The authors of this study chose to examine not only differences in themes and behavior problems between maltreated and non-maltreated children, but also how the themes and behavior problems were related to each other. This additional assessment allowed for further exploration of possible associations among various negative outcomes (e.g., negative representations and behavior problems) experienced by maltreated children. This study was not free of limitations: for example, the authors used only teacher ratings of behavior (CBCL-TRF), which assessed a child's behavior in the school setting but not in the home setting. Given that children may behave differently at home than at school and parents and teachers may view behaviors differently, it is important to assess functioning in both social contexts. Including a rating of child behavior at home would have created a more complete examination of child behavior.

Peer relationships. Distorted views of novel social situations could lead maltreated children to have difficult or deficient peer interactions and/or friendships. Mueller and Silverman (1989) reviewed a number of studies that compared the social interactions and relationships of maltreated children to those of their non-maltreated peers and found that maltreated children tended to have heightened aggression in their peer interactions. They also found that maltreated children showed more withdrawal and active avoidance of peer interactions than their non-maltreated peers. Waldinger and colleagues (2001) provided

further support for problematic peer interactions when they showed that maltreated children expressed fewer wishes to be close to others and tended to represent themselves as angry and oppositional towards others. Maltreated children have also been found to exhibit less prosocial behavior than their peers (Anthonysamy & Zimmer-Gembeck, 2007; Kaufman & Cicchetti, 1989).

Kinard (1999) provided further evidence of problematic peer relationships with results that showed that mothers of maltreated children rated their children as less socially competent than mothers of non-maltreated children. Bolger, Patterson, and Kupersmidt (1998) found that children who experienced chronic maltreatment not only had more difficulties with peer relationships (e.g., fewer reciprocated playmates, and inability to maintain close positive friendships), but they also were less well liked by their peers. Salzinger, Feldman, and Ng-Mak (2007) indicated that maltreated children's social expectations and prosocial behavior mediated the link between abuse and positive and negative social status, and between abuse and positive and negative reciprocity. These results suggest that children's expectations for relationships play an important role in their success in social relationships.

There is a long history of research on aggressive behavior in maltreated children. Results have indicated that abused children are more verbally and physically aggressive towards caregivers and peers than are non-maltreated peers (George & Main, 1979; Haskett & Kistner, 1991; Herrenkohl & Herrenkohl, 1981; Hoffman-Plotkin & Twentyman, 1984). Rogosch, Cicchetti, and Aber (1995) displayed further evidence when they showed that,

when assessed by teachers and peers, maltreated children had more difficulties in peer relationships and displayed more undercontrolled and aggressive behavior than their non-maltreated peers. Maltreated children, specifically physically abused children, have also been shown to be at heightened risk for reactive aggression (Shields & Cicchetti, 1998). Finzi, Ram, Har-Even, Shnit, and Weizman (2001) added that abused children tend to be more aggressive than their non-abused peers and are also at higher risk for future antisocial behavior. In their study using a community sample, Johnson, Kotch, Catellier, Winsor, Dufort, Hunter, et al. (2002) also found that children who had histories of abuse were rated by their parents as having significantly higher rates of aggression than other children in the sample. These findings suggest that not only are problematic peer relationships common among maltreated children, but that aggressive behavior is also typical for these children.

In sum, differences have been seen in the attachment styles of maltreated children, in that maltreated children tend to have higher rates of insecure attachments than non-maltreated children. Given these differences in attachment style, it should come as no surprise that differences also have been revealed in the internal working models of maltreated children. Specifically, maltreated children tend to have more negative representations of the self and the caregiver and fewer positive representations. Maltreated children tend to exhibit more problematic peer relationships, and their problematic peer relationships have been linked to children's internal working models, with negative representations predicting higher rates of behavior problems and problematic social relationships than positive representations. The following section will continue the discussion of social relationships and will elaborate

on the concept of social information processing and how it relates to successful peer interactions.

Social Information Processing

A prominent theory developed to explain the etiology of children's problematic social interactions, including aggressive behavior, is the social information processing theory, which describes the manner in which the cognitive tasks of social perception and problem solving interact with one's own goals, motivational state, and arousal regulation to predict their behavior in social situations with peers (Dodge, 1993). Over the past two decades, research designed to test this theory has demonstrated that the theory is useful in predicting social, cognitive, and behavioral differences between socially competent children and those who have more difficulty with social interactions.

According to the social information processing model developed by Crick and Dodge (1994), there are six mental steps involved in the processing of social information. The processing for each step is essentially simultaneous, but follows a logical sequence. During the first two steps, children selectively attend to particular situational and internal cues, encode those cues, and interpret them. In the third step, children select a goal or desired outcome for the situation or continue with a preexisting goal. Step four is when children access possible responses from their memory or construct new responses to novel situations. Children evaluate the possible responses to the situation and then select the most positively evaluated response for enactment during step five. Finally, in step six children react to the

situation with a behavioral enactment of their selected response. The cycle is repeated when the child's behavioral enactment invokes a peer's response.

Peer relationships and social interactions require children to constantly process the information that is received during interactions. Fraser, Galinsky, Smokowski, Day, Terzian, Rose, et al. (2005) suggested that accurate social information processing is imperative in order for children to be socially competent and that patterns of social information processing relate to early life experiences and later conduct. There is a substantial body of research to support the validity of the social information processing framework. To illustrate, Dodge and Price (1994) found a pattern of consistent associations between social information processing variables and behavioral competence in a sample of socially competent children. They also found that measures of each step of the process were correlated in the expected direction with behavior in at least one social situation that they assessed.

Support for the social information processing model also can be found in research on socially incompetent and aggressive children. Research suggests that characteristic patterns at different steps correlate to extreme group differences in socially competent behavior. For example, aggressive children tend to display poorer skills in enacting competent social behavior, and have been shown to experience difficulties across all steps of the process (Lansford, Malone, Dodge, Crozier, Pettit, & Bates, 2006). Dodge and Tomlin (1987) found that aggressive children encoded fewer cues than their non-aggressive peers. It has also been shown that aggressive children tend to evaluate aggressive behavior as having more positive outcomes (Crick & Ladd, 1990). Although evidence exists for difficulties among aggressive

children at all stages of processing, Crick and Dodge (1994) proposed that the interpretation of cues, specifically children's attributions of intent, and response generation were the most problematic steps for aggressive children. Due to the suggested importance of those two steps, they are the focus of this study and will be discussed in more detail in the following sections.

Attributions of intent. Attributing intent to another's actions takes place during the first two steps of social information processing: encoding of cues, and interpretation and representation of those cues. It is during these steps that a child decides why a peer acted in a particular manner. Dodge, Murphy, and Buschbaum (1984) suggested that the child's perception of intent was more important than the actual intent in determining the child's response. Dodge (1980) found that when a child attributed hostile intent to a peer, there was a greater likelihood of an aggressive response than when a benign attribution was made. A great deal of subsequent research was designed to further examine the link between aggression and hostile attributional biases. In specific studies, aggressive children have been found to attribute hostile intentions to a peer's behavior in a situation where the intent was ambiguous (Quiggle, Garber, Panak, & Dodge, 1992). Consequently, it has been surmised that these children are incorrectly interpreting social cues and situations, and that may be what is leading them to display heightened levels of aggression.

de Castro, Veerman, Koops, Bosch, and Monshouwer (2002) provided further support for the relevance of hostile attributions in understanding aggressive behavior. Their meta-analysis contained 41 studies that examined relations between children's aggressive behavior

and hostile attributions of peers' intentions. Using Fisher Z calculations, the authors found that the overall relationship between aggression and hostile attributions of intent was highly significant $Z = 11.25, p < .01$. Additionally the authors assessed the magnitude of the association by transforming the Fisher Z scores to correlations, and found weighted mean effect sizes ranging from $r = -.29$ to $r = .65$. The results of this meta-analysis suggest that, across the research examining hostile attributions of intent, a strong tie to aggressive behavior has been consistently reported. However, according to the authors, the link between hostile attributions and aggressive behavior tended to be stronger in studies that included the following: children who had more severe behavior problems, children who were 4 - 6 years old or 8 - 12 years old, stimuli that were read to the children, and when intelligence was not controlled in data analyses.

Response generation/problem solving. As stated earlier, Crick and Dodge (1994) considered the ability to problem solve and generate responses to peer conflict as particularly problematic for aggressive children. Research has shown that aggressive children tend to be poor social-problem solvers, in that they generate fewer solutions to problems and select aggressive solutions more often than their non-aggressive peers (Quiggle et al., 1992). Aggressive children also have been found to anticipate more positive outcomes from aggressive behavior compared to their non-aggressive peers (Crick & Ladd, 1990). It seems, therefore, that aggressive children not only generate fewer responses to peer social problems but that the responses they generate are less positive and they view their aggressive responses in an optimistic manner. As mentioned earlier, maltreated children tend to have problematic

peer relationships and to use aggression in an attempt to resolve difficult situations with peers. It follows that maltreated children might hold hostile attributions for peers' intentions and might have deficits in social problem solving skills. Research designed to examine the social information processing of maltreated children will be explored in the following section.

