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Relations between Parenting, Family Context, and Emotion Regulation in the Development of Psychopathology in Young Maltreated Children

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PARENTAL DETERMINANTS OF EMOTION REGULATION IN A MALTREATED SAMPLE

A Thesis

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Table of Contents

List of Tables

Abstract

The current investigation examines the relationship between parenting, emotion regulation, and symptoms of psychopathology in maltreating and non-maltreating parent-child dyads. The participants in this study were 114 children (67 maltreated and 57 non-maltreated) from ages 1 to 4. Child affect and effortful control along with parent affect were observed during a parent-child interaction procedure. Symptoms of psychopathology were measured using the Child Behavior Checklist. The maltreated children in this study exhibited more irritability/anger, affect lability, and internalizing symptomatology, along with less positive affect than their non-maltreated peers. These data also suggest that parental affect is related to internalizing symptomatology; but this relationship is stronger for the maltreated group. Contrary to expectations emotion regulation did not fully mediate the relationship between parenting and psychopathology. Clusters of maladaptive affect, "angry" and "labile", emerged in the maltreated group along with a more "resilient" group characterized by positive affect, positive parental affect, and lower levels of psychopathology.

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Introduction

In 2000 there were 879,000 validated reports of child abuse and neglect in the United States (NCANDS, 2002) and thousands of other incidents remain unvalidated and unreported. The highest rates of abuse, 15.7 per 1,000, are found in the birth to three age group (NCANDS, 2002), when children are already most vulnerable to developmental disruptions. Consequently, the magnitude of this problem is tremendous and poses particular concerns for those interested in the effects of stress on early development. Furthermore, maltreatment is not a unitary concept and provides for an interesting research construct. Subtypes of abuse include physical abuse, sexual abuse, neglect, lack of supervision, and emotional abuse (Barnett, Manly, & Cicchetti, 1993). The abuse may be chronic or may occur as a single event. The perpetrator may be someone close to the child or a stranger. Despite the heterogeneity of maltreatment, the literature clearly shows that maltreated children consistently experience a variety of psychopathologies.

Maltreated children exhibit dysfunctions in all domains of development: cognitive, physical, and social/emotional. For example, recent research has focused on the differences of brain development in children who have experienced maltreatment early in childhood. Recent research on stress and neuroplasticity has found that maltreatment early in development was associated with alterations in the structure of certain regions of the brain, specifically relating to neuronal atrophy of the hippocampus (Kaufman & Charney, 2001) and increased levels of cortisol (Cicchetti & Rogosch, 2001) in maltreated children with clinical levels of internalizing behaviors. The experience of maltreatment has also been shown to affect cognitive development, as demonstrated by deficits in cognitive control functioning (Reider & Cicchetti,

1989), and negative self and maternal representations (Toth, Cicchetti, Macfie, & Emde, 1997; Waldinger, Toth, & Gerber, 2001).

However, it is within the social/emotional domain that maltreated children seem to exhibit the most impairing behaviors. Maltreated children are less socially competent (George & Main, 1979; Herrenkohl & Herrenkohl, 1981; Sheilds, Cicchetti, & Ryan, 1994), are more often rejected by peers, and exhibit higher levels of aggression with peers (Bolger & Patterson, 2001; Shields& Cicchetti, 1998). They experience more internalizing symptoms such as depression (Kaufman & Charney, 2001; Toth, Manly, & Cicchetti, 1992), anxiety, and withdrawal (Cicchetti, Ganiban, & Barnett, 1991). In addition, maltreated children experience higher incidences of dissociation (Macfie, Cicchetti, & Toth, 2001; Putnam, Helmers, & Trickett, 1993).

For infants, the most important social relationship is with the parent. Highly documented in attachment research is the existence of a disorganized or insecure attachment style with primary caregivers of maltreated children; 70-100% of maltreated children have insecure attachments (Barnett, Ganiban & Cicchetti, 1999; Crittenden, 1988; Egeland & Sroufe, 1981). Attachment theory states that early relationships lead to the development of "working models" of self and attachment figures that serve as templates for future relationships and situations (Bowlby, 1969). These working models are therefore a product of the responsivity, sensitivity, consistency and affection provided or not provided by the primary caregiver. Maltreated children's working models of their primary caregiver often reflect inconsistencies in the relationship and a lack of safety or security. The freezing, apprehension of approach, lethargic movements, contradictory behaviors, and stereotypes evidenced in Ainsworth's (1978) Strange Situation Procedure and later classified by Main & Solomon (1986) as disorganized or

disoriented attachment illustrate how infants are unable to soothe themselves yet cannot allow themselves to be soothed by a caregiver.

The social/emotional deficits of maltreated children can be described as a failure in emotion regulation. Emotion regulation is the process by which one manages his or her physiological arousal (Cicchetti et al., 1991), internal feeling states, and behaviors to reach one's goals (Eisenberg & Morris, 2002; Thompson, 1994) or situational demands. This concept is an excellent framework in which to investigate the sequela of early child maltreatment. Beginning in infancy, children learn to regulate their emotions based on parental cues (Kopp, 1989; Sorce & Emde, 1981) and the emotional availability of their caregivers (Kogan & Carter, 1995; Tronick, 1989). Maltreating parents are harsh, interfering, and controlling in their daily interactions with their infants (Crittenden, 1981). Additionally, lack of praise and use of negative control (Calkins & Johnson, 1998) have been associated with emotion regulatory difficulties. Since maltreated children experience disruptions in their caregiving relationships and the consequent socialization of emotional regulation, they experience difficulties developing future socioemotional competencies (Shields, Cicchetti, & Ryan, 1994).

Despite our knowledge of the effects of maltreatment, our understanding of the link between abuse and outcome is severely limited. Identifying the trajectories of emotional development in maltreated children would enable researchers to clarify the risk factors for maladaptation (Cicchetti & Toth, 1995) and strengthen prevention efforts. Taking a developmental approach would foster greater understanding of the contextual, interpersonal, and transactional processes that affect maltreated infants. In response, the current study aims to examine the role of the parent in facilitating emotion regulation within the maltreating relationship. The proposed study plans to help fill the gap in research through three major

objectives: 1) to better understand the utilization of emotion regulation in maltreated infants, 2) to determine the role of parental affect in the development of emotion regulation and 3) to clarify the relationship between emotion regulation and psychopathology in maltreated infants.

Emotion Regulation and Parenting

Cicchetti (1991, 1995) and others (Grolnick & Farkas, 2002; Stifter & Braungart, 1995; Diener & Manglesdorf, 1999) describe affect and emotion regulation as one of the key stage salient issues early in life that an infant must resolve for successful socioemotional development. Well-regulated individuals are able to flexibly respond to differing experiences and are neither undercontrolled nor overcontrolled (Eisenberg & Morris, 2002). Furthermore, control may be reactive or voluntary and well-regulated individuals are better able to voluntarily control their attention and behavior based on situational demands (Eisenberg & Morris, 2002). Effortful voluntary control is a self regulatory mechanism linked with attention that reflects the ability to suppress a dominant response in order to perform a less salient response (Eisenberg & Spinrad, 2004; Rothbart & Bates, 1998) Thus, well-regulated infants may demonstrate attentional effortful control through persistence in a difficult task, delaying gratification for a prize or treat, turn-taking, and attending to a subdominant stimulus (Kochanska, Murray, & Harlan, 2000). Reactivity or emotional lability is more often demonstrated in poorly-regulated infants (Cicchetti, et al., 1991). Maturation of the parasympathetic system causes the child's reactions to stress to be less reactive and more controlled, therefore the child's capabilities for management of internal states increases as a product of age. Thus, emotion regulation involves several components such as emotion states, behavior, and physiological arousal.

