

Emotional Dysregulation and Negative Affect Mediate the Relationship Between Maternal History of Child Maltreatment and Maternal Child Abuse Potential

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Abstract Risk for committing child abuse is frequently attributed to an intergenerational “cycle of violence” through which abuse as a child increases risk for committing abuse as a parent. While this hypothesis has support, more research is needed to understand the factors that account for this pattern of risk. Given literature suggesting that adults with a history of child maltreatment have increased risk for a wide range of psychopathology, this study examined the role of two behavioral endophenotypes, emotional dysregulation and negative affect, in the association between maternal experiences of childhood maltreatment and maternal child abuse potential among 83 low-income, primarily African-American mothers of elementary school age children. Results indicate that a mother’s experience of abuse as a child predicts later risk for abusive parenting as measured by child abuse potential scores. However, our data also indicate that the relationship between maternal experience of child abuse and later child abuse potential is mediated by maternal emotional dysregulation and negative affect.

Keywords Child maltreatment · Emotional dysregulation · Negative affect · Child abuse potential · Intergenerational trauma

A robust body of literature demonstrates that exposure to physical, sexual, and emotional abuse in childhood increases

risk for a wide range of mental health problems across the lifespan (Anda et al. 2006; Lanius, Vermetten, and Pain 2010; Mullen, Martin, Anderson, Romans, and Herbison 1996; Silverman, Reinherz, and Giacconia 1996), and adults with histories of childhood maltreatment are particularly vulnerable to the development of stress-related psychopathology in adulthood (Binder et al. 2008; Bradley et al. 2008). The lifespan impact of childhood maltreatment also includes an impact on parenting behaviors. Studies focusing specifically on the parenting practices of mothers who experienced abuse as a child find that these mothers show higher levels of parenting deficits than those who were not abused as children. These parenting deficits include decreased nurturance/supportiveness, increased reactivity/harshness, increased punitiveness, increased permissiveness, increased risk for physical punishment, and higher scores on assessments of child abuse potential (Banyard 1997; Begle, Dumas, and Hanson 2010; Bert, Guner, and Lanzi 2009; DiLillo and Damashek 2003; DiLillo, Tremblay, and Peterson 2000; Haapasalo and Aaltonen 1999; Roberts, O’Connor, Dunn, and Golding 2004; Schuetze and Eiden 2005).

Further data suggest that, all other factors being equal, mothers who experienced abuse as children are more likely to become abusive parents than mothers who were not abused as children (Berlin, Appleyard, and Dodge 2011; Pears and Capaldi 2001). Parental history of child abuse is the most frequently studied child maltreatment risk factor. This research is based on the idea that there is an intergenerational cycle of abuse through which abuse as a child increases risk for committing abuse as a parent (Altemeier et al. 1982; Cappell and Heiner 1990; Coohey and Braun 1997; Dixon, Browne, and Hamilton-Giachritsis 2009; Friedrich and Wheeler 1982; Haapasalo and Aaltonen 1999; Pears and Capaldi 2001). Some researchers estimate that approximately one-third of abused children perpetrate abuse as adults while other studies report wide variations in the transmission rates

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with estimates ranging from 7 to 70 % (Belsky 1993; Haapasalo and Aaltonen 1999; Kaufman and Zigler 1987; Oliver 1993). Some have called into question methodological limitations of this body of literature, suggesting that there is not clear evidence supporting the intergenerational transmission of abuse (Ertem, Leventhal, and Dobbs 2000; Widom 1989). Methods of examining child maltreatment vary, often including only families for which substantiated child abuse exists. Research focused only on substantiated maltreatment is vulnerable to underreporting problems and may lead to a limited range of families being included in research (Cross and Casanueva 2009). Even taking these concerns into account, the overall literature supports the idea that parents who were abused in childhood are at increased risk for abusing their own children (Berlin, Appleyard, and Dodge 2011; Egeland, Bosquet, and Chung 2002; Kaufman and Zigler 1989). Another approach to research focuses on assessing parental risk for being abusive. Within this field, the most well-developed area focuses on factors predicting increased risk for physical abuse with some related studies also examining risk for physical neglect and emotional abuse (Rodriguez and Tucker 2011; Stith et al. 2009; Thornberry, Knight, and Lovegrove 2012). The present study examines physical child abuse potential using the Child Abuse Potential Inventory (CAPI; Milner 1986, 1994) and assesses three self-reported subtypes of maternal history of child abuse, specifically sexual, physical, and emotional abuse.