Social information processing of maltreated children. The link between aggression and social information processing that was presented in the previous section can also be applied to the aggressive behavior of maltreated children, suggesting that the aggression exhibited by maltreated children may be linked to their social information processing. In fact, a great deal of research indicates that maltreated children tend to show deficits in social information processing similar to other aggressive children (Dodge, Bates, Petit, & Valente, 1995; Salzinger et al., 2001). Specifically, in their processing of social information, maltreated children have been found to misinterpret cues provided by their peers and to attribute hostile intent in situations in which peers' intentions are ambiguous (Price & Landsverk, 1998). Furthermore, research indicates that hostile attributions made by maltreated children predict their social behavior (Dodge et al., 1990; Dodge et al., 1995; Price & Landsverk). For example, the hostile attributions of maltreated children have been found to predict their later behavior problems and account for a significant portion of variance in social adaptation (Price & Landsverk). Dodge and colleagues (1995) provided further evidence when they showed that physically abused children had higher rates of conduct problems and hostile attributions of intent than non-maltreated children.

In addition to misinterpretation of peers' social cues, maltreated children tend to demonstrate difficulty in problem solving and generating responses to social problems. Maltreated children have been found to generate significantly more low-quality responses (i.e., solutions involving force, aggression, ignoring, tricking or lying) than their non-maltreated peers (Trickett, 1993). These results suggest that although maltreated children are capable of generating responses to social situations, they are not generating socially appropriate solutions. Price and Landsverk (1998) found that response generation/social problem solving skills of maltreated children predicted their level of social competence and their social behavior. These results provide further support for the theory that disrupted social information processing, in particular interpretation of social cues and response generation, might contribute to maltreated children having higher rates of aggressive behavior.

Connecting Internal Working Models and Social Information Processing

Research has shown that maltreated children tend to have internal working models that are different from their typically developing peers as well as deficits in their social information processing; however, the association between the two areas is not well defined. Based on the attachment model, Bowlby (1973) suggested that the two main functions of internal models, including the representation of caregiver and self, are to predict future behavior and plan responses. Using a social cognitive framework, Crick and Dodge (1994) suggested that mental representations of past events are stored in long term memory and these memories are used in the processing of future social cues. It has also been suggested that the process of encoding and interpreting cues may be influenced or guided by the

database of information stored in memory (e.g., social schemata, scripts, and social knowledge), and that engaging in interpretational processes may result in subsequent changes or revisions to the database (Crick & Dodge, 1994). Thus, it could be argued that children's internal working models, including their representations of self and caregiver, influence how they encode, interpret and respond to social situations.

Indeed, Cicchetti and colleagues (1992) suggested that the construct of children's internal working models of self and caregiver, which are derived from attachment relationships, may contribute to expectations of how peers will act and react in social situations. Cassidy, Kirsh, Scolton, and Parke (1996) showed that attachment was significantly related to a child's social information processing. Specifically, security of attachment (as measured by the Strange Situation Paradigm) was related to attributions of peer intent in ambiguous situations, with securely attached children having more positive attributions of peer intent than insecurely attached children. Ziv, Oppenheim, and Sagi-Schwartz (2004) also showed that attachment (as measured by the Strange Situation Paradigm) was significantly related to children's social information processing such that securely attached children evaluated competent social responses more positively than did insecurely attached children. In addition, insecurely attached children anticipated negative social outcomes regardless of the situation presented to them, and also anticipated better social outcomes for hostile responses than did the securely attached children.

The research of Cassidy and colleagues (1996) and Ziv and colleagues (2004) suggests that there is a relationship between the quality of children's attachment to caregivers

and children's social information processing operations; however, this previous research was designed to examine general attachment style and not specifically internal working models. In a discussion of possible relations between attachment and social information processing, Crick and Dodge (1994) concluded that future research was needed to further investigate the specific link between internal working models and social information processing. Dodge and Rabiner (2004) suggested that internal working models might be a more relevant link to the inadequate social information processing of maltreated children than other theories that had been proposed (e.g., object relations theory and moral domain theory). They also suggested that due to a paucity of studies in this area, further research should be conducted in order to evaluate the association between internal working models and social information processing. Finally, Dodge and Rabiner suggested that a better understanding of the link between internal working models and social information processing would provide important information about the factors that are influential on the various stages of social information processing.

Statement of the Problem

Maltreatment has been associated with poor quality of relationships with caregivers and negative internal models of relationships (Toth et al., 1997). The difficulties in relationships tend to extend to maltreated children's peer relationships (Mueller & Silverman, 1989). Previous studies have examined how abuse can relate to a child's internal models and results have shown that not only are the representations of the mother influenced by abuse, but the representations of self and others also are influenced (Toth et al.; Toth, Cicchetti, Macfie, Maughan, & Vanmeenen, 2000). A child's internal working models and representations of self and caregiver have been linked to difficulties with peer relationships (Bolger et al., 1998). However, mechanisms that might account for the relation between children's internal models and difficulties with peers have not been adequately examined in prior research; leading investigators have called for increased attention to identification of potential mechanisms.

When examining children's interactions with their peers it is important to consider how they are processing the social information they are constantly receiving. Crick and Dodge (1994) showed that faulty processing of social information by children can be linked to certain social behaviors, such as aggression, that relate to peer status. Price and Landsverk (1998) also have suggested that the manner in which children process social information will influence their social adaptation, and this was true for abused children as well. For example, children who have experienced abuse have more hostile attributions and exhibit more aggression towards their peers (Alessandri, 1991; Price & Landsverk). Thus there is

consistency across literature showing difficulties with peer relationships for children who have experienced abuse. Although there is agreement about outcomes related to faulty social information processing, factors that may contribute to this faulty processing have not been fully explored.

Within the literature on social information processing, there is consensus that a child's preexisting database of social knowledge is intimately linked with all of the steps involved in processing social information. The model of relationships a child has internalized becomes part of their preexisting database of knowledge that is subsequently used in social interactions. Although there are clear theoretical links between working models of relationships and social information processing, the association between these constructs has not been examined empirically. Thus, the purpose of the present study was to examine if children's internal models predicted their processing of social information within a sample of children who have experienced abuse. This research specifically examined whether abused children's representations of parent and self predicted their attributions of intent and response generation. This study also investigated if the themes within children's representations predicted attributions of intent and response generation.

Research Questions and Hypotheses

Due to the paucity of research specifically examining the connection between internal models and children's social information processing, it was difficult to make specific hypotheses about this association; however, there has been discussion of an important link between the two (Dodge & Rabiner, 2004). It was hypothesized, therefore, that internal

working models of relationships of abused children would predict their social information processing skills. Specifically, it was expected that children's internal working model of the parent and of the self would predict children's attributions for peers' intentions and children's response generation when faced with problematic peer situations.

Hypothesis 1: Children's *representations of self* would significantly predict attributions of peer intent.

- 1a. Positive self representations would predict the number of peer problems for which children report a hostile attribution of peer intent, with higher rates of positive representations being associated with fewer hostile attributions.
- 1b. Negative self representations would predict the number of peer problems for which children report a hostile attribution of peer intent, with higher rates of negative representations being associated with more hostile attributions.

Hypothesis 2: Children's *representations of self* would significantly predict generation of solutions to peer problems.

- 2a. Positive self representations would predict the number of peer problems for which children report aggressive solutions, with higher rates of positive representations being associated with fewer aggressive responses.
- 2b. Negative self representations would predict the number of peer problems for which children report aggressive solutions, with higher rates of negative representations being associated with more aggressive responses.

Hypothesis 3: Children's *representations of parent* would significantly predict attributions of peer intent.

3a. Positive parent representations would predict the number of peer problems for which children report a hostile attribution of peer intent, with higher rates of positive representations being associated with fewer hostile attributions.

3b. Negative parent representations would predict the number of peer problems for which children report a hostile attribution of peer intent, with higher rates of negative representations being associated with more hostile attributions.

Hypothesis 4: Children's *representations of parent* would significantly predict generation of solutions to peer problems.

4a. Positive parent representations would predict the number of peer problems for which children report aggressive solutions, with higher rates of positive representations being associated with fewer aggressive responses.

4b. Negative parent representations would predict the number of peer problems for which children report aggressive solutions, with higher rates of negative representations being associated with more aggressive responses.

Hypothesis 5: Children's *expressed attachment themes* would significantly predict attributions of intent.

5a. Moral-affiliative themes would predict the number of peer problems for which children report a hostile attribution of peer intent, with higher rates of moral-affiliative themes being associated with fewer hostile attributions.

5b. Conflictual themes would predict the number of peer problems for which children report a hostile attribution of peer intent, with higher rates of conflictual themes being associated with more hostile attributions.

Hypothesis 6: Children's *expressed attachment themes* would significantly predict their responses to problematic social situations.

6a. Moral-affiliative themes would predict the number of peer problems for which children report aggressive solutions, with higher rates of moral-affiliative themes being associated with fewer aggressive responses.

6b. Conflictual themes would predict the number of peer problems for which children report aggressive solutions, with higher rates of conflictual themes being associated with more aggressive responses.