Emotion regulation develops as an interaction between biological maturity and sensitive, responsive caregiving (Diener & Mangelsdorf, 1999; Kopp, 1989; Stifter & Braungart, 1995,

Von Salisch, 2001). Positive affect sharing (Kochanska & Aksan, 1995; Osofsky, 1992), emotional availability (Volling, McElwain, Notaro, & Herrera, 2002), emotional support (Diener & Manglesdorf, 1999; Kopp, 1989), and consistent positive discipline (Calkins & Johnson, 1998) help infants use their parent as a resource, but allow infants the security to develop their own capacities to regulate their emotions. In the first three years of life, positive parenting is crucial for healthy emotional development.

For the preverbal infant, facial expression is the best estimate of emotional state (Stifter & Moyer, 1991). Moreover the study of infants' emotions has often been used as a measure of the infant-parent relationship (Osofsky, 1992). Infants' affectivity is a means of communication of their needs and helps create the relationship with the parent, as they are expected to respond and model behavior (Gaensbauer & Hiatt, 1985; Osofsky, 1992; Tronick, 1989). Infants regulate their affect partially based on their caregiver's affect and cues, and mutual positive affect regulation contributes to the development of emotion regulation (Tronick, 1989). Being able to share affect with a parent validates the feeling state for the infant (Osofsky, 1992). Conversely infants who are constantly affectively mismatched with their mother more often disengage from their mother and have more negative interactions with strangers (Tronick, 1989). Kochanska and Aksan (1995) in a study with 26-41 month olds showed that mother-child mutually positive affect is associated with children's internalization of standards of conduct while alone with prohibited toys. Additionally, mother-child mutually positive affect is related to committed compliance and full endorsement of maternal agenda during control tasks. This demonstrates that positively synchronous affect is related to effortful control and the development of self-regulation. Tronick (1989) states that in normal infant-caregiver interactions there are periods of both positive and negative affect but the negative affect is brief and usually repaired with

constant resolution of the negative affect. Consequently, infants are able to view themselves as successful and their parent as available and thus develop effective coping and emotion regulation. Volling et al. (2002) studied one year old infant-parent dyads and found that emotional availability (sensitivity and positive affect) in free play is related to infant positive affect and that emotional availability in teaching tasks is related to infant attentional control. Taken together, these studies show that shared affect is integral to facilitating the development of effortful control and later self control.

Emotion Regulation and Maltreatment

Although the research on emotion regulation in maltreated children has increased over the past years, there are still very few studies that have investigated this relationship. Abuse early in development is such an aberration in the adequate caregiving environment that emotion regulation deficits can occur for a variety of parental reasons such as lack of modeling and support, absence of positive affect, harsh discipline and negative control, inconsistency and lack of sensitivity. In terms of emotion states, maltreated children demonstrate less understanding of negative emotion (Shipman, Zeman, Penza & Champion, 2000; Waldinger et al., 2001), decreased emotional expression and flexibility (Gaensbauer, 1982), use fewer internal state words (Cicchetti & Beeghly, 1987; Coster, Gertsen, Beeghly, & Cicchetti, 1989), exhibit more negative affect (Gaensbauer, 1982) and are more emotionally dysregulated (Maughan & Cicchetti, 2002). Behaviorally, maltreated children exhibit less self control and social competence (Fantuzzo, Weiss, Atkins, Meyers, & Noone, 1998) and more emotional lability, reactivity, and anger (Alessandri, 1991; Shields, Cicchetti, & Ryan, 2001) with peers. Additionally, Gaensbauer, Mrazek, and Harmon (1980) decribed the affect of maltreated children

as fitting four profiles: developmentally and affectively retarded, depressed, ambivalent and affectively labile, and angry.

Despite the importance of the caregiving relationship for the development of emotion regulation, the majority of maltreatment studies focus on the difficulties with peer relationships experienced by maltreated children such as aggression, peer rejection, and negativity (Alessandri, 1991; Bolger & Patterson; George & Main, 1979; Shields & Cicchetti, 1998). Thus, maltreated children's inabilities to successfully regulate emotions are often described in terms of social difficulties or as an explanation for these difficulties.

There are very few studies that investigate emotion regulation from the perspective of the maltreating infant-parent dyad. Abusing parents are often extreme versions of Baumrind's (1971) authoritarian parenting—harsh, controlling, interfering, and coercive (Rogosch, Cicchetti, Sheilds, & Toth, 1995). Neglecting parents are often unavailable, unresponsive, insensitive to their child's needs and distress, so much so that infants must be responsible for their own stimulation (Crittenden, 1981). Additionally parents may be a combination of the two styles, authoritarian and neglecting.

Negative control is related to more emotional reactivity and lack of effortful control (Calkins, Smith, Gill, & Johnson 1998). When a parent is available, more mature emotion regulation strategies are used (Kopp, 1989) relating to why maltreated children often display poor or immature emotional regulation as their caregiver is rarely available for their needs. In a study with maltreated preschool aged children, Howes, Cicchetti, Toth, and Rogosch (2000) found the family environment in which a child had been sexually abused characterized by anger, chaos, less organized family roles, lower in positive affect, higher in sadness, and less skilled in managing interactions for adaptive and flexible relationships. Furthermore, maltreating parents

are less able to read their infant's cues of crying and smiling and are more likely to report being physiologically aroused by both (Frodi & Lamb, 1980). This may foster the mismatch in affect and parental inability to synchronize their affect with child to facilitate affect regulation.

Erickson, Egeland, and Pianta (1989) investigated maltreated dyads from infancy through school age engaging in various teaching tasks and frustration exercises. Mothers were divided into four groups: physically abusive, hostile/verbally abusive, neglectful, and psychologically unavailable. At 24 months, all the maltreated groups demonstrated less positive affect, higher noncompliance, and all but the neglected maltreated group showed higher frustration than the control group in a tool teaching task. At 42 months almost all the maltreated groups showed lower persistence, enthusiasm, and compliance than the control group in a teaching task. In addition, all the maltreated groups showed higher negativity than the non-maltreated control group during the same teaching task.

Shipman and Zeman (2001) specifically investigated the mediating role of maternal socialization in the development of emotion regulation among maltreated and non-maltreated school aged children using child and maternal report measures. Children's expectations of maternal support and the maternal effectiveness of generating coping skills for the child accounted for the relationship between maltreatment and emotional expression and emotional arousal; such that children who expect their parents to be more supportive and who have parents who help them create coping skills are more likely to express their emotions and are less explosive and emotionally labile. In another study by Shipman et al. (2000), sexually abused 6-12 year old girls again reported more emotional dysregulation and expected less emotional support from their parents with regard to sadness and anger. Haskett, Meyers, Pirrello, and Dombalis (1995) also found that parenting style can explain the emotional development of

maltreated children using Baumrind's (1971) dimensions of parenting as a framework. Taken together these studies demonstrate that there are parental determinants that can help explain the relationship between maltreatment and child emotional adjustment.