Negative Affect and Emotional Dysregulation as Factors Contributing to Increased Risk for Abusive Behavior

While history of child abuse is the most frequently studied child maltreatment risk factor, additional factors have been examined as risks for child abuse, including poverty (Brown, Cohen, Johnson and Salzinger 1998; Whipple and Webster-Stratton 1991), social support and isolation (Crouch, Milner, and Thomsen 2001; Egeland, Bosquet, and Chung 2002; Milner and Chilamkurti 1991), parental substance use disorders (Ammerman et al. 1999), and maternal psychiatric disorders (Briere 1992), among many others. In addition, research has found a strong relationship between childhood maltreatment and exposure to other types of traumatic events across the lifespan (Desai, Arias, Thompson, and Basile 2002; Schaaf and McCanne 1998). Given this relationship, is it important to include assessment of total lifetime trauma exposure in studies examining the potential impact of childhood maltreatment.

A sizable body of research demonstrates that maternal psychiatric disorders, particularly depression (see Goodman 2007), have a negative impact on parenting and may thereby increase risk for becoming an abusive parent (Burke 2003; Chaffin, Kelleher, and Hollenberg 1996; Pears and Capaldi

2001; Shay and Knutson 2008). This research has primarily focused on individual maternal disorders, like depression, with a smaller literature focused on maternal PTSD and other maternal anxiety disorders (Cloitre, Miranda, Stovall-McClough, and Han 2005; Pears and Capaldi 2001; Zajac and Kobak 2009). Further, maternal childhood abuse is associated with increased risk for a wide range of psychopathology with symptom presentations that change over time, often include psychiatric co-morbidities, and may manifest as sub-diagnostic but clinically relevant symptom presentations (Briere, Hodges, and Godbout 2010; Briere and Jordan 2009). Thus, psychological processes that are known to be common across these multiple types of stress-related psychopathology should be taken into consideration in understanding the relationship between maternal exposure to abuse in their childhood and their later parenting of their own children. Two such psychological constructs associated with increased risk for a number of stress-related anxiety and mood disorders, and potentially accounting for co-morbidity among these disorders (Etkin and Wager 2007; Watson, O'Hara, and Stuart 2008; Wilamowska et al. 2010) are negative affect (i.e., feelings of distress, including sadness, nervousness, and anger; (Watson, Clark, and Tellegen 1988)) and emotional dysregulation (i.e., the tendency for emotions to spiral out of control, change rapidly, get expressed in intense and unmodified forms, and/or overwhelm both coping capacity and reasoning (Caliso and Milner 1994; Linehan and Heard 1992; Shedler and Westen 2004)). Effective emotional regulation, on the other hand, involves being able to exercise control over when, where, and how to experience or express a given emotion (Gross 1998). Both the experience of negative affect and difficulty effectively regulating its expression may be important aspects of abusive parenting.

Exposure to childhood abuse is associated with increased negative affect and problems with emotion regulation in adulthood (Cloitre et al. 2005; Gratz, Paulson, Jakupcak, and Tull 2009; Mammen, Kolko, and Pilkonis 2002; Milner and Chilamkurti 1991), and these problems may begin to manifest as early as childhood (Alink, Cicchetti, Kim, and Rogosch 2009; Kim and Cicchetti 2010; Maughan and Cicchetti 2002; Shields and Cicchetti 1998; Shipman, Edwards, Brown, Swisher, and Jennings 2005). Children with high levels of negative affect are at increased risk for developing emotional dysregulation when their development also occurs in the context of environmental adversity (Calkins and Hill 2007). Research conducted by Cloitre et al. (2005) found that emotion regulation was a strong predictor of functional impairment in adulthood among women with a history of child maltreatment beyond sociodemographics and PTSD severity. Thus, high levels of negative affect and associated emotional dysregulation may be important factors contributing to the robust relationship between exposure to childhood adversity and a wide range of psycho-social problems, including

impaired parent-child relationships (Alink et al. 2009; Anda et al. 2006; De Pauw and Mervielde 2010; Krueger et al. 2002; Krueger and Tackett 2003; Nigg 2000).