Method

Participants

Participants for the present study were a subset of physically abused children enrolled in a larger study. The purpose of the larger study was to determine predictors of abused children's successful transition from preschool into the elementary school setting. A number of potential predictors were under examination in the larger study, including familial relationships, parenting practices/beliefs, as well as self perceptions and social capabilities of the child. Criteria for inclusion in the larger study included (a) a substantiated report of physical abuse to the social service registry within the prior 12 months, (b) confirmation that the child/parent dyad was living in the same home, (c) an absence of sexual abuse of the child, and (d) the child was in his or her last year of preschool at the time of the initial visit. Although the goal of the study was to have children enter the study while in preschool, a number of children entered the study while in kindergarten or first grade. Children were included in the present study if they completed the measures of social information processing and internal working models.

Nearly all children enrolled in the larger study ($N = 79$) were included in this study. The sample included 65 children who ranged in age from 4 to 7 years ($M=5.5$). A large majority of children in the sample were male (63%) and African American (75%). All children were enrolled in preschool, kindergarten, or first grade at the time of data collection. All parents in the study were mothers or grandmothers of the children. Twelve children in the study had siblings that were also in the study. The present study included these 12 children as

well as their siblings. Each child has unique representations of their experiences and unique social information processing abilities and results were not affected by the inclusion of siblings.

Instrumentation

Measure of internal models. Children's internal models of relationships were measured using a story-stem completion task based on the MacArthur Story Stem Battery (Bretherton, Oppenheim, Buschbaum, & Emde, 1990) and developed by Bretherton and colleagues (Bretherton, Ridgeway, & Cassidy, 1990). Using dolls, children were presented with the beginning of a story and were asked to complete the story. All stories were narrated and acted out by the research assistant using a set of family dolls. Stories portrayed emotionally-laden family interactions designed to be relevant to the lives of young children; content areas included child accident, child injury, parental conflict, child fear, parent-child separation and reunion, and family interaction. Each story is provided in Appendix A.

The MacArthur Story Stem Battery contains many stories and investigators choose those stories and content areas that best fit their research questions. This study included seven stories presented using a combination of dolls that can include a mother, father, grandmother, and two same-sex child dolls. The sex and race of the child dolls were matched to the sex and race of the participant. Stories were administered individually to each child by trained research assistants. The child was instructed to "Listen to the beginning of the story, and then finish it any way you would like to." The research assistant then told the beginning of the story and acted it out, using the dolls. At the conclusion of the story stem, the child

was asked to “Show me and tell me what happens now.” An initial story about a birthday party was presented as a practice story to introduce the children to the task and allow them to gain familiarity with the procedures. Administration of all stories was audiotaped and videotaped for later coding.

Toth, Cicchetti, Macfie, Maughan, and colleagues (2000) reported the inter-rater agreement of the MacArthur narrative coding manual – Rochester Revision ranges from kappa = .71 to 1.0 for all categorical variables. Toth, Cicchetti, Macfie, Rogosch, and colleagues, (2000) also assessed inter-rater reliability of this coding system and reported it to range from kappa = .73 to .95 and the Moral-affiliative and Conflictual composite scores are negatively correlated ($r = -.28, p < .05$). Oppenheim, Emde, and Warren (1997) also found adequate inter-rater reliability of the coding system, kappa = .85. In the present study inter-rater reliability was assessed for approximately 30% of the sample. However, due to the fact that kappa could not be computed for certain variables in this study, percent agreement was calculated for all variables and ranged from 72% to 100% for all variables of interest.

Prior research provides evidence to support the validity of the measure. Principal component analyses showed adequate internal consistency ranging from alpha = .70 to .81 for the parent composite scores (Oppenheim, et al.). Warren, Oppenheim, and Emde (1996) suggested that based on the type of task, the type of data generated and results of their study the narrative measure and coding system are useful assessment tools and provide support for the coding of themes present in the stories. Previous studies have shown that maltreated and non-maltreated children obtained significantly different scores on Child and Parent

Representation composites, and scores on the Conflictual composite mediated the relation between maltreatment status and externalizing disorders (Buchsbbaum, Toth, Clyman, Cicchetti, & Emde, 1992; Toth, Cicchetti, Macfie, Rogosch et al.). These findings suggest that this measure is a valid tool to assess children's internal working models; the measure captures differences between abused and non-abused groups and scores are linked to measures of behavioral outcomes.

Measure of social information processing. The Home Interview with Children (HIWC) was used to assess several aspects of children's social information processing. The HIWC (Appendix B) was developed by investigators on the Fast Track Project to assess children's attributional style for peer intent and children's response generation skills (Conduct Problems Prevention Research Group, 1991). To administer the HIWC, participants were presented with eight vignettes describing peer social problem situations; four of the problems related to exclusion by peers and the other four related to a physical conflict. For example, one item related to exclusion stated "Pretend you see some kids playing on the playground. You would really like to play with them, so you go over and ask one of them if you can play. They say no." Participants listened to the vignette and were asked to pretend that they were the protagonist in the described interaction. The participants were then asked to (a) state why the antagonist child in the vignette did what he or she did and (b) report what they would do about the child's behavior. All vignettes were matched to the gender of the participant.

Dodge and colleagues (2002) reported high inter-rater reliability for the HIWC ($\kappa = .91$). Rains (2002) showed that there is acceptable inter-item reliability and acceptable subscale reliability for Hostile Attributions and Aggressive Response with alpha ranging from .72-.84. Internal consistency was assessed by the developers of the measure using Cronbach's alpha and reliability was found to be .80 for items that assess attributions (Conduct Problems Prevention Research Group, 1991). For the present study, inter-rater agreement of coding was estimated using a second coder for approximately 30% of participants. Kappa was used to estimate inter-rater agreement on variables that were being coded in the measure. In order to maintain a more conservative approach, kappa was computed individually for each scenario rather than for the composite scores. Kappa ranged from .71-1.0 for both variables of interest in this measure. The scenarios that resulted in a lower kappa (e.g, .71) tended to be response generation variables. However, because these codes are then categorized into either aggressive or non-aggressive response type scores, the slight variations in codes did not affect the final aggressive response scores and were therefore considered appropriate to use.

In terms of validity, Dodge, Lochman, Laird, and Zelli (2002) conducted a confirmatory factor analysis which provided support for internal consistency of HIWC scales, and suggested that Intent Attributions (Hostile Attributions) and Response Generation (Aggressive Response) were separate aspects of social information processing. Numerous studies, including Dodge and colleagues (1990), have established adequate validity and de Castro and colleagues (2002) found higher effect sizes for the relation between attributions

and social behavior in studies that used hypothetical vignettes read to children compared to studies that used measures where children watched video taped vignettes or simply looked at pictures that portrayed social situations.

Procedures

Participants were identified through the Department of Social Services (DSS) as having substantiated cases of physical abuse. Parents of abused children in the appropriate age range were sent a letter informing them of the study and providing them with contact information for the study. Interested parents called the research office and were screened for participation by a doctoral level psychologist. A psychosocial interview was conducted during the phone interview screening. This interview involved gathering demographic information and medical and mental health histories for the parent and child. Families were informed that the study included three data collection sessions that would span three years. The family was informed that they would be scheduled to attend one three-hour session each year. Optimally, the initial session was scheduled when the child was in preschool, the second session occurred approximately one year later when the child was in kindergarten, and the third and final session was scheduled when the child was in first grade. Data from the earliest time point available for each child was used in this study. The final sample included data for 28 children in preschool, 27 children in kindergarten, and 10 children in first grade.

After completion of the Psychosocial Interview, families were scheduled for a three-hour data collection session at a university-based clinic. To encourage participation, transportation to the data collection site and childcare were provided. Each parent received

\$70 for participating. To encourage families to participate in all three time-points of the study, the payments were increased by \$10 each year the family participated. Therefore, families that returned for the second and third assessments received \$80 and \$90, respectively. Parents also received a book with contact information for local parenting and family support resources and their child was given educational materials and a small toy. Parent participants were also entered into a monthly drawing for a \$50 cash “bonus” when they scheduled their appointment. Confidentiality was maintained by assigning identification numbers to all participating families and cataloging data according to these numbers in locked filing cabinets. To take further precautions for confidentiality, a Certificate of Confidentiality was obtained from the federal Department of Health and Human Services, which protects families from research information being used in court proceedings. Procedures were approved by the university Institutional Review Board.

Informed consent was obtained from parents at the beginning of each session and assent was obtained from children. Teams of undergraduate research assistants, supervised by a graduate student, administered all measures with parents and children. Undergraduate research assistants were not aware of the families’ involvement with the Department of Social Services or the children’s substantiated histories of abuse. All measures were completed in private interview rooms and participants were given the option to decline to participate in any aspect of the data collection process.