Despite the breadth of the maltreatment literature, our knowledge of emotional development in maltreated infants is limited and insufficient because of a lack of developmental studies using longitudinal designs, appropriately matched control groups (Trickett, 1998), developmental periods (Heller, Larrieu, D'Imperio, & Boris, 1999), and inclusion of other contextual factors. The few available developmental studies for this population have investigated peer interaction as the outcome measure of emotion regulation (Alessandri, 1991, Shields et al., 1994; Shields et al., 2001). Moreover, most of these studies are done with school aged children and not young children. The literature examining the mitigating or potentiating roles (Shipman & Zeman, 1999, Shipman & Zeman, 2001) the parent may play is sparse. Future research must focus on the relationship between the maltreating parent and the infant in order to determine what factors might help foster emotional development.

The Current Study

Infants learn to regulate their emotions based on their caregivers' modeling, support, and sensitivity (Diener & Mangelsdorf, 1999; Kopp, 1989; Stifter & Braungart, 1995). When an infant has been maltreated, there are extreme disruptions in this relationship. Yet, parental factors such as use of positive affect and positive guidance may help mitigate the effects of maltreatment and promote improved emotion regulatory skills. The few studies that have investigated this relationship (Shipman & Zeman, 1999; Shipman & Zeman, 2001) have used self or other report and only one has used observational methods (Erickson et al. 1989) to describe emotion regulation and the nature of the caregiving relationship. Observational

methods are an excellent tool for assessing the parent-infant relationship and can be useful for investigating certain aspects of emotion regulation (Eisenberg & Morris, 2002). Furthermore, these factors have yet to be investigated in infants and young children when the development of emotion regulation is an extremely important stage salient task (Cicchetti & Toth,1995; Diener & Manglesdorf, 1999, Grolnick & Farkas, 2002; Stifter & Braungart, 1995). This study will expand extant research by specifically investigating the relationship between emotion regulation and maltreatment and the effect of parental affect on this relationship. This was done by assessing emotion regulation and parenting in an observational parent-child interaction task. Children's behavior problems were assessed using a standard measure of psychopathology.

This study proposes four main hypotheses: maltreated young children will display more emotion dysregulation than non-maltreated children, parenting will affect emotion regulation in the expected directions (e.g. positive affect be related to better emotion regulation whereas negative affect will be related to emotion regulation problems), emotion dysregulation will be related to more symptoms of psychopathology whereas better emotion regulation will be related to less symptoms of psychopathology, and emotion regulation will mediate the relationship between parenting style and symptoms of psychopathology.

This project, drawing from pre-collected data of maltreated children used a multi-method approach to the investigation of the maltreating dyad. Sixty-six maltreating dyads and fifty-seven non-maltreating dyads were observed while engaging in freeplay, cleanup, and four teaching tasks. Emotion regulation was operationalized based on emotional lability, affect congruence with parent, affect intensity, and use of effortful control. The current study is specifically interested in the relationship between the infant and parent when maltreatment has

occurred and how this subsequently affects the development of emotion regulation in the first few years of life.

Hypotheses

In order to better understand the development of emotion regulation in maltreated infants, the role of parenting in its development, and examine how this relationship affects symptoms of psychopathology, this proposal seeks to test the following four hypotheses.

1. In comparison to the non-maltreated cases, the maltreated cases will appear to be less emotionally regulated such that well regulated infants will be described as those who display moderate affect intensity, low affect lability, high congruence with parent affect, and high use of effortful control. In contrast, poorly regulated infants will be described as those with either extremely high or low affect intensity, high affect lability, low congruence with parent affect, and low use of effortful control.
    - Patterns of maladaptive child affect will emerge within the maltreated dyads such as: blunted or affectively neutral (also called "retarded"), angry, and labile (Gaensbauer, Mrazek, & Harmon, 1980). Blunted behavior will be described as low affect intensity on all scales: Positive Affect and Irritability/Anger. The Angry affect pattern will be described as high affect intensity on the Irritability/Anger scale and low positive affect. The Labile affect pattern will be described as high affect lability and intensity on all affect scales: Positive Affect and Irritability/Anger. The blunted pattern will predominate in this sample, compared to non-maltreated infants.

2. Parenting will affect emotion regulation in the expected directions. Positive parental affect will serve to promote emotion regulation. Negative parental affect will serve to decrease emotion regulation.
3. Higher levels of affect regulation and use of effortful control will be related to less internalizing and externalizing symptoms of psychopathology in maltreated infants and non-maltreated infants.
4. Emotion regulation will mediate the relationship between parenting affect and child symptoms of psychopathology. Positive parental affect will result in more emotion regulation and consequently less symptoms of psychopathology. Negative parental affect will result in less emotion regulation and consequently more symptoms of psychopathology.

An exploratory investigation will also take place to determine whether type of abuse has any affect on emotion regulation. An additional exploratory analysis will investigate the effect of timing of abuse on emotion regulation. Recent research has called for the investigation into the heterogeneity of child maltreatment and the consequent outcomes. "By quantifying the major components of maltreatment, researchers can capture the qualitative meaning of the experience for the child and can then apply these powerful independent variables in investigations aimed at elucidating the consequences of maltreatment. (Cicchetti et al., 2000, p. 691)" Therefore type and timing of abuse in relation to emotion regulation will be explored.

Method

Participants

Participants include 123 children from age one to three. All the children were enrolled from either Jefferson or Orleans Parishes. The children are 69% African American and 31% non African American (Caucasian, Hispanic, Biracial or Other). The sample is 47% female and 53% male. Additional demographic information for all participants included in this study can be found in Table 1-3.

Table 1. T Test (Two Tailed) Analyses for Demographic Information of the Two Samples

Group	Child's Age	Child Gender	Child Ethnicity	Maternal Age	Maternal Level of Education
Maltreated	M=31.17(9.71)	M=0.42 (0.50)	M=1.30 (0.46)	M=26.92 (7.58)	M=10.08(1.75)
Non-maltreated	M=34.48 (11.85)	M=0.53 (0.50)	M=1.31 (0.47)	M=27.14(5.87)	M=12.15(1.37)
	t=1.61	t=1.12	t= .51	t= .16	t=-6.63**

Note. Maternal level of education is measured in years of schooling, therefore, 12 would be completing high school.
** p< 0.01

Table 2. Demographic Information for all Participants by Group: Means, Standard Deviations, and Percentages

	Maltreated	Non-maltreated
Child's Age in Months	31.17(9.71)	34.48 (11.85)
Child Gender	42.4% female 57.6% male	52.6% female 47.4% male
Child Ethnicity	69.7% African American 30.3% Non African American	68.4% African American 31.6% Non African American
Maternal Age	26.92 (7.58)	27.14(5.87)
Maternal Level of Education***	10.08(1.75)	12.15(1.37)

Note. Maternal level of education is measured in years of schooling, therefore, 12 would be completing high school.
** p< 0.01

Table 3. Demographic Information for All Participants: Minimum, Maximum, Mean, and Standard Deviation

Variable	Min	Max	Mean	SD
Child Age in Months	12	47	32.75	10.82
Child Gender	0.00	1.00	0.47	0.50
Child Ethnicity	1.00	2.00	1.31	0.46
Maternal Age	16.00	47.00	27.00	6.91
Maternal Education	6.00	16.00	10.97	1.90

Note. For gender, 0 = male and 1 = female. For ethnicity, 1 = African American and 2 = non-African American (Caucasian, Hispanic, Biracial, Asian, or other).