The Role of Negative Affect and Emotional Dysregulation in Increased Risk for Abusive Parenting

Given the association between childhood maltreatment and adult negative affect and emotional dysregulation, it is important to examine a potential mediating role of both negative affect and emotional dysregulation in the intergenerational cycle of abuse. It has been shown that higher negative affect (i.e., manifest anxiety and depression-dejection) was found among mothers who experienced childhood maltreatment and perpetrated maltreatment with their own child compared to mothers who provided adequate care to their child (Egeland, Jacobvitz, and Sroufe 1988). Moreover, Milner and colleagues, in their examination of affective state prior to abuse, found that negative affectivity preceded abusive behavior among mothers who were categorized as high risk for child abuse (Milner, Halsey, and Fultz 1995). Other studies found that aspects of negative affect, specifically anger and impulsive aggression in parenting, were related to experiencing childhood sexual and physical abuse (DiLillo et al. 2000; Mammen et al. 2002); moreover, anger mediated the association between experiencing childhood sexual abuse and abusive parenting behaviors. Parental negative affect is an important factor to consider in the intergenerational cycle of abuse, and how that affect is regulated is also likely important. Poor maternal regulation of negative emotions is associated with an authoritarian parenting style (Martini, Root, and Jenkins 2004), and other research demonstrates the importance of examining the mediating role of emotional dysregulation in the relationship between child maltreatment and future perpetration of interpersonal violence more broadly (Gratz et al. 2009).

Trauma experts have examined mechanisms by which exposure to early traumatic events, specifically child maltreatment, may relate to psychological dysfunction as an adult, which in turn may lead to problematic parenting behavior such as child abuse. Theoretical research in the area of developmental and trauma psychology suggests that child maltreatment often disrupts child development in important domains such as the acquisition of adaptive emotion regulation and interpersonal skills (Cicchetti and Olsen, Kurt 1990; Shields and Cicchetti 1998). Abused children are exposed to excessive emotional demands, while in many cases failing to be taught how to adequately regulate and tolerate emotional arousal (Cloitre 1998; Thompson and Calkins 1996). One model suggests that child maltreatment leads to disruptions in early attachment as the abused child may face instability and insecurity within an early relationship (Briere 1996,

2002). These early experiences may also shape the child's internal working model of the parent-child relationship, which may impact how they parent their own children (Morton and Browne 1998; Zuravin, McMillen, DePanfilis, and Risley-Curtiss 1996). Further, Briere (2002) indicated that this traumatic environment distorts the child's cognitive understanding of self, others, the environment, and the future (e.g., safety and controllability), which may persist into adulthood and may be linked to adult psychological disturbance such as depression and anxiety (Allen 2001; Cloitre et al. 2008). These disturbances in affect and emotion regulation may in turn have a negative impact on parenting and thereby increase risk for becoming an abusive parent (Burke 2003; Chaffin et al. 1996; Pears and Capaldi 2001; Shay and Knutson 2008). Despite a relatively limited body of research on emotional dysregulation and child abuse potential, a strong theoretical framework exists that suggests that at-risk parents may be unable to effectively manage negative affect, may inappropriately attribute internal distress to their children, and may subsequently behave in abusive or neglectful ways (Marziali, Damianakis, and Trocmé 2003). In addition, research suggests that aggressive behavior may serve, in part, as an attempt by the perpetrator to regulate negative affect (Bushman, Baumeister, and Phillips 2001). For example, a parent may experience overwhelming distress related to perceived loss of control and may re-establish a sense of control via harsh or abusive parenting.

The goal of our study was to examine the role of maternal negative affect and emotional dysregulation in accounting for the relationship between maternal experience of child abuse and later child abuse potential. More specifically, our first goal was to test the hypothesis that maternal experience of child abuse (specifically, physical, sexual, and emotional abuse) predicts current physical child abuse potential. Our second goal was to test the hypothesis that the relationship between maternal experience of abuse as a child and current maternal child abuse potential is mediated by both maternal negative affect and emotional dysregulation.