Creating usable data from the MacArthur Story Stem Battery was an involved process that had two main steps: coding each story along a number of dimensions and generating

scores using the codes. A flow chart of score creation is provided in Appendix C. Each story was coded separately using the Rochester Narrative Coding II Manual (2001). This manual is the latest revision of the MacArthur narrative coding manual – Rochester Revision (Robinson, Mantz-Simmons, Macfie, & the MacArthur Narrative Working Group, 1996). Stories were coded by undergraduate research assistants. All coders were unaware of the child's history of maltreatment as well as hypotheses to be tested. All coders completed a series of training sessions with the same graduate student trainer (the author) until 80% minimum inter-rater agreement was established. After reaching reliability during training, coders were assigned a series of tapes to code individually and approximately 30% of the narratives were coded by a second coder to assess inter-rater reliability.

Each of the six stories (excluding the practice story) was coded for representations of self (child representations) and representations of caregivers (parent representations). First, all stories were coded for the presence of positive, negative, and false child representations. Positive child representations included pride, helping, and feeling good about self in any domain (e.g., child helps clean up the spilled juice). Negative child representations included aggression, shame, self-blame, and feeling bad about oneself in any domain (e.g., child hits the mom). False child representations encompassed reports of inappropriate emotions or an overly compliant strategy (e.g., when asked how the child feels about the parents arguing, participant says “good” or “fine”).

Second, stories were coded for the presence of positive, negative, disciplining, controlling, and incongruent parent representations. Positive parent representations included

protection, caretaking, affection, and helpfulness (e.g., parent puts a band-aid on the hurt finger). Negative parent representations involved harsh or punitive behaviors, rejection, and ineffectual actions (e.g., parent rejects a child's bid for closeness, or moves rather than deal with the monster). Disciplining parent representations consisted of descriptions of the parents or grandmother disciplining a child, which may have included physical punishment if it was not overly harsh (e.g., parent put the child in time out, or parent spanked the child).

Controlling parent representations were parental attempts to control the child independent of discipline (e.g., parent tells the child to go to bed, not as a punishment). Incongruent parent representations were when a child told a story about a parent dealing inconsistently with the child (e.g., Mom comforted the child and put a band-aid on the hurt knee, then yelled at the child for falling off the rock).

In addition to specific representations, all stories were coded for themes including: (a) affection (an appropriate display of hugs, kisses, and compliments); (b) affiliation (a positive situation where two or more dolls were participating in an activity together); (c) compliance (when a character yielded to the rules or requests of an adult in the story); (d) empathy/helping (character identified with or demonstrated an understanding of the thoughts or feelings of another); (e) reparation/guilt (character made story stem wrongs/upsets right, made amends, or displayed feelings of guilt); (f) aggression (verbally aggressive comments or physically aggressive acts); (g) verbal conflicts (highly inflected angry verbal remarks such as name calling or yelling); and (h) escalation of conflict (incidence of a coherent escalation in the level of conflict beyond that initially expressed).

Once the stories were coded for child and parent representations and for themes, the codes were used to generate scores using the method employed by Toth, Cicchetti, Macfie, Maughan, and colleagues (2000). Procedures for generating summary scores and composite scores are described next. Self representations were assessed using the child representations scale, which contains positive representations, negative representations, and false representations. The codes for positive, negative and false representations were summed across narratives to create summary scores. The Positive Child Representations composite was the sum of the positive representations scale with a range of 0-6, with a score of 6 corresponding to having a positive representation in each of the 6 stories. The Negative Child Representations composite was the sum of both the negative and false scales. Therefore, the Negative Child Representations composite score was divided by two, to create the average composite score, because it combined two scales (i.e., the negative and false scales). The composite score ranged from 0-6, and a 6 equated with having a negative and false representation in each story.

Parental representations were assessed using composite scores as outlined by Toth and colleagues (1997). Positive representation, Negative representations, Controlling representations, and Incongruent representations were summed across narratives for each child to create a composite score for Positive and Negative Parent Representations. The Positive Parent Representations composite, containing only positive representations, had a range of 0-6, where a 6 corresponded to a positive representation in each story. The Negative Parent Representations composite consisted of scores on negative, controlling and

incongruent representations. Therefore, the Negative Parent Representations composite score was divided by 3, to create an average composite score, because it combined three scales (i.e., negative, controlling, and incongruent). Scores range from 0-6, and a score of 6 showed that there were negative, controlling, or incongruent representations in each story. Please see the flow chart in Appendix B for further explanation of variable composites.

Finally, using the method employed by Toth, Cicchetti, Macfie, Rogosch, and Maughan (2000) the coded themes were used to create composite scores for Moral-Affiliative themes and Conflictual themes. The score for each individual theme was created by summing the presence of that theme across the six stories to create a summary score. Composite scores for Moral-Affiliative and Conflictual themes were generated by averaging the sum of relevant content codes for each theme. The Moral-Affiliative composite consisted of scores for affection, affiliation, compliance, empathy, and reparation/guilt. The total score was the sum of the scores for all five themes divided by 5, in order to create an average composite score. The Conflictual composite consisted of scores for aggression, verbal conflicts, and escalation of conflict. Once again the total score was the sum of the three themes divided by 3, so that an average composite score was created.

The HIWC was used in the proposed study to evaluate the child's tendency to attribute hostile intent to peers in situations in which the peers' intent is ambiguous. Each of the child's responses was coded by trained undergraduate research staff for intent attributions (why the children in the vignette did what they did). Coding procedures were based on those used by the developers of the measure (Conduct Problems Prevention Research Group,

1991). Responses were coded as either Hostile (e.g., "he was being mean"), Non-hostile (e.g., "it was an accident"), or Don't Know (when participant was unable to generate a reason for the child's behavior). The attribution style score was based on the total number of vignettes for which a child gave a response characteristic of a hostile attribution bias (possible range 0-8). Higher scores were equated with higher rates of hostile attributions.

Additionally, the HIWC was used to measure the child's tendency to choose aggressive strategies to resolve peer conflicts (i.e., response decision), by totaling the number of vignettes for which the child provided an aggressive response when asked what he/she would do about the antagonist child's behavior (possible range 0-8). Based on the coding procedures used by the test developers (Conduct Problems Prevention Research Group, 1991; Dodge, Lochman, Laird, & Zelli, 2002), response decisions were first coded by uninformed undergraduate coders as Don't Know, Do Nothing, Ask Why/Ask Again, Command, Adult Punishment/Threat, or Retaliate. Then, responses that were coded as Don't Know, Nothing, Ask Why/Ask Again, or Command were classified as Non-aggressive and responses coded as either Adult Punishment/Threat or Retaliate were classified as Aggressive. Aggressive responses were summed across the eight vignettes to represent aggressive strategies, and a higher score indicated more frequent generation of aggressive strategies.

Results

Descriptive Statistics

To assess normality of data, means, standard deviations, and ranges were calculated for all variables. Values for all variables can be found in Table 1. Additionally, skewness and kurtosis values were computed to examine the distribution of the dependent variables and predictors. The ratio of kurtosis and skewness to its standard error was used as a test of normality for each predictor. Positive Self Representations, Negative Self Representations, Negative Parent Representations, Moral-Affiliative Themes, Conflictual Themes, and Aggressive Response were significantly skewed. Additionally, Negative Self Representations, Moral-Affiliative Themes, and Conflictual Themes were kurtotic. Variables that were skewed or kurtotic were transformed using non-linear log transformations; however, running the analyses using the corrected values did not change the pattern of results. Therefore, results using the uncorrected true values will be presented. All uncorrected skew and kurtosis values can be found in Table 2.

Correlational analyses were used to assess the degree of association among all variables of interest. All correlations can be found in Table 3. T-tests were conducted to assess whether any variables differed significantly by race or gender. Variables did not differ significantly by race; however, moral-affiliative themes differed significantly by gender. Females ($M = 1.33$) had significantly more moral-affiliative themes than did males ($M = .95$) in this study. Finally, in order to assure independence of data all analyses were run both with and without the 12 siblings that were included in the study. Including the siblings in the

analyses did not change the significance of any of the predictors in the study. Therefore, to increase the sample size the analyses that included the siblings will be presented in the following sections.

Representations of Self as Predictors of SIP

First, the degree to which children's representations of themselves predicted their attributions of peer intent, specifically hostile attributions, was examined using a multiple regression analysis. Positive Self Representations was not a significant predictor of Hostile Intent, $\beta (65) = .099, t = -.793, p = .431$; nor was Negative Self Representations a significant predictor of Hostile Intent, $\beta (65) = .152, t = -1.218, p = .228$. The model as a whole accounted for 3.3% of the variance in attributions of hostile intent.

Second, to assess whether children's representations of themselves predicted their solutions to peer problems, specifically the number of aggressive responses, a multiple regression analysis was conducted. The model accounted for 7.1% of the variance in Aggressive Response. Positive Self Representations was found to be a significant predictor of Aggressive Response in the expected direction $\beta (65) = -.265, t = -2.165, p = .034$. However, Negative Self Representations did not significantly predict Aggressive Response, $\beta (65) = .033, t = .273, p = .786$.