Data for 66 of the children were collected by the Jefferson Health and Human Services Infant Mental Health Team. These children comprise the maltreated group. These children entered the Infant Mental Health Team because they were between the ages of birth and 47 months and had been taken into the custody of the Office of Community Services in Jefferson Parish for validated abuse or neglect. Consent for participation in Infant Team Assessments was obtained at the time of the initial clinic visit by the biological parent. The maltreated population was coded by type of abuse experienced using Barnett et al.(1993) maltreatment subtype definitions and severity ratings (further described in the procedures section). Overlap in the type of abuse experienced by participants was consistent with the literature (Howes et al., 2000; Manly, Cicchetti, & Barnett, 1994; Toth et al., 1997). Physical abuse was experienced by 25.7% of the participants, sexual abuse by 2.8%, Neglect/Failure to Provide by 62.3%, Neglect/Lack of Supervision by 87.0% (the largest category), Emotional Maltreatment by 37.1%, Moral/Legal/Educational by 4.2%, Dependency/Abandonment by 16.4%, and Financial Abandonment by Father by 6.8%.

The 57 non-maltreated cases that comprise the control group are from two larger studies: one is the control group for an investigation of Post Traumatic Stress Disorder in young children (Scheeringa, 2002) and a dissertation exploring working model classification on the mother-child interaction (Smyke, 2000). In the trauma study the criteria for inclusion as a healthy control is age between 36 months and 83 months and lack of exposure to trauma to self or others (thus no experience of child abuse). Over fifty percent of the controls from the trauma study were recruited from Jefferson Parish Head Start centers. The remaining controls were recruited as neighbors of the trauma subjects. Informed consent was given by the caregiver at the time of the laboratory visit and participants were paid $100 for three hours of their time.

In the dissertation study, non-maltreated cases were recruited from the same Jefferson Parish Head Start Centers and were included in the dissertation study if they were between the ages of 12 and 48 months. Office of Community Services (OCS) was contacted to verify that the controls did not have validated abuse or neglect and the Child Abuse Potential (CAP) Inventory (Milner, 1986, 1994) was used to exclude cases above the cutoff score. Informed consent was given by the caregiver at the time of the laboratory visit and participants were paid $100 and given meals for approximately 8 hours of their time over two visits.

All the controls were included in the present study as long as they had completed a Child Behavior Checklist, CBCL (Achenbach & Rescorla, 2000), Crowell and Feldman's (1988) parent-child interaction procedure with their biological mother, and met age criteria. The non-maltreated cases were compared to the maltreated cases based on child gender, child ethnicity, maternal age, and maternal education (please refer to Table 1 for t test data) For the purposes of this study, all the maltreated cases from the Infant Team program were included as long as they had completed a CBCL, Crowell's parent-child interaction task with their biological mother and

met age criteria. In cases where the parent had multiple children, only the oldest child who met age criteria was used to avoid violating independence assumptions for analyses. The maltreated sample and the nonmaltreated sample were similar on all demographic variables except maternal education (see Table 1 for t tests). Despite a significant difference, both groups had low maternal education levels with the control group having a mean of 12 years and the maltreated group a mean of 10 years. However, maternal education was not significantly correlated with any of the child emotion regulation or psychopathology variables. Therefore it was not necessary to control for education in any of the parenting analyses.

Procedures

As mentioned earlier, the maltreated cases are participants in the Infant Mental Health Team assessment program. The Infant Team assessment details the infant's social and emotional functioning and the status of their caregiving relationships in order to submit recommendations to OCS. In addition, treatment services are offered as long as the children are in foster care. All of the data utilized in this study were measured prior to treatment services. Because the data used in this study are a subset of data from a larger study, only measures used in the current study will be mentioned here.

An OCS referral is received at the Infant Team and the family enters the process approximately six weeks after the child has been placed in foster care. Consent is obtained at the time of the intake assessment. The biological parents participate in the parent child interaction procedure and during a separate clinic visit the foster parent completes the CBCL (Achenbach & Rescorla, 2000). CBCLs were completed by foster parents rather than biological parents in an attempt to provide a more objective estimate of behavioral symptoms because court-involved biological parents might be biased about child symptomatology (Trickett & Sussman, 1988).

Half the non-maltreated control group in this study is the comparison group of the Young Child Trauma Project (YCTP). All data used in the present study come from the first year of data collection. At this time participants came into the lab to participate in the parent child interaction procedure and to complete the Child Behavior Checklist.

The other half of the non-maltreated control group is the comparison group from a dissertation investigating maltreatment status on maternal internal representation of attachment and mother-child interaction. Participants in this study completed all the same measures as those administered to the maltreated cases.

Parent child interaction procedure

The parent child interaction procedure is an assessment of the infant-parent relationship in which the dyad is both stressed and allowed opportunity for fun. Crowell and Feldman (1988) modified Matas, Arend, and Sroufe's (1978) attachment based "tool use task" so that it may be used with children of age 24 to 54 months (Zeanah et al., 1997). The interaction procedure used in the current study has been further adapted for use with even younger children and with high-risk populations by Heller, Aoki, and Schoffner (1998).

The parent child dyad is instructed to complete seven different tasks: free play, cleanup, bubbles, and four teaching tasks that start out as developmentally age appropriate and become increasingly more difficult. The procedure lasts from 30-45 minutes and is videotaped. The first segment of the structured interaction is a ten minute free play period, the second segment is the parent asking the child to clean up and is variable in length, and the third segment is two minutes in which the parent asks the child to pop bubbles as she blows the bubbles. The final four segments are 4 teaching tasks, such as pop-up toys and puzzles, of increasing developmental difficulty. The first tasks last between two and four minutes and the last two tasks last between

three and five minutes depending on the child's age and skill with the task. The parent is instructed to give help if the child needs it and continue until the researcher calls.

The procedure is later coded on three parent affect scales (positive affect, withdrawn/depressed, and irritability/anger) and three child affect scales (positive affect, withdrawn/depressed, and irritability/anger). In addition, child persistence with task is also coded. All scales described range from one to seven where one is low in the construct and seven is high on the construct.

Measures

In the original study using her parent- child procedure, Crowell and Feldman (1988) found 93% discriminate validity for predicting into clinical or nonclinical groups. The primary coder has completed reliability training for this parent infant task procedure and received a coding reliability score of over 0.75 for percentage score agreement with expert coder on each scale and .70 to 1.00 scale correlation with expert coder. Additionally, over twenty-five percent (n=35) of the tapes were double-coded for inter-rater reliability. The child and parent withdrawal/depression scales were dropped due to low variability within the scale. As reported in Crowell and Feldman (1988), scores were considered reliable if agreement was within one point. Inter-rater reliability, within one point, correlations for the mean score of the remaining scales ranged from .65 to .83. Exact agreement inter-rater reliability correlations for the mean scores of the remaining scales ranged from .57 to .74. This procedure was used to measure emotion regulation and parenting.

Emotion Regulation

Four components of children's emotion regulation (child affect intensity, parent/child affect congruence, child affect lability, and use of effortful control) were measured using the parent child interaction procedure.

Child Affect Intensity. Child affect intensity was measured using the mean of all the individual segment scores from the parent child interaction procedure (free play, bubbles, cleanup, and the four teaching tasks). Affect intensity is calculated for two scales for the child: Positive Affect and Irritability/Anger. A score of one on each scale would indicate absence of the construct and a score of seven would indicate an extremely high level of the construct.

Child Affect Lability. Child affect lability was calculated for positive affect and irritability/anger. Lability is the standard deviation across the four teaching task scores within a scale; higher scores indicate more lability.

Child/Parent Affect Congruence. Child/Parent Affect Congruence is a measure of how congruent or incongruent a child's affect is in comparison to the mother's affect. Congruence scores were calculated as the absolute value of the mean difference across the four structured teaching tasks. Therefore high scores represent low congruence and low scores represent high congruence.