Method

Recruitment and Participant Characteristics

Eighty-three mothers participated in the study. Participants were recruited from waiting rooms of a child psychiatry outpatient clinic, a primary care clinic, and an obstetrics/gynecology clinic at the Grady Health Systems in Atlanta, GA (see Jovanovic et al. 2011 for more details of the study methodology). Eligible participants were women who were primary care-givers of children between the age of 6 and 13. Overall the sample was comprised of primarily African American, low income women. See Table 1 for a description of

Table 1 Participant characteristics

Demographics	
Age— <i>M</i> (<i>SD</i>)	34.84 (8.83)
African-American— <i>N</i> (%)	80 (96.39)
High grade completed— <i>N</i> (%)	
Less than 12th grade	22 (26.2)
12th or high school graduate	30 (35.7)
GED	6 (7.1)
Some college or technical school	15 (17.9)
Technical school graduate	4 (4.8)
College graduate	5 (6.0)
Graduate school	1 (1.2)
Household monthly income— <i>N</i> (%)	
\$0–249	12 (14.3)
\$250–499	5 (6.0)
\$500–999	31 (36.9)
\$1,000–1,999	31 (36.9)
\$2,000 or more	4 (4.8)

participants' age, racial identification, highest grade completed, and household monthly income.

Measures

Childhood Trauma Questionnaire (CTQ) The CTQ (Bernstein and Fink 1998; Bernstein et al. 2003) is a self-report instrument assessing three types of child abuse: sexual, physical, and emotional. For the purposes of our analyses, we categorized each type of abuse into three levels following Bernstein and Fink's score ranges for differing levels of abuse (Bernstein and Fink 1998), with scores of 0 (none/mild), 1 (moderate), and 2 (severe). In addition, we created an overall abuse score summarizing total number of types of abuse experienced at the moderate or severe level by each participant. This variable has 3 levels: no abuse (0), one type of abuse (1) and 2 or more types of abuse (2). Internal consistency in the current sample was good ($\alpha=.95$).

Traumatic Events Inventory (TEI) Lifetime history of trauma other than childhood maltreatment was assessed using the TEI (Bradley et al. 2008; Gillespie et al. 2009; Schwartz, Bradley, Sexton, Sherry, and Ressler 2005). This instrument measures life-time exposure to different categories of trauma, including natural disaster, serious accident or injury, sudden life-threatening illness, military combat, physical assault, and sexual assault. Consistent with our prior research, we created the total trauma exposure score by creating a sum of the number of different types of trauma to which participants reported exposures (the childhood abuse items in this inventory were excluded to avoid overlap with the information collected with the CTQ). The mean number of types of non-

child abuse trauma reported in the current sample was 4.28 ($SD=2.66$, range 0 to 12). See Table 2 for details of traumatic exposure in this sample, including child abuse and non-child abuse trauma.

Emotional Dysregulation Scale (EDS) The EDS (Bradley et al. 2011) is a 24-item self-report scale adapted from the clinician-rated Affect Regulation and Experiences Questionnaire (Westen, Muderrisoglu, Fowler, Shedler, and Koren 1997; Westen and Shedler 1999a, 1999b; Zittel Conklin and Westen 2005). Items are scored on a 7-point Likert scale and assess domains of emotional experiencing (e.g., "My emotions sometimes spiral out of control," "Emotions overwhelm me," "When I feel angry, I get *really* angry"), cognition (e.g., "When I'm upset, I have trouble seeing or remembering anything good about myself," "When I'm feeling bad, I have trouble remembering anything positive; everything just feels bad"), and behavior (e.g., "When my emotions are strong, I often make bad decisions," "When I'm upset, I sometimes become needy or clingy"). This self-report measure of emotional dysregulation demonstrates high internal consistency ($\alpha=.97$) and relates as expected to a range of psychopathology criterion variables including PTSD, substance abuse problems, depression, suicide history, and subjective sense of adaptive functioning (Bradley et al. 2011). A copy of the full measure is available at www.psychsystems.net. The mean EDS score for this sample was 82.54 ($SD=40.47$, range 24 to 168). Within this sample, this scale demonstrated good internal consistency with a Cronbach's alpha of .96.

Positive and Negative Affect Schedule (PANAS) The PANAS (Watson et al. 1988) is a 20-item self-report questionnaire measuring both positive and negative affect; however, for the current study, we used only negative affect scores. The PANAS is well validated and has been widely used as a broad, brief self-report measure of negative affect. Items are rated on a 1 (*very slightly/not at all*) to 5 (*extremely*) Likert-type scale. Respondents indicate to what extent they have felt a particular way in general. Sample items include feeling, "distressed," "nervous," and "ashamed." The mean negative affect score for this sample was 21.79 ($SD=9.57$, range 10 to 48). Internal consistency for this subscale within the current sample was good ($\alpha=.91$).