Representations of Parent as Predictors of SIP

A multiple regression analysis was also used to determine whether children's representations of their parents predicted their hostile attributions of peer intent. Positive Parent Representations was not found to be a significant predictor of Hostile Intent, $\beta (65) = -$

.054, $t = -.424$, $p = .673$; nor was Negative Parent Representations found to be a significant predictor of Hostile Intent, $\beta (65) = .055$, $t = .434$, $p = .666$. The entire model accounted for only .6% of the variance in Hostile Intent.

The degree to which children's representations of their parents predicted their aggressive responses to peer problems was analyzed by using multiple regression. The model as a whole predicted 2.9% of the variance in Aggressive Response. Positive Parent Representations were not found to significantly predict Aggressive Response, $\beta (65) = -.099$, $t = -.790$, $p = .432$; nor was Negative Parent Representations a significant predictor of Aggressive Response, $\beta (65) = -.138$, $t = -1.099$, $p = .276$.

Expressed Attachment Themes as Predictors of SIP

In order to examine whether the moral-affiliative themes and conflictual themes expressed in children's stories would predict the number of problems for which they would attribute hostile peer intent a multiple regression analysis was used. Children's moral-affiliative themes differed by gender and therefore gender was entered initially into the model as a covariate. The overall model accounted for 1.5% of the variance in Hostile Intent. There were no significant relationships found with Moral-affiliative themes predicting Hostile Intent, $\beta (65) = -.098$, $t = -.733$, $p = .466$; nor with Conflictual themes predicting Hostile Intent, $\beta (65) = -.025$, $t = -.190$, $p = .850$.

Finally, multiple regression was again used to examine whether children's attachment themes, both moral-affiliative and conflictual themes, predicted aggressive responses to peer problems. Once again, because moral-affiliative themes differed by gender it was entered in

the model in the first step of the analysis. This model accounted for 1.6% of the total variance in Aggressive Response. Moral-affiliative themes did not significantly predict Aggressive Response, $\beta (65) = -.076, t = -.569, p = .572$; nor did Conflictual themes predict Aggressive Response, $\beta (65) = .011, t = .088, p = .931$.

Discussion

Numerous studies have documented the negative effects that maltreatment can have on children's familial and peer relationships (Toth & Cicchetti, 1996; Waldinger et al., 2001). Specifically, maltreated children's internal models of relationships have been linked to poor relationships with caregivers (Toth et al., 1997) as well as to problematic peer relationships (Bolger et al., 1998). To understand maltreated children's social interactions with peers, it is important to consider the manner in which maltreated and non-maltreated children process social information. Specifically, differences have been found in the social information processing of maltreated children compared to their non-maltreated peers, such that maltreated children are more likely to attribute hostile intent to ambiguous peer behaviors and create less socially appropriate responses than their non-maltreated peers (Alessandri, 1991; Price & Landsverk, 1998). It has been suggested the negative ways in which maltreated children process social information can lead to their problematic social relationships (Price & Landsverk). Although differences in social information processing have been documented, factors such as internal working models that may contribute to these differences had not been explored. Theoretical links between children's internal models and their social information processing have been made; however, this link had not been fully

tested. Therefore, the purpose of this study was to examine whether the internal models of maltreated children predicted their social information processing, specifically examining attributions of intent and response generation.

Correlations within Children's Internal Working Models

Previous researchers who have used the MacArthur Story Stems to explore the internal models of maltreated children have found that various aspects of children's models are significantly correlated with each other (Toth, Cicchetti, Macfie, Maughan, & Vanmeenen, 2000). A number of these findings were replicated in this study. Specifically, children who viewed their attachment relationship with their parents positively also viewed themselves positively. Results also demonstrated that children who viewed their parents negatively likewise viewed themselves negatively in their attachment relationships. These results suggest that the ways in which maltreated children view themselves and their caregivers are not completely independent of one another. Therefore, maltreated children may form internal models where their representations of themselves are tied to how they are representing their parents and these children may not have completely separate views of each person in their attachment relationships. These associations are to be expected because a child's internal models combine the various aspects of his or her attachment relationship into an internal working model (Bowlby, 1973; Crittenden, 1990; Toth, Cicchetti, Macfie, Maughan, & Vanmeenen, 2000). Therefore, these correlations are consistent with the attachment literature and provide some degree of support for the validity of the measure of children's internal models.

Additionally, intercorrelations revealed that children who viewed themselves and their parents positively also portrayed their relationships as containing more positive characteristics and shared events (e.g., time spent with family, affection, and empathy). Finally, results suggested that children who viewed themselves negatively also viewed their attachment relationship as having high rates of conflict (e.g., aggression, verbal conflict, or physical conflict). Therefore, maltreated children not only integrate themselves and their caregivers together in their models of attachment relationships, but they also incorporate general characteristics of the relationships into the connected model. This provides further support for the idea that maltreated children create models of their relationships that link all aspects of that relationship together. These findings would suggest that when a child has formed a negative model of his or her relationship he or she has incorporated multiple aspects of the relationship, including characteristics of a caregiver and characteristics of interactions with the caregiver. Although clinical implications of these findings should be considered preliminary, one might conclude that representations of the child, their parent, and the various features of the relationship (e.g., aggression between family members, verbal conflict, and physical conflict) should all be addressed during intervention in order to fully challenge a negative model.

Internal Models as Predictors of Social Information Processing

As hypothesized, results indicated that children with more positive views of themselves had fewer aggressive responses to possible peer conflicts. This finding suggests that maltreated children who view themselves in a positive manner may transfer that positive

view to social relationships. Such a finding supports the hypothesis that maltreated children likely use their models when encountering “new” relationships such as those in the hypothetical stories. It is possible that their view of themselves, which is derived from their working model, might influence how they act in a social context. Previous research has provided a theoretical link for this finding (Crick & Dodge, 1994; Dodge & Rabiner, 2004); however, the actual link has not been established before this study. This finding supports the theoretical link between aspects of children’s internal models and how they process social information. Specifically, this result suggests that it might be helpful to improve children’s negative views of themselves in their attachment relationships in terms of creating more positive responses to conflicts in social situations. Maltreated children do not always view themselves in a positive manner in their relationships (Kaufman & Cicchetti, 1989); therefore, intervening and attempting to change children’s views of themselves may help these children to have positive social responses. Additionally, because maltreated children’s views of themselves are related to how they portray their parents and other aspects of their attachment relationships it may be important to address all aspects of the relationship when intervening.

Although there is a theoretical link suggesting that other aspects of internal models (i.e., representations of the parent and themes within the attachment relationship) should significantly predict social information processing, that link was not found in this study. Parent representations, attachment themes and negative self representations were not significant predictors of whether children attributed hostile intent to peer actions or

responded aggressively to the peer's action. One possible explanation for the non-significant results relates to the measure of SIP that was used. Previous studies have shown that the variables of Hostile Intent and Aggressive Response in the HIWC are significantly correlated (Price & Landsverk, 1998; Shultz & Shaw, 2003); however, that was not the case in this study ($r = .23, p = .06$). The fact that the correlation between the variables in this study was not as strong as correlations found in previous studies may suggest that the sample in this study was different in some manner (e.g., age, ability to understand the behavior's of others, etc.) and the HIWC may not be as valid a measure of social information processing for this sample.

Additionally, the HIWC only taps two aspects of children's social information processing. It is possible that, although internal models did not predict the aspects of social information processing addressed in this study, models might predict other components of Crick and Dodge's (1994) model of social information processing. For example, maltreated children's internal models may predict attention to or encoding of social information. Previous research has shown that maltreated children differ from non-maltreated children in how they encode social cues (Dodge et al., 1990; Dodge et al., 1995) and it is possible that differences in internal models contribute to the differences in how social cues are encoded. Burks, Laird, Dodge, Pettit, and Bates (1999) suggested that it is possible that the effect children's knowledge structures have on their behavior is mediated by steps in the social information processing other than intent attributions. Thus it is possible that the relation

between internal models and social information processing could show up in a step prior to intent attributions or response generation.

It is also possible that, rather than predicting earlier stages in social information processing, internal models affect a later stage in social information processing, such as children's behavioral outcomes. Indeed, previous research has linked aspects of internal models to externalizing behaviors (Toth, Cicchetti, Macfie, Rogosch & Maughan, 2000) suggesting that there is an association between internal models and behavioral outcomes in social settings. Therefore, it is possible that rather than internal models directly predicting social information processing, social information processing serves as a moderator in the link between internal models and behavioral outcomes. A moderation model would suggest that social information processing abilities change the association that exists between internal models and behavior outcomes.

Another possible explanation of these non-significant findings is related to the potentially restricted ranges of data that were collected. In general, the mean scores across all variables were low (i.e., a floor effect might have been present), which could limit the ability to find strong associations between independent and dependent variables. In support of this explanation, participants portrayed a greater range of positive self representations (0-5) than negative self representations (0-2), and only children's positive representations of themselves predicted lower aggressive response rates. The more restricted range in negative representations may have limited the ability to find that negative representations also predicted aggressive responses in maltreated children.