Child use of effortful control. Child use of effortful control is measured by the persistence scale on the parent child interaction procedure. One is equal to "No persistence: the child actively ties to avoid the task. The child seems to want no part in this problem-solving exercise and spends very little time doing the task at all" and a score of seven is equal to "Very High (Extreme Persistence): the child is persistent virtually throughout the entire session. The child displays very little, if any, diversionary tactics that require a special effort by the parent to re-

engage him/her in the task. The child's motivation to master the task appears to come from the child not the parent." (Heller et al., 1998). The Persistence score is coded as the mean score across all the individual tasks (free play, bubbles, cleanup, and the four teaching tasks). A high Persistence score would therefore indicate a significant use of effortful control.

Parenting

Parent affect intensity. Additionally, the parent child interaction task was used to measure the parental variables: parental positive affect intensity and parental irritability/anger intensity. Parent affect intensity was measured using the mean of all the individual segment scores from the parent child interaction procedure (free play, bubbles, cleanup, and the four teaching tasks). As in the child scales, a score of one on each construct would indicate absence of the construct and a score of seven would indicate an extremely high level of the construct.

Symptoms of Psychopathology

Child Behavior Checklist. Symptoms of psychopathology was measured using the Child Behavior Checklist, CBCL (Achenbach & Rescorla, 2000). Both internalizing and externalizing broad band scales were used. CBCL t-scores (M=50, SD=10) were used in the present investigation; they are normed by age and gender.

The CBCL is a 100-item checklist completed by a child's caregiver, which gives information about symptoms of psychopathology. The CBCL has been validated on large, nationally representative samples and is shown to be stable across time (Achenbach & Rescorla, 2000). Test-retest reliability coefficients over one month averaged .90 for the broad bands (internalizing and externalizing) and .88 for the narrow bands (withdrawn, somatic complaints, anxious/depressed, social problems, thought problems, attention problems, delinquent behavior,

emotionally reactive, sleep problems, and aggressive behavior), (Achenbach & Edelbrock, 1983).

Participants in this study received one of two versions, CBCL/1.5-5 years (Achenbach & Rescorla, 2000) or CBCL/2-3 years (Achenbach, Edelbrock, & Howell, 1987). Both CBCL versions utilize the same coding scheme and scores are adjusted for age norms. Most of the children in this study received the CBCL/1.5-5 years. The CBCL/1.5-5 years version consists of the internalizing and externalizing scores and seven narrow band syndrome scores (withdrawn, somatic complaints, anxious/depressed, attention problems, emotionally reactive, sleep problems, and aggressive behavior), which additionally yields one Total score.

There is considerable overlap between the two versions. The CBCL/2-3 years (Achenbach, Edelbrock, & Howell, 1987) version generates the same two broad band scores and six narrow band scores, five of which are the same as the CBCL/1.5-5 years (Achenbach & Rescorla, 2000) version (withdrawn, anxious/depressed, somatic complaints, sleep problems, and aggressive behavior) and one which is unique to the CBCL/2-3 years version (destructive behavior).

Timing and Type of Abuse

Child protective services (CPS) validated reports of abuse and clinical case files on the maltreated children were reviewed and evaluated using Barnett, Manly, and Cicchetti's (1993) classification system. First, CPS court (CPS investigative summary, adjudication reports, hearing minutes) and other legal/medical documents (police records, hospital forensic reports) were reviewed. Then all the clinical assessments (interviews, Partner Violence Inventory adapted from Straus, 1979, parent-child dyadic observations) were reviewed to fill in any missing information.

Finally, all cases were compared to clinical update reports to determine any changes in abuse status.

CPS validation was often determined by the ability to identify a perpetrator or document an act. In some cases abuse was highly suspected but validations by CPS were essentially downgraded due to an inability to identify the perpetrator due to lack of physical evidence (such as in the case of emotional maltreatment). In such cases, two of the following methods were used in place of CPS validation to determine abuse category: the Partner Violence Inventory (parent report of child witnessing domestic violence), client interview (parent admission to the abuse), physician forensic report (describing the likelihood of the identified injuries being accidental), and police report or interview. Each case was categorized for as many types of abuse as were appropriate using the following categories: physical abuse, sexual abuse, physical neglect (failure to provide), physical neglect (lack of supervision), emotional maltreatment, moral/legal/educational maltreatment, and dependency/abandonment.

Plan of Analysis

The described hypotheses were tested using a variety of statistical procedures.

1. The first hypothesis, maltreated infants will appear to be less emotionally regulated than the non-maltreated infants, will be tested using ANOVA. Results will support the hypothesis if the means for congruence with parent affect and use of effortful control are lower for the maltreated infants. Additionally, there will be a larger standard deviation for affect scores in the maltreated sample.
    - The sub-hypothesis that patterns of maladaptive child affect will emerge was tested using cluster analysis. K-means cluster analysis was used with a pre-determined

number of three clusters. Results will support the hypothesis if clusters of neutral, angry, and labile are found.

2. The second hypothesis that parenting will affect emotion regulation in the expected directions was tested using regression and correlations. Results will support the hypothesis if positive affect are negatively correlated with affect lability and intensity and positively correlated with use of effortful control.
3. The third hypothesis that higher levels of affect regulation and use of effortful control will be related to less internalizing and externalizing symptoms of psychopathology in maltreated infants was tested using regression and correlations. Results will support the hypothesis if internalizing and externalizing symptoms are positively correlated with affect lability and intensity and negatively correlated with use of effortful control.
4. The hypothesis that emotion regulation mediates the relationship between parenting style and symptoms of psychopathology was tested using Baron and Kenny's test for mediation (1986). The test for mediation is done using three separate regression equations: 1) regressing emotion regulation on parenting style, 2) regressing symptoms of psychopathology onto parenting style, 3) regressing symptoms of psychopathology on parenting style and emotion regulation. Results will support the mediation hypothesis if the following four conditions are met. First, positive parenting must be positively correlated to moderate affect intensity, use of effortful control and congruence with parent affect and negatively correlated with affect lability. Second, parent affect must be negatively correlated to internalizing and externalizing symptoms. Third, affect lability and intensity and must be positively correlated with internalizing and externalizing symptoms and negatively correlated with effortful control. Finally, the effect of

parenting style on psychopathology symptoms must be less in the third equation than the second. Perfect mediation would be demonstrated if parenting style has no effect when emotion regulation is controlled.

The exploratory analysis for whether type of abuse has an effect on emotion regulation was tested with ANOVA. The additional exploratory analysis of the effect of timing of abuse on emotion regulation was tested using regression and correlations.

Results

Descriptive Analyses

Means and standard deviations for all the major variables are presented in Table 4 by group membership. Inter-correlations for all variables are found in Table 5 and separately by group membership in Table 6.