Child Abuse Potential Inventory, 2nd Edition (CAPI) The CAPI (Milner 1986, 1994) is a 160-item self-report screening measure used to assess risk for perpetration of physical child abuse. Seventy-seven items contribute to an overall physical abuse potential score with six subscales (distress, rigidity, unhappiness, problems with child and self, problems with family, and problems from others); the remaining items contribute to three validity scales. Respondents indicate that they either agree or disagree with each item statement on the

Table 2 Lifetime rates of traumatic events ($N=83$)

Traumatic events and childhood abuse	Percent of sample
Natural disaster	22.6
Serious accident or injury	42.9
Sudden life-threatening illness	17.9
Military combat	0
Witness close friend or family member murdered	17.9
Attacked with weapon by partner/spouse	27.4
Attacked with weapon by other than partner/spouse	26.2
Attacked without weapon by partner/spouse	52.4
Attacked without weapon by other than partner/spouse	17.9
Violence between parents or caregivers	31.0
Forced sexual contact after age 17	15.5
Moderate or severe childhood physical abuse (CTQ)	29.8
Moderate or severe childhood sexual abuse (CTQ)	45.2
Moderate or severe childhood emotional abuse (CTQ)	26.2

inventory. Items are based on attitudes and parenting behavior that have been observed in parents who have been identified as physically abusive (Milner 1994; Milner, Gold, and Wimberley 1986; Walker and Davies 2010). Example items include, “Spanking that only bruises a child is okay” and “A child should never talk back.” Milner (1986) recommended a cutoff score of 215 to indicate high-risk for abuse. It is important to note that this score represents only an assessment of risk and cannot be interpreted as certain presence of abuse. In the current study, we analyzed scores continuously; the mean CAPI score for this sample was 194.19 ($SD=97.07$, range 39 to 395).

The CAPI is widely used and demonstrates good reliability and differential validity, even across several cultures (Walker and Davies 2010). The CAPI has demonstrated concurrent and predictive validity in differentiating non-physically abusive parents from abusive parents, with correct classification ranging across studies between 80 and 90 % (Caliso and Milner 1994; Milner 1994; Milner, Gold, Ayoub, and Jacewitz 1984; Milner et al. 1986; Milner and Robertson 1989; Walker and Davies 2010). For example, in a study comparing identified physical child abusers participating in an at-risk parent-child program and a non-abusive control group, the CAPI abuse scale alone, without use of validity scales, correctly classified 85.4 % of participants (88.2 % of control and 82.7 % of abusers correctly classified; Milner et al. 1986). Using the validity scales, classification improved even further (93.2 %). Internal consistency (split-halves and KR-20 reliability coefficients) reliabilities ranged from .92 to .98 for a variety of groups including general population, at risk, neglectful, and physically abusive groups (Milner 1986). In the

current sample, 37.3 % of our sample had scores within the high-risk for abuse range using the recommended cutoff score of 215. Other studies have used cutoff scores of 166 or higher to define high-risk parents based on a signal detection theory described in the CAPI technical manual (Milner 1986; Milner, Halsey and Fultz 1995). If this cutoff were used, 54.8 % of our sample scored within the high-risk for abuse range. In a study comprised of generally lower-income participants (52 % African American), substantiated neighborhood child maltreatment rates were significantly correlated ($r=.48$) with mean neighborhood CAPI scores (Merritt 2009). In another study of low-income mothers identified by professionals as at-risk for abusive parenting, maternal responses to parenting situation vignettes were rated as increasingly controlling, punishing, and rejecting as CAPI scores increased, and CAPI scores were significantly correlated ($r=.74$) to the number of identified risk factors present (e.g., child developmental delay, maternal substance abuse, maternal unemployment, etc.; Monroe and Schellenbach 1989). Thus, prior research on the CAPI instrument suggests that it is both reliable and valid in populations similar to the one used in the current study.

Results

Table 3 presents correlations among all of the key variables. As expected, each type of abuse and neglect was significantly and positively correlated to all other variables. Based on this finding as well as the intercorrelations of the CTQ subscales (physical, sexual, and emotional abuse), we decided to analyze all types of abuse together, using an overall CTQ score (coded as no, moderate, or severe abuse of any type) as a predictor variable rather than conducting separate analyses for different types of abuse. We considered adding childhood abuse into a separate step following the step in which total life trauma was indicated. We decided against this because childhood abuse predicts later life trauma exposure and is strongly associated with other types of early life childhood trauma exposure. Given this strong association between these related but not fully overlapping constructs we chose to enter them into the same step into the regression. Of note, even when total life trauma score is entered into the equation in the first step, the second step (with CTQ entered alone) still accounts for a significant amount of additional variance in the regression equation. Finally, considering the theoretical and empirical overlap between negative affect and emotional dysregulation in the presentation of many forms of psychopathology, we decided to assess the two constructs together.