A final explanation for the non-significant findings is that the theory of internal working models proposes that these models are changeable and are often altered by experiences with new relationships (Bowlby, 1973). As children get older they may have increased experience with social relationships outside the family and therefore may not rely as heavily on their internal models developed during early interactions with parents to guide their social responses. Gains in social understanding also have been linked to a child's ability to understand classroom social activities such as playing with other children (Porath, 2003). This finding suggests that as children have increased experience in the school setting they may also be gaining social knowledge. The additional social experience and knowledge may alter the relationship between internal models and social information processing. It is possible that, because this sample included children who were already attending formal school, their school experience and exposure to many new relationships might have altered their working models and reduced the relation between internal models and social information processing.

Study Limitations

Although efforts were made to ensure that this study and the data collected were sound, the study was not without limitations. One major limitation was that the children in the study varied in grade level and ranged in age from 4 to 7 years old. Previous research has documented that extensive developmental change in the ability to understand the behavior of others and anticipate future events occurs between the ages of 4 and 7 years old (Astington & Olsen, 1995; Atance & Metzlof, 2005; Lewis, 1994). This ability to attribute mental states to

oneself and others and understand that the behavior of others can differ from one's own behavior is referred to as "theory of mind." Previous research also has shown that maltreated children in preschool show a delay in the development of theory of mind when compared to non-maltreated preschoolers suggesting that many maltreated children in this sample may not have been able to fully interpret the behavior of other children (Cicchetti, Rogosch, Maughan, Toth, & Bruce, 2003). In previous research the HIWC has been used mainly with children in Kindergarten or older; therefore, including a large portion of maltreated preschool children (43% of the sample) in this sample may have reduced the validity of the measure. Younger children, especially those who have just entered preschool may not have fully understood how to respond to the vignettes presented in the HIWC, which could have made their responses to the measure less valid. Younger children in this study appeared to have some difficulty responding appropriately to the questions asked during the HIWC, such that it was not uncommon for children to express why they did the action in the story rather than why the peer did the action (e.g., saying "I hit him in the back because I wasn't looking" instead of "he hit me in the back because he wasn't looking"). Unfortunately, this was the only measure of social information processing used in this study. Using multiple measures would have strengthened the study.

An additional limitation relates to the coding procedures for the Narrative Story Stems. Coding for this measure involved a "presence" or "absence" method that has been used in a number of previous studies (Toth et al., 1997; Toth, Cicchetti, Macfie, Maughan, & Vanmeenen, 2000; Toth, Cicchetti, Macfie, Rogosch & Maughan, 2000). This type of coding

may add to the problem of restricted range within the data because the procedure does not allow for coding the same theme or representation more than one time per story. To illustrate, allowing multiple coding of items would make it possible for a child who had three positive representations of their parent in each of the six stories to have a score of 18 for positive parent representations rather than having a score of six. Allowing multiple coding of items may make the composite scores children receive in this measure more robust than coding just the presence/absence of items.

A final limitation of this study is that fathers were not included in the sample. This is a limitation that exists for the majority of attachment research, as it has consistently involved mostly mothers. Although, the parents were not directly involved in this study, there may have been an indirect influence of having only mothers and grandmothers involved. Although fathers were not participants in the study the child's narrative representations of parents included both mothers and fathers; therefore it could be beneficial to include the father in the study as well as the mother. This is a limitation that should be addressed across the literature base by making a stronger effort to include fathers in future studies so that the research is not solely directed toward the mother child relationship.

Directions for Future Research

Although the hypotheses that internal models predict social information processing were not fully supported in this study it will be important for future research to further examine how these variables relate to one another in order to fully assess all possible associations between these variables. As mentioned earlier it is possible that internal models

predict a different stage of social information processing. Therefore, future studies should measure the early stages of information processing (e.g., attending to social cues and encoding these cues). Internal models may influence how a child attends to social information that they are presented with, in that depending on their internal model they may only attend to certain aspects of the social situation. Additionally, internal models may influence how a child encodes aspects of social situations.

Even though a direct relation between internal models and social information processing was not found in this study, it will be important for future research to continue to examine these variables and explore if they relate in a different manner, such as through moderation. Previous research has shown that maltreated children's internal models relate to behavioral outcomes (Teisl & Cicchetti, 2008; Toth, Cicchetti, Macfie, Rogosch & Maughan, 2000) and aspects of social information processing may still have an effect within this relationship. That is, children's social information processing, specifically attributions of intent and response generation, may moderate the link between internal models and behavioral outcomes. In a moderation model, social information processing deficits might exacerbate the impact of negative representations on behavior, and well-developed social information processing skills might serve as a buffer for children with negative representations.

Finally, it will be important for future research to explore if the associations that were found among aspects of internal working models and between positive self representations and aggressive response are also true for non-maltreated children. Additional associations

that were not found in this study of maltreated children may be present in non-maltreated children. Maltreated children have shown differences from non-maltreated children on both variables included in this study. It is possible that based on these differences there are also contrasts between maltreated and non-maltreated children in the way these variables relate to each other. Therefore, it is extremely important that these variables are explored using a sample of maltreated and non-maltreated children so that further differences or similarities between maltreated children and their non-maltreated peers can be discovered.

In summary, the current study was designed to investigate whether internal working models predicted aspects of social information processing in a sample of young maltreated children. Results of the present study failed to fully support the notion that children's representations of themselves, their parents, and attachment themes that exist within their internal models predict their intent attributions and response generation in hypothetical social scenarios. However, the study did support previous findings of the relationship between aspects of children's internal models by showing that child representations are related to both parent representations and attachment themes. In addition, the study showed that maltreated children who positively represent themselves are also likely to have fewer aggressive responses in social situations. These findings provide important information for working with maltreated children and how to help them achieve an optimal outcome. It is also hoped that this study will encourage future investigations of the influence of both children's attachment and their social information processing, as prior research has shown that both

areas of functioning, independently, contribute to the social adjustment of maltreated children.

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Table 1

Mean Raw Scores and Standard Deviations of Measures for Full Sample

| Variable | <i>M</i> | <i>SD</i> | Range |
|---|----------|-----------|---------|
| Measures of Internal Working Models | | | |
| Positive Self Representations | 1.21 | 1.31 | 0.0-5.0 |
| Negative Self Representations | .39 | .49 | 0.0-2.0 |
| Positive Parent Representations | 2.74 | 1.38 | 0.0-6.0 |
| Negative Parent Representations | .58 | .51 | 0.0-2.3 |
| Moral-Affiliative Themes | 1.07 | .59 | 0.0-3.8 |
| Conflictual Themes | .62 | .54 | 0.0-2.0 |
| Measures of Social Information Processing | | | |
| Hostile Intent | 3.95 | 2.09 | 0.0-8.0 |
| Aggressive Response | 2.51 | 2.19 | 0.0-8.0 |

Table 2

Skew and Kurtosis of Measures for Full Sample

| Variable | <i>Skew</i> | <i>S.E.</i> | <i>Kurtosis</i> | <i>S.E.</i> |
|---|-------------|-------------|-----------------|-------------|
| <hr/> | | | | |
| Measures of Internal Working Models | | | | |
| Positive Self Representations | 1.13 | .295 | 0.86 | .582 |
| Negative Self Representations | 1.46 | .295 | 2.07 | .582 |
| Positive Parent Representations | 0.34 | .295 | 0.31 | .582 |
| Negative Parent Representations | 0.84 | .295 | 0.59 | .582 |
| Moral-Affiliative Themes | 1.62 | .295 | 6.19 | .582 |
| Conflictual Themes | 1.15 | .295 | 1.44 | .582 |
| Measures of Social Information Processing | | | | |
| Hostile Intent | 0.13 | .297 | -.911 | .586 |
| Aggressive Response | 0.88 | .297 | -.042 | .586 |

Table 3*Correlations Among All Variables*

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|-----------------------------|-------|-------|-------|------|------|------|-----|----|
| 1. Positive Child Reps | -- | | | | | | | |
| 2. Negative Child Reps | .03 | -- | | | | | | |
| 3. Positive Parent Reps | .30* | -.07 | -- | | | | | |
| 4. Negative Parent Reps | .21 | .32** | .04 | -- | | | | |
| 5. Moral-Affiliative Themes | .51** | .03 | .62** | .20 | -- | | | |
| 6. Conflictual themes | -.02 | .40** | -.01 | .23 | .00 | -- | | |
| 7. Hostile Intent | .10 | .15 | -.05 | .06 | -.11 | -.01 | -- | |
| 8. Aggressive Response | -.27* | .03 | -.10 | -.14 | -.10 | .03 | .23 | -- |

* $p < .05$; ** $p < .01$

Appendix A

Narrative Story Stems: Administration

Introduction of Figures

Experimenter: **“Look who we have here”** (bring out family)

“Here’s our family. Look. This is grandma, this is daddy, this is mommy, and these are the girls, Bria and Megan (and these are the boys, Sean and Chris).” (show them to the child as you name them).

Experimenter: **“Who do we have here?”** (point to family figures as child names them)

“You know what? I’ve got an idea. Let’s pretend to make up some stories about them. How about if I start a story about our family and you finish it.”

Warm-Up Story: Birthday Party

Props: Table, chairs, birthday cake

Characters: All the characters

Set up: Place figures on the table according to the picture.