Table 4. Means and Standard Deviations for Major Variables by Group

Variable	Group	Min	Max	Mean	SD
Child Positive Affect Intensity	Non-Maltreated	1.57	6.14	4.45	.87
	Maltreated	1.43	6.00	3.66	.92
Child Irritability/Anger Intensity	Non-Maltreated	1.00	4.86	1.68	.85
	Maltreated	1.00	6.00	2.66	.92
Child Positive Affect Lability	Non-Maltreated	.00	1.50	.50	.39
	Maltreated	.00	1.89	.63	.39
Child Irritability/Anger Lability	Non-Maltreated	.00	2.63	.67	.68
	Maltreated	.00	2.36	.63	.64
Child Effortful Control	Non-Maltreated	2.86	6.29	5.07	.91
	Maltreated	1.57	6.71	4.84	.95
Positive Affect Congruence	Non-Maltreated	.00	2.14	.59	.76
	Maltreated	.00	1.93	.65	.49

(table 4 continued)

Irritability/Anger Congruence	Non-Maltreated	.00	3.86	.60	.76
	Maltreated	.00	2.67	.72	.62
Parent Positive Affect Intensity	Non-Maltreated	3.43	6.14	4.60	.54
	Maltreated	1.43	5.86	3.75	.93
Parent Irritability/Anger Intensity	Non-Maltreated	1.00	2.57	1.18	.31
	Maltreated	1.00	5.17	1.69	.86
Child Externalizing T Score	Non-Maltreated	30.00	66.00	47.50	10.10
	Maltreated	30.00	80.00	51.40	13.50
Child Internalizing T Score	Non-Maltreated	30.00	67.00	47.80	10.30
	Maltreated	30.00	71.00	53.70	11.20

Note. Congruence variables are the absolute value of the mean difference between parent and child affect for a give affect scale.

Table 5. Inter-correlations of Major Variables for Entire Sample

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Child Positive Affect Intensity	1.00**										
2. Child Irritability/Anger Intensity	-.51**	1.00**									
3. Child Positive Affect Lability	-.21*	.341**	1.00**								
4. Child Irritability/Anger Lability	-.18*	.60**	.41**	1.00**							
5. Effortful Control	.60**	-.60**	-.18	-.37**	1.00**						
6. Parent Positive Affect Intensity	.65**	-.27**	-.05	.07	.18*	1.00**					
7. Parent Irritability/Anger Intensity	-.52**	.60**	.14	.16^{+}	-.32**	-.61**	1.00**				
8. Positive Affect Congruence	-.29**	.15^{+}	.15^{+}	.15^{+}	-.21*	-.16^{+}	.02	1.00**			
9. Irritability/Anger Congruence	-.40**	.72**	.36**	.54**	-.52**	-.07	.14	.29**	1.00**		
10. Internalizing	-.25*	.18^{+}	.16	-.06	-.19^{+}	-.29**	.30**	.22*	.04	1.00**	
11. Externalizing	-.18	.09	.07	-.12	-.15	.15	.20^{+}	.16	.05	.64**	1.00**

Note. **p < .001, *p < .05, $^{+}$p < 0.10

Table 6. Inter-correlations of Major Variables, Non-maltreated above the Diagonal and Maltreated below the Diagonal

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Child Positive Affect Intensity	1.00**	-.60**	-.21	-.31*	.71**	.55**	-.38**	-.50**	-.57**	.02	.02
2. Child Irritability/Anger Intensity	-.43**	1.00**	.38**	.59**	-.67**	-.17	.27*	.45**	.96**	-.15	-.10
3. Child Positive Affect Lability	-.10	.29*	1.00**	.31*	-.24^{+}	.03	.08	.20	.41**	.03	.10
4. Child Irritability/Anger Lability	-.14	.65**	.51**	1.00**	-.47**	.01	.05	.17	.54**	-.24^{+}	-.29*
5. Effortful Control	.52**	-.56**	-.09	-.29*	1.00**	.23^{+}	-.29*	-.44**	-.67**	.09	.04
6. Parent Positive Affect Intensity	.60**	-.24^{+}	.08	.09	.10	1.00**	-.34**	-.25^{+}	-.16	-.18	.02
7. Parent Irritability/Anger Intensity	-.50**	.69**	.09	.26*	-.34**	-.58**	1.00**	.21	.12	-.08	.01
8. Positive Affect Congruence	-.13	.09	.09	.15	-.03	-.10	-.07	1.00**	48**	.23^{+}	.18
9. Irritability/Anger Congruence	-.24^{+}	.58**	.30*	.54**	-.38	.05	.14	.11	1.00**	-.15	-.06
10. Internalizing	-.37*	.44*	.26	.21	-.45**	-.21	.41*	.15	.31^{+}	1.00**	.65**
11. Externalizing	-.26	.21	-.02	.09	.30^{+}	-.15	.21	.12	.17	.60**	1.00**

Note. **p < .001, *p < .05, $^{+}$p < 0.10

Group Differences in Emotion Regulation

Results partially supported the hypothesis that emotion regulation would be affected by abuse status. (Means and standard deviations for the major variables are found in Table 4). More specifically, the maltreated group would display less emotion regulation (higher anger, lower positive affect, more lability, and less congruence) than the non-maltreated group. This was tested using Analysis of Variance (ANOVA). Analyses comparing abuse status to child positive affect lability indicate that the maltreated sample, $F(1,121) = 4.20$, $p = .043$, displayed more

positive affect lability compared to the non-maltreated sample. Analyses comparing abuse status to child positive affect intensity indicate that the maltreated sample, $F(1,121) = 24.00$, $p = .000$, displayed less positive affect intensity compared to the non-maltreated sample. Analyses comparing abuse status to child irritability/anger indicate that the maltreated sample, $F(1,121) = 3.44$, $p = .066$, displayed more irritability/anger compared to the non-maltreated group. ANOVAs revealed significant differences by abuse status for child positive affect lability, child positive affect intensity, and child irritability/anger intensity with the maltreated group being more labile and irritable along with being less positive. However, significant differences were not found for the emotion regulation variables of child irritability/anger lability, parent-child affect congruence, and effortful control.

Parenting and Emotion Regulation

According to expectations, parenting affected emotion regulation for both the maltreated and nonmaltreated groups in the expected directions. Correlations for the entire sample revealed that positive parental affect intensity is associated with child positive affect ($r = .651$, $p = .000$) and effortful control ($r = .180$, $p = .047$). (See Tables 5 for correlations). Positive parental affect ($r = -.269$, $p = .003$) is inversely related to child irritability/anger. Conversely, parent irritability/anger is inversely associated with child positive affect ($r = -.515$, $p = .000$) and effortful control ($r = -.323$, $p = .000$). Parent irritability/anger is positively associated with child irritability/anger ($r = .599$, $p = .000$).

As seen in Table 7, correlations for the maltreated group revealed that positive parental affect intensity is associated with child positive affect ($r = .602$, $p = .000$). Conversely, parent irritability/anger is inversely associated with child positive affect ($r = -.494$, $p = .000$), child positive affect lability ($r = .258$, $p = .037$), and effortful control ($r = -.338$, $p = .005$) and

positively associated (r = .681, p = 000) with child irritability/anger. A similar pattern was seen for the non-maltreated group; however, correlations were stronger for the maltreated group. These findings indicate that parenting is strongly associated with positive and negative affect and effortful control in the observation procedure; this may even be more so for maltreated children.

Table 7. Correlations Between Parent Affect and Child Emotion Regulation

Variable	Child Positive Affect	Child Irritability/ Anger	Child Positive Affect Lability	Child Irritability/ Anger Lability	Child Effortful Control
		Maltreated (n = 66)			
Parent Positive Affect	.60**	-.24^{+}	.08	.09	.10
Parent Irritability/ Anger	-.50**	.68**	.09	.26*	-.34**
		Non-Maltreated (n = 57)			
Parent Positive Affect	.55**	-.17	-.03	.01	.23^{+}
Parent Irritability/ Anger	-.38**	.27*	.08	.05	-.29*

Note. **p < .001, *p < .05, $^{+}$p < 0.10

Emotion Regulation and Psychopathology

According to expectations, emotion regulation affected psychopathology for the maltreated sample in the expected directions. However, overall and for the control group this relationship was not found. Correlations for the entire sample revealed that only positive child affect intensity is inversely associated with child internalizing symptomatology (r = -.254, p= .021).