In order to evaluate our two hypotheses, we conducted a hierarchical multiple regression predicting abuse potential with demographic variables (i.e., age, education, and income) entered in the first step, number of lifetime traumatic

Table 3 Pearson correlations among study variables

	1	2	3	4	5	6	7	8	9
1) TEI traumatic experiences	—								
2) CTQ physical abuse	.40**	—							
3) CTQ sexual abuse	.35**	.35**	—						
4) CTQ emotional abuse	.38**	.51**	.38**	—					
5) PANAS negative affect	.25**	.24**	.21**	.29**	.21**	.21**	—		
6) EDS emotional dysregulation	.32**	.27**	.20**	.32**	.22**	.17**	.62**	—	
7) CAPI abuse scale	.35**	.32**	.31**	.36**	.24*	.20	.61**	.61**	—

* $p < .05$, ** $p < .01$

TEI Traumatic Experiences is a continuous variable representing the total number of different types of trauma other than childhood abuse and neglect reported by each participant. The variable ranges from 0 to 12. Each of the CTQ abuse subtypes are scored based as an ordinal variable with 0 = no or mild abuse, 1 = moderate abuse and 2 = severe abuse. PANAS, EDS, and CAPI are analyzed as continuous total scores for each measure

experiences (excluding childhood abuse) and childhood abuse entered in the second step, and emotional dysregulation and negative affect entered in the final step (see Table 4; the variance inflation factors for each coefficient suggested that multicollinearity was not a concern.). Demographic variables did not predict abuse potential in any step of the analysis. After including both demographics and number of lifetime traumatic experiences (excluding childhood abuse) into the regression in the second step, childhood abuse alone predicted abuse potential. These data support our first hypothesis that maternal childhood abuse is associated with higher levels of current child abuse potential. However, childhood abuse was no longer predictive when emotional dysregulation and negative affect were accounted for in the next step, supporting our second hypotheses that the relationship between maternal childhood abuse and levels of current child abuse potential is mediated by negative affect and emotional dysregulation. To further evaluate this hypothesis, we conducted a multiple mediation analysis in accordance with the guidelines provided by Baron and Kenny (1986) to test whether the relationship between the experience of childhood abuse and the potential to abuse one's own child is mediated by emotional dysregulation and negative affect. Three consecutive regression analyses were used to assess mediation. In the first analysis, the proposed mediators (emotional dysregulation and negative affect) were regressed on the experience of childhood abuse. In the second analysis, child abuse potential was regressed on the experience of childhood abuse. In the final analysis, child abuse potential was regressed on the experience of childhood abuse and the proposed mediators. Sobel's t -test equation, provided by Baron and Kenny (1986), was then used to test the significance of mediation. This equation examines the significance of the reduction in the effect of the independent variable that is found in the dependent variable after including the mediator in order to assess the indirect effect of the independent variable on the dependent variable via the mediator.

Regression analyses revealed that the relationship between experiencing childhood abuse and potential for child abuse as an adult was significantly reduced when emotional dysregulation and negative affect were accounted for (see Table 5 and Fig. 1). The data suggest that both variables serve as mediators in the relationship between maternal childhood abuse and maternal child abuse potential. We calculated the effect size of the mediation for emotional dysregulation and negative affect separately. Calculations were based on MacKinnon and MacKinnon's (2008) suggestions (dividing the product of paths a and b by the standard deviation of the dependent variable). Using this approach, we determined that the magnitude of the mediation effect of emotional dysregulation was a change of .23, and .11 for negative affect, standard deviation units in CAPI scores. These represent small effects (Cohen 1988).