Experimenter: **“Here’s their table and chairs, and what’s this?”** (show cake to child and wait for child to name it)

As needed, state, **“What kind of cake?” “Yes, it’s a birthday cake.”**

“Listen carefully to the story. The Mommy has baked this beautiful birthday cake and she calls out…”

Mother: **…“Come on grandma, come on Dad, come on boys/girls, let’s have a birthday party.”**

Experimenter: **“Show me and tell me what happens now”** (invitingly). Let the child play with the figures or tell a story yourself if child does not.

Prompts: If the child wants to sing “Happy Birthday”, join him/her and sing along.

“Show me how they eat the cake”

What might the children say about this beautiful cake?”

General prompting: If child performs ambiguous actions with figures ask **“What are they doing?”** and if the child uses an ambiguous pronoun when talking about the figures, ask **“who was doing it?”** Experimenter can also repeat the child’s statement in question form, to verify what the child said (**“The mommy wiped the juice? And then what?”**)

Spilled Juice

Props: Table, chairs, cups, plates

Characters: Mom, Dad, both children

Experimenter: **OK. I think I have an idea for a new story** (put away the grandmother and cake, and set out the figures as below:

(shake the box with the plates and cups) **“Can you help me set the table for dinner”** (give box to child, wait till child has set the table, help if necessary).

“Now put the family around the dinner table so they’re ready to eat”
(wait till child has placed the figures).

“Here is our family eating dinner and Sean/Bria gets up and reaches and spills his/her juice” (make figure knock cup off toy-table so cup is visible to child).

Mother: **“Sean/Bria, you spilled your juice!!”** (reproachful tone of voice) (stand the mother up, and face the child doll, and move her up and down while she is “talking”)

Experimenter: **“Show me and tell me what happens now.”**

Prompting:

Prompt (if child does not spontaneously mention): **“What do they do about the spilled juice?”**

Prompt if child only gives one response: **“Anything else?”, “What else?” or “Then what?”.**

Hurt Knee

Props: Rock, green felt
Characters: Mom, Dad, both children

Experimenter: **“OK, I have an idea for another story. You put our family there and get them ready for the next one while I put these things away.”**

“OK, look what I’ve got” (set out piece of green felt and rock).

“This is the park. Do you sometimes go to the park with your Mom and Dad?”

“Here is our family and they’re out walking in the park (stand all the dolls up and move them to the felt as you talk), **and at this park there is this high, high rock.”**

Child: **“Look mommy and daddy. Watch me climb this high, high rock.”** (make child figure climb rock, then fall off).

“Boo-hoo, I’ve hurt my knee” (crying voice).

Experimenter: **“Show me and tell me what happens now.”**

Prompt if child does not spontaneously mention: **“What do they do about the hurt knee?”**

Experimenter: **“All done? Shall we try another? Let’s put these away.”** Leave one child and the parents out on the table.

Monster in the Bedroom

Props: Bed, dresser

Characters: Mom, Dad, one child

Experimenter: **“Can you get the family ready for the next one?”** (set out the props as shown)

Experimenter: **“Look what happens now. Listen carefully.”**

Mother: (to small child figure) **“It’s bedtime. Go up to your room and go to bed.”**

Father: **“Go up to bed now.”**

Child: **“OK, Mommy and Daddy, I’m going.”**

Experimenter: As child walks to the room, state, **“Bria/Sean goes upstairs to her/his room, and she/he goes...”**

Child: **“Mommy! Daddy! There’s a monster in my room! There’s a monster in my room!”** (alarmed tone of voice)

Experimenter: **“Show me and tell me what happens now.”**

Prompt if child does not mention spontaneously: **“What do they do about the monster in the room?”** If necessary, use other prompts.

Experimenter: **“OK, let’s get ready for the next one.”**

Lost Keys

Props: None

Characters: Mom, Dad, one child

Setting: Mom and Dad are facing each other in glare positions.

Experimenter: Make child walk into the room, and explain, **“Bria/Sean comes in the room and sees Mom and Dad looking at each other like this.** Look at my face (show angry expression).

Mother: (angrily) **“You lost my keys!”**

Dad: **“I did not!”**

Mom: **“Yes you did, you always loose my keys!”**

Dad: **“I did not lose them this time.”**

Experimenter: **“Show me and tell me what happens now.”**

Prompt: If child does not enact end or resolution of conflict. **“What’s going to happen about Mom and Dad’s argument?”**

Experimenter: **“OK, let’s get ready for the next story”**

Departure

Props: Car, green felt

Characters: Mom, Dad, Grandma, both children

Experimenter: Set out family and green felt and car as shown, with car in front of the child. Bring grandmother out of the box. **“Let’s use the grandmother this time”**

“Here we have their front lawn, and here we have their car. This is the family car”

“You know what it looks like to me, (the child’s name). It looks like the mommy and the daddy are going on a trip.”

Mother: **“O.k. boys (girls). Your dad and I are going on a trip. We are leaving on our trip now. See you tomorrow. Grandma will stay with you.”**

Experimenter: **“Show me and tell me what happens now.”**

Let the child put the figures in the car and make the car drive off. Only intervene if the child refuses or seems unable to make the car drive away. In either case, make the car *disappear from the table top*).

If the child wants to retrieve the car, state, **“No, they’re not coming back yet”**.

If the child puts everyone in the car, state, **“No, only the mother and father are going”**.

Experimenter: **“And away they go...”**

Prompt: **“What do the children do now, while the parents are away?”** or use other prompts as needed.

Reunion

Props: Car, green felt

Characters: Mom, Dad, Grandma, both children

Experimenter: **“OK, you know what? It’s the next day and the grandma looks out of the window (make grandma look toward car) and she goes...”**

Grandmother: **“...Look boys (girls), here comes your Mommy and Daddy. They’re home from their trip.”** Bring out the car from under the table. Do *not* move it toward the child.

Experimenter: **“Show me and tell me what happens now”**. (Let child drive car toward “home”).

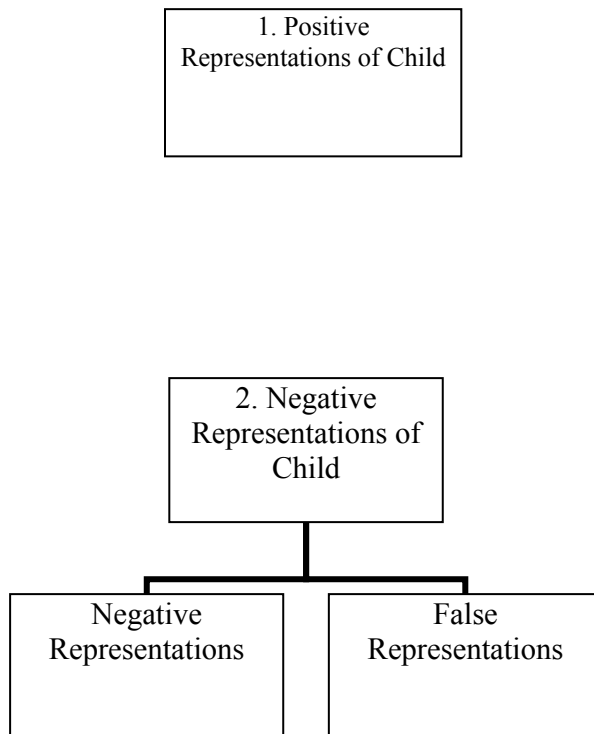
Prompt if child does not spontaneously take the figures out of the car: **“What do they do, now that the mom and dad are home?”**. Also use other prompts where appropriate.

Experimenter: Closing, using your own words.