As seen in Table 8, correlations for the maltreated group only revealed that internalizing symptomatology as reported by foster parent is inversely associated with child positive affect (r

= -.370, p = .034), effortful control (r = -.449, p = .009), and positively associated with child irritability/anger intensity during the interaction task (r = .441, p = .010). There were no significant correlations for externalizing symptomatology.

The only significant correlation for the non-maltreated group was between externalizing symptomatology and irritability/anger lability. Unexpectedly, child irritability/anger lability was inversely associated with externalizing symptomatology (r = -.289, p < .042) indicating that higher levels of lability were related to lower levels of externalizing symptoms. Overall, findings for children's emotion regulation and psychopathology suggest that observed affect and effortful control are more related to symptoms of psychopathology for maltreated children than non-maltreated children.

Table 8. Correlations Between Psychopathology and Child Emotion Regulation

Variable	Child Positive Affect	Child Irritability/ Anger	Child Positive Affect Lability	Child Irritability/ Anger Lability	Child Persistence
			Maltreated (n = 66)		
Internalizing	-.37*	.44*	.26	.21	-.45**
Externalizing	-.26	.21	-.02	.09	-.30^{+}
			Non-Maltreated (n = 57)		
Internalizing	.02	-.15	.03	-.24^{+}	.09
Externalizing	.02	-.10	.10	-.29*	.04

Note. **p < .001, *p < .05, $^{+}$p < 0.10

Relations Between Emotion Regulation, Parenting, and Symptoms of Psychopathology

The fourth hypothesis of this study was that emotion regulation would mediate the relationship between parenting variables and symptoms of psychopathology. For the entire sample, (see Table 5) parent positive affect is related to lower levels of internalizing symptoms (r = -.290, $p < .01$) whereas parent irritability/anger is associated with higher levels of internalizing symptoms (r = .300, $p < .01$). For the non-maltreated group, (see Table 6) there are significant correlations for parent affect and symptoms of psychopathology. However for the maltreated group, parent irritability/anger with biological parent is positively associated (r = .412, $p < .05$) with internalizing symptomatology as reported by foster parent.

Baron and Kenny (1986) three step regression tests for mediation were performed for the entire sample and for the maltreated group separately. The test for mediation is done using three separate regression equations: 1) regressing emotion regulation on parenting style, 2) regressing symptoms of psychopathology onto parenting style, 3) regressing symptoms of psychopathology on parenting style and emotion regulation. Contrary to expectations, none of the emotion regulation variables fully mediated the relationship between parenting and psychopathology. However, child effortful control partially mediated the relationship both between parent positive affect and parent irritability/anger and internalizing symptoms of psychopathology (see Table 9) for the entire sample.

Table 9. Mediational Analyses of Parenting Variables and Psychopathology by Child Effortful Control

Predictors	Equation 1 β Effortful Control and Predictor	Equation 2 β Predictor and Outcome Variable	Equation 3 β Controlling for Effortful Control (Mediational Variable)
	Outcome Variable: Internalizing Symptoms		
Parent Positive Affect Intensity	.18^{+}	-.29**	-.26*
Parent Irritability/Anger Intensity	-.32**	.30**	.27*
	Outcome Variable: Externalizing Symptoms		
Parent Positive Affect Intensity	.18^{+}	-.15	-.12
Parent Irritability/Anger Intensity	-.32**	20^{+}	.16

Note. **p < .001, *p < .05, $^{+}$p < 0.10

Maladaptive Affect Clusters

We also hypothesized that different patterns of maladaptive child affect would emerge. K means cluster analysis was used to create three clusters for child affect and affect lability among the maltreated children (see Table 10). Cluster one (n=15), the "angry" cluster was represented by moderate positive affect lability, high irritability/anger lability, low positive affect intensity, and high irritability affect intensity center means. Cluster two (n=35), the "resilient" group, was represented by moderate positive affect lability, low irritability/anger lability, moderate positive affect, and low irritability/anger center means. Cluster three (n=16), the "labile" group, was represented by moderate positive affect lability, high irritability/anger lability, moderate positive affect, and moderate irritability/anger center means.

Table 10. Final Mean Cluster Centers for Maltreated Child Affect

Cluster	Positive Affect Intensity	Irritability/Anger Intensity	Positive Affect Lability	Irritability/Anger Lability
1 "Angry"	2.77	3.60	.750	1.20
2 "Resilient"	4.79	1.19	.430	.270
3 "Labile"	4.33	2.06	.560	1.36

T-tests for the mean levels of internalizing and externalizing symptomatology between the clusters indicate that children in the angry cluster $t(25) = 3.36$, $p = .003$ exhibit significantly more internalizing symptomatology than children in the resilient cluster, (see Table 11). In addition, the angry children $t(25) = 2.22$, $p = .043$ exhibit significantly more externalizing symptomatology than the resilient children.

Table 11. Cluster Means by Psychopathology, Parenting, and Emotion Regulation Variables

Cluster	Internalizing	Externalizing	Parent Positive Affect	Parent Irritability/ Anger	Positive Affect Congruence	Irritability/Anger Congruence	Effortful Control
1	61.89	59.33	3.44	2.46	.80	1.34	3.95
2	50.28	47.33	4.11	1.41	.57	.55	5.25
3	51.50	51.50	3.23	1.56	.70	.50	4.81

Cluster Definitions:
1 = low positive affect intensity, high irritability/anger intensity, moderate positive affect lability, high irritability/anger lability
2 = moderate positive affect intensity, low irritability/anger intensity, moderate positive affect lability, low irritability/anger lability
3 = moderate positive affect intensity, moderate irritability/anger intensity, moderate positive affect lability, high irritability/anger lability

Clusters also differed by parenting variables. The children in the angry cluster $t(50) = -2.31$, $p = .03$, have parents who exhibit less positive affect and more irritability/anger $t(50) = 3.179$, $p = .006$, than the children in the resilient cluster. In addition, the angry children $t(29) = 2.61$, $p = .017$ have parents who exhibit more irritability/anger than the labile children. Additionally, the resilient children $t(49) = -3.76$, $p = .000$ have parents who exhibit more positive affect than the average children.

Additionally, clusters differed by emotion regulation, specifically affect congruence and effortful control (variables that were not part of the clusters). Children in the angry cluster $t(50) = 4.00$, $p = .001$, exhibit significantly less irritability/anger congruence with their mothers than children in the resilient and labile clusters $t(49) = 4.09$, $p = .000$. In terms of effortful control, children in the angry cluster $t(50) = -6.36$, $p = .000$, exhibit significantly less effortful control than children in the resilient and the labile clusters $t(29) = -2.50$, $p = .019$.

These results suggest that three meaningful clusters emerged. The first is an angry group characterized by harsh parental affect, severe behavioral symptomatology, and poor emotion regulation. The second group was a more resilient group with more positive parental affect, less severe behavioral symptomatology, and moderate emotion regulation. This group appeared similar to the non-maltreated control group (see Table 12). The third group displayed labile affect a mix between positive and negative affect and high irritability lability) and fell between the other two groups in terms of mean levels of psychopathology and parenting variables.