Discussion

It is important to consider that mothers in our sample are parenting in a high stress, high risk environment. The majority of participants reported household incomes of less than \$12,000 per year and only 4 % reported household incomes higher than \$24,000 per year. In addition, the majority reported high lifetime rates of exposure to trauma, including high rates of child abuse with approximately 30 % reporting moderate to severe childhood physical abuse, approximately 25 % reporting moderate to severe childhood emotional abuse and just under half reporting moderate to severe childhood sexual abuse. Consistent with prior research supporting an intergenerational pattern of risk for child abuse (Altemeier et al. 1982; Cappell and Heiner 1990; Coohey and Braun 1997; Dixon et al. 2009; Friedrich and Wheeler 1982; Haapasalo and Aaltonen 1999; Pears and Capaldi 2001), we found that mothers' childhood abuse experiences significantly predicted current child abuse potential. However, the relationship

Table 4 Abuse predicts abuse potential even when controlling for demographics and trauma exposure but not when emotional dysregulation and negative affect scores are controlled

Model	R^2	$SE(R^2)$	$F\Delta$	p	
Demographics	.04	98.76	.87	.46	
+ lifetime trauma + childhood abuse	.25	88.59	9.01	<.001	
+ emotional dysregulation + negative affect	.53	70.93	18.93	<.001	
Coefficients	<i>b</i>	$SE(b)$	<i>t</i>	p	<i>VIF</i>
Age	.32	1.43	.22	.82	1.23
Highest grade completed	-1.91	8.49	-.23	.82	1.25
Household monthly income	-17.28	11.51	-1.55	.13	1.04
Age	.78	1.3	.60	.55	1.26
Highest grade completed	-.75	7.68	-.10	.92	1.27
Household monthly income	-14.03	10.03	-1.40	.17	1.05
Number of lifetime traumatic experiences	8.00	4.84	1.65	.10	1.34
Childhood abuse	39.98	14.38	2.78	.01	1.25
Age	-.05	1.05	-.04	.97	1.29
Highest grade completed	5.39	6.24	.86	.39	1.31
Household monthly income	-5.14	8.16	-.63	.53	1.08
Number of lifetime traumatic experiences	4.76	3.92	1.22	.23	1.36
Childhood abuse	11.61	12.61	.92	.36	1.50
Emotional dysregulation	.97	.26	3.66	.001	1.62
Negative affect	3.26	1.03	3.16	.002	1.36

Demographics = age, highest grade completed, and household monthly income; *VIF*, Variance Inflation Factor

between experiencing childhood abuse and child abuse potential was not one to one, as not all mothers who reported abuse histories were deemed “at risk” based on the CAPI. Maternal negative affect and emotional dysregulation mediated the relationship between child experiences of abuse and current child abuse potential. These data contribute to a growing body of research suggesting that negative affect and emotional dysregulation are important behavioral endophenotypes underlying the relationship between exposure to child abuse and risk for potential child abuse (DiLillo et al. 2000; Egeland et al. 1988; Mammen et al. 2002; Milner, Halsey, and Fultz 1995).

This study demonstrates that negative affect and emotional dysregulation play an important role in the intergenerational cycle of abuse, but the reason for that importance can likely be explained in a number of ways. One explanation may be that an abused child’s understanding of self, others, relationships, and the world, including beliefs about safety and control, may become distorted and increase risk for adult psychopathology, such as anxiety and depression (Briere 2002; Cloitre et al. 2008). Moreover, a child in an abusive home may be unable to effectively manage this distress out of fear of punishment or rejection and may instead engage in strategies such as social withdrawal and aggressive behavior, resulting in seriously

Table 5 Regression analyses for mediational models with emotional dysregulation and negative affect

Emotional dysregulation	R^2	$SE(R^2)$	<i>F</i>	p	<i>b</i>	$SE(b)$
Regression 1 (CTQ→EDS)	.22	35.91	20.73	<.001	22.98	5.04
Regression 2 (CTQ→PANAS)	.08	9.25	5.91	.02	3.22	1.32
Regression 3 (CTQ→CAPI)	.19	89.31	15.90	<.001	51.74	12.98
Regression 4 (CTQ, EDS, PANAS→CAPI)	.52	70.02	23.50	<.001		
Coefficients—Regression 4	<i>b</i>	$SE(b)$	<i>t</i>	p		
Childhood abuse	17.80	11.54	1.54	.13		
Emotional dysregulation	.97	.26	3.80	<.001		
Negative Affect	3.41	1.01	3.39	.001		

CTQ→EDS = regressing EDS on CTQ; CTQ→PANAS = regressing PANAS on CTQ; CTQ→CAPI = regressing CAPI on CTQ; CTQ, EDS, PANAS→CAPI = regressing CAPI on CTQ, EDS, and PANAS