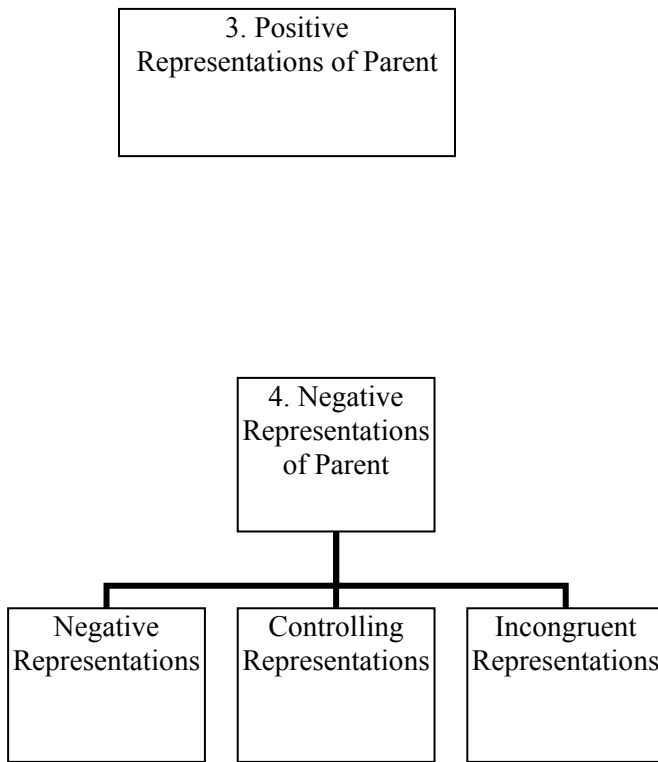
Appendix B

Flow Chart for Narrative Story Stems Coding

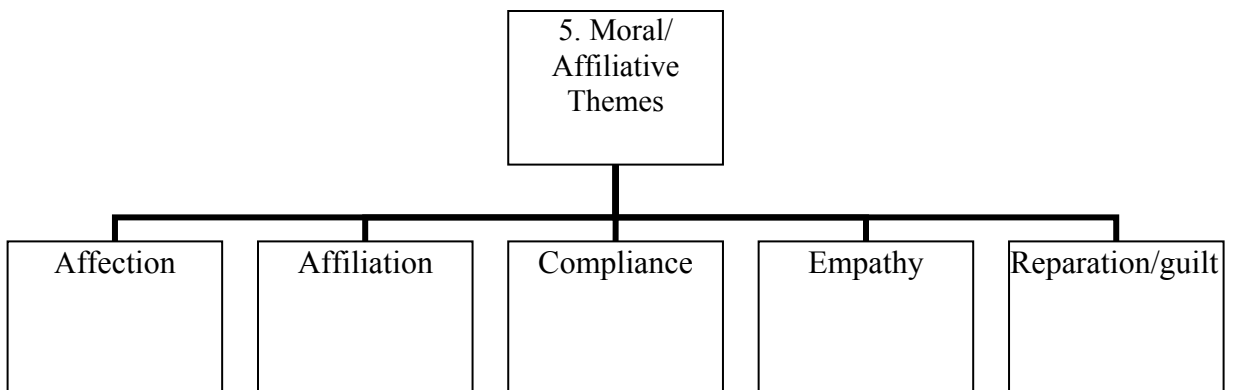
Representations of Child

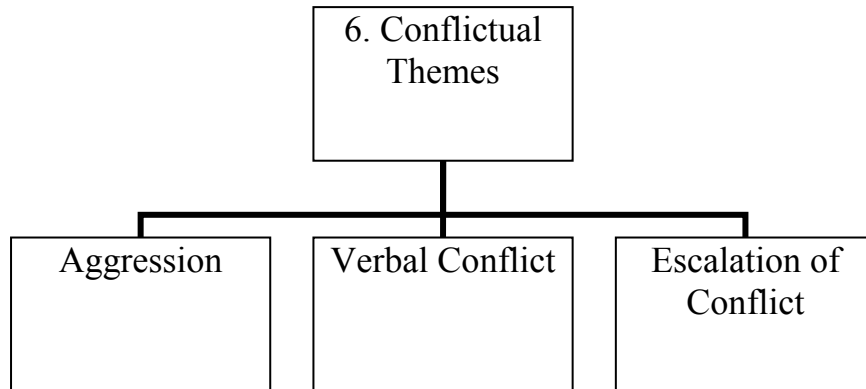


Representations of Parent



Attachment Themes





Appendix C

ID# _____ Date: _____ Interviewer: _____ Scorer: _____

Home Interview with Children

- A. Pretend that you are standing on the playground playing catch with a kid named Todd/Jessica. You throw the ball to Todd/Jessica and he/she catches it. You turn around, and the next thing you realize Todd/Jessica has thrown the ball and hit you in the middle of your back. The ball hits you hard, and it hurts a lot.

Why do you think Todd/Jessica hit you in the back?

| | | |
|------------|---------|------------|
| 1 | 2 | 3 |
| NONHOSTILE | HOSTILE | DON'T KNOW |

What would you do about Todd/Jessica after he/she hit you?

| | | | | | |
|------------|---------|-----------------------|---------|------------------------|-----------|
| 0 | 1 | 2 | 3 | 4 | 5 |
| DON'T KNOW | NOTHING | ASK WHY, ASK AGAIN | COMMAND | ADULT PUNISH/THREAT | RETALIATE |

- B. Pretend you see some kids playing on the playground. You would really lie to play with them, so you go over and ask one of them, a kid named Alan/Leah, if you can play. Alan/Leah says no.

Why do you think Alan/Leah said no?

| | | |
|------------|---------|------------|
| 1 | 2 | 3 |
| NONHOSTILE | HOSTILE | DON'T KNOW |

What would you do about Todd/Jessica after he/she hit you?

| | | | | | |
|------------|---------|-----------------------|---------|------------------------|-----------|
| 0 | 1 | 2 | 3 | 4 | 5 |
| DON'T KNOW | NOTHING | ASK WHY, ASK AGAIN | COMMAND | ADULT PUNISH/THREAT | RETALIATE |

- C. Pretend you are walking to school and you're wearing brand new sneakers. You really like your new sneakers and this is the first day you have worn them. Suddenly, you are bumped from behind by the kid named John/Lisa. You stumble into a mud puddle and your new sneakers get muddy.

Why do you think John/Lisa bumped you?

| | | |
|------------|---------|------------|
| 1 | 2 | 3 |
| NONHOSTILE | HOSTILE | DON'T KNOW |

What would you do about Todd/Jessica after he/she hit you?

| | | | | | |
|------------|---------|--------------------|---------|---------------------|-----------|
| 0 | 1 | 2 | 3 | 4 | 5 |
| DON'T KNOW | NOTHING | ASK WHY, ASK AGAIN | COMMAND | ADULT PUNISH/THREAT | RETALIATE |

- D. Pretend you are a new kid in school and you would really like to make friends. At lunch time, you see some kids you would like to sit with and you go over to their table. You ask if you can sit with them and a kid named Carl/Carolyn says no.

Why do you think Carl/Carolyn said no?

| | | |
|------------|---------|------------|
| 1 | 2 | 3 |
| NONHOSTILE | HOSTILE | DON'T KNOW |

What would you do about Todd/Jessica after he/she hit you?

| | | | | | |
|------------|---------|--------------------|---------|---------------------|-----------|
| 0 | 1 | 2 | 3 | 4 | 5 |
| DON'T KNOW | NOTHING | ASK WHY, ASK AGAIN | COMMAND | ADULT PUNISH/THREAT | RETALIATE |

- E. Pretend you go to the first meeting of a club you want to join. You would like to make friends with the other kids in the club. You walk up to some of the other kids and say “Hi!”, but they don’t say anything back.

Why do you think the other kids didn’t answer you?

| | | |
|------------|---------|------------|
| 1 | 2 | 3 |
| NONHOSTILE | HOSTILE | DON’T KNOW |

What would you do about Todd/Jessica after he/she hit you?

| | | | | | |
|---------------|---------|-----------------------|---------|------------------------|-----------|
| 0 | 1 | 2 | 3 | 4 | 5 |
| DON’T KNOW | NOTHING | ASK WHY, ASK AGAIN | COMMAND | ADULT PUNISH/THREAT | RETALIATE |

- F. Pretend you are walking down the hallway at school. You’re carrying your books in your arm and talking to a friend. Suddenly, a kid named Brett/Wendy bumps you from behind. You stumble and fall and your books go flying across the floor. The other kids in the hall start laughing.

Why do you think Brett/Wendy bumped into you?

| | | |
|------------|---------|------------|
| 1 | 2 | 3 |
| NONHOSTILE | HOSTILE | DON’T KNOW |

What would you do about Todd/Jessica after he/she hit you?

| | | | | | |
|---------------|---------|-----------------------|---------|------------------------|-----------|
| 0 | 1 | 2 | 3 | 4 | 5 |
| DON’T KNOW | NOTHING | ASK WHY, ASK AGAIN | COMMAND | ADULT PUNISH/THREAT | RETALIATE |

- G. Pretend it is your first day at school. You don’t know a lot of the other kids and you would like to make friends with them. You see some kids playing a rope game so you walk up and say “Hi!” but no one answers you.

Why do you think the other kids didn't answer you?

| | | |
|------------|---------|------------|
| 1 | 2 | 3 |
| NONHOSTILE | HOSTILE | DON'T KNOW |

What would you do about Todd/Jessica after he/she hit you?

| | | | | | |
|---------------|---------|-----------------------|---------|------------------------|-----------|
| 0 | 1 | 2 | 3 | 4 | 5 |
| DON'T KNOW | NOTHING | ASK WHY, ASK AGAIN | COMMAND | ADULT PUNISH/THREAT | RETALIATE |

H. Pretend you and your class went on a field trip to the zoo. You stop to buy a coke. Suddenly, a kid named David/Allison bumps your arm and spills your coke all over your shirt. The coke is cold, and your shirt is all wet.

Why do you think David/Allison bumped into you?

| | | |
|------------|---------|------------|
| 1 | 2 | 3 |
| NONHOSTILE | HOSTILE | DON'T KNOW |

What would you do about Todd/Jessica after he/she hit you?

| | | | | | |
|---------------|---------|-----------------------|---------|------------------------|-----------|
| 0 | 1 | 2 | 3 | 4 | 5 |
| DON'T KNOW | NOTHING | ASK WHY, ASK AGAIN | COMMAND | ADULT PUNISH/THREAT | RETALIATE |