Table 12. Resilient Maltreated Cluster versus the Control Group for Major Variables

Variable	Group	Mean	SD
Child Positive Affect Intensity	Resilient Maltreated	4.39	.45
	Control	4.45	.87
Child Irritability/Anger Intensity	Resilient Maltreated	1.60	.57
	Control	1.68	.85
Child Positive Affect Lability	Resilient Maltreated	.57	.32
	Control	.50	.39
Child Irritability/Anger Lability	Resilient Maltreated	.47	.44
	Control	.67	.68
Child Effortful Control	Resilient Maltreated	5.25	.61
	Control	5.07	.91
Positive Affect Congruence	Resilient Maltreated	.57	.57
	Control	.59	.45
Irritability/Anger Congruence	Resilient Maltreated	.52	.44
	Control	.60	.76
Parent Positive Affect Intensity	Resilient Maltreated	4.11	.74
	Control	4.59	.54
Parent Irritability/Anger Intensity	Resilient Maltreated	1.41	.47
	Control	1.18	.31
Externalizing T Score	Resilient Maltreated	47.33	12.24
	Control	47.5	10.10
Internalizing T Score	Resilient Maltreated	50.28	11.65
	Control	47.8	10.30

Relations Between Emotion Regulation, Timing of Abuse, Type of Abuse, and Number of Types of Abuse

Exploratory analyses were also run in the maltreated group comparing timing of abuse, type of abuse, and number of different types of abuse. Significant correlations were found between timing of abuse and child positive affect lability ($r = .272$, $p = .029$) and child positive affect intensity ($r = .434$, $p = .000$). Child positive affect intensity and lability are not

significantly correlated with each other for the maltreated group. These findings suggest children who were abused at an older age displayed more positive affect lability and intensity. There were no differences found for type or number of abuse types for any of the emotion regulation variables. In addition, there were no significant results for timing, type, or number of abuse for internalizing and externalizing symptomatology.

Discussion

This investigation offers evidence that the development of emotion regulation is affected by early child maltreatment. The maltreated children in this study exhibited more irritability/anger, affect lability, and internalizing symptomatology, along with less positive affect than their non-maltreated peers. Moreover, these data suggest that parental affect is related to internalizing symptomatology; but this relationship is stronger for the maltreated group. Although correlations were strong between emotion regulation variables, psychopathology, and parent affect, contrary to expectations emotion regulation did not fully mediate the relationship between parenting and psychopathology. However, child effortful control partially mediated the relationship both between parent positive affect and parent irritability/anger and internalizing symptoms of psychopathology suggesting that both parenting style and emotion regulation independently are important predictors of symptoms of psychopathology. As expected, clusters of maladaptive affect emerged in the maltreated group. However, a more "resilient" group also emerged characterized by more positive affect, more positive parental affect, and lower levels of psychopathology.

A unique finding of this investigation was that timing of abuse was related to child positive affect intensity suggesting that children abused later in this developmental period (age 1-

3) displayed more positive affect. From the attachment perspective we know that early abuse can be impairing to attachment relationships and therefore disruptive to the development of emotion regulation. An unreliable caregiver may result in the young child developing an impaired "working model" of self and attachment figures (Bowlby, 1969). As a result, maltreated children's working models of their primary caregiver reflect inconsistencies in the relationship and a lack of safety or security. These working models appear to be a key link between abuse and pathology in young maltreated children (Cicchetti & Toth, 1995). The present study suggests that early abuse is qualitatively different from later abuse and may lead to more severe adjustment difficulties (Hinshaw-Fuselier, Heller, Parton, Robinson, & Boris, 2004).

The results of the present study expand research on maltreatment and emotion regulation by exploring this relationship in young children. As shown in studies with older maltreated children (Alessandri, 1991; Maughan & Cicchetti, 2002; Shields et al., 1994; Shipman & Zeman, 1999), the children in this study appeared more emotionally dysregulated and exhibited more internalizing symptomatology. This study also expands the maltreatment and emotion regulation literature by investigating specific components of abuse such as type and timing in order to clarify their unique role in affecting the development of emotion regulation in a maltreated population. Furthermore this study supports emotional regulation (Kochanska & Aksan, 1995; Kopp, 1989; Volling et al., 2002*)* and parenting literature, in general, because parenting was found to be related to both children's emotion regulation and behavioral symptomatology. Based on Gaensbauer, Mrazek, and Harmon (1980) it was expected that three types of affect would emerge from the present sample: angry, blunted, and labile. However, instead of a purely labile group, lability was found in a few clusters and a more resilient group emerged along with the angry group. This type of resilience to maltreatment by a quality parent-child relationship has

been found throughout the literature (Erickson, Sroufe, & Egeland, 1985; Toth & Cicchetti, 1996).

There are many strengths to the current investigation. First, this study uses extremely rich observational data to investigate emotion regulation within the context of the parent-child dyad. Second, the use of foster parent report of symptomatology for the maltreated group reduced parental bias of symptomatology and provided validity for the observations with the biological parent. Third, this study is one of very few (Erickson et al., 1989) that has investigated emotion regulation in the maltreating parent-child dyad with very young children. Finally, this study also explored the heterogeneity of abuse through multiple forms of substantiated verification by examining differences in emotion regulation in terms of timing of abuse, type of abuse, and number of abuse types.

A limitation of the present study was that emotion regulation was measured only in the parent-child context. Despite only measuring emotion regulation in the parent-child dyad, this is considered an ecologically valid assessment because most emotion regulation development at this age occurs during this context. However, because the maltreated children were with the family were abuse occurred; these data may be less generalizable to other potentially less emotional contexts. Future investigations would be enhanced by the observation of the parent-child dyad outside the laboratory setting using multiple-reporters to capture the most comprehensive information on this construct.

We could not confirm that emotion regulation fully mediated the relationship between parenting and psychopathology. One possibility is that behavioral adjustment as reported for non-maltreated group was influenced by a parental social desirability bias. The relationship between parenting and psychopathology may also have been stronger if CBCL total scores were

used rather than t scores. This mediational relationship may also have emerged with a large sample size. Another possibility is that the relationship would be better represented by moderation and not mediation. Lengua (2002) found that emotion regulation in low income children moderated the relationship between risk and adjustment problems. Therefore, it is possible that for the maltreated children, emotion regulation is more of a moderator than a mediator. Another possible reason for this result is that both emotion regulation and parenting style are important and unique predictors of symptoms of psychopathology.

The data suggest that children abused earlier in this developmental period, experience less positive affect lability. If early abuse is presumed more deleterious than later abuse, from the attachment perspective, then the question arises why children abused later are also more labile. Another unexpected finding was that child irritability/anger lability was inversely associated with externalizing symptomatology for the non-maltreated group only. It is uncertain why these results for lability were found. Further research must investigate this construct of affect lability and specifically examine the most appropriate methods for measuring this construct.

Studies of this type enable researchers to clarify risk factors for maladaptation and can aid in strengthening prevention efforts by targeting the specific needs of the child. Raver (2004) recently argued for the value of studying high risk populations and the importance of placing the study of emotion regulation within its sociocultural context. The present investigation examined young maltreated children within the parent-child dyad, arguably the most significant social context for children of this age. These data suggest that maltreated children experience difficulties in the development of emotion regulation which may be responsible for their higher levels of behavioral symptomatology. However, maltreated children with more positive parental affect exhibit less internalizing symptomatology and appear better able to regulate their

emotions. This "resilient" group suggests that positive parenting can mitigate some of the harmful effects of maltreatment. Moreover these data suggest that clinical intervention for those children who experience abuse in infancy may be particularly important. Therefore this study has significant intervention implications; improving the parent child relationship in a dyad where abuse has occurred is paramount to placing the child on a trajectory of healthy development.

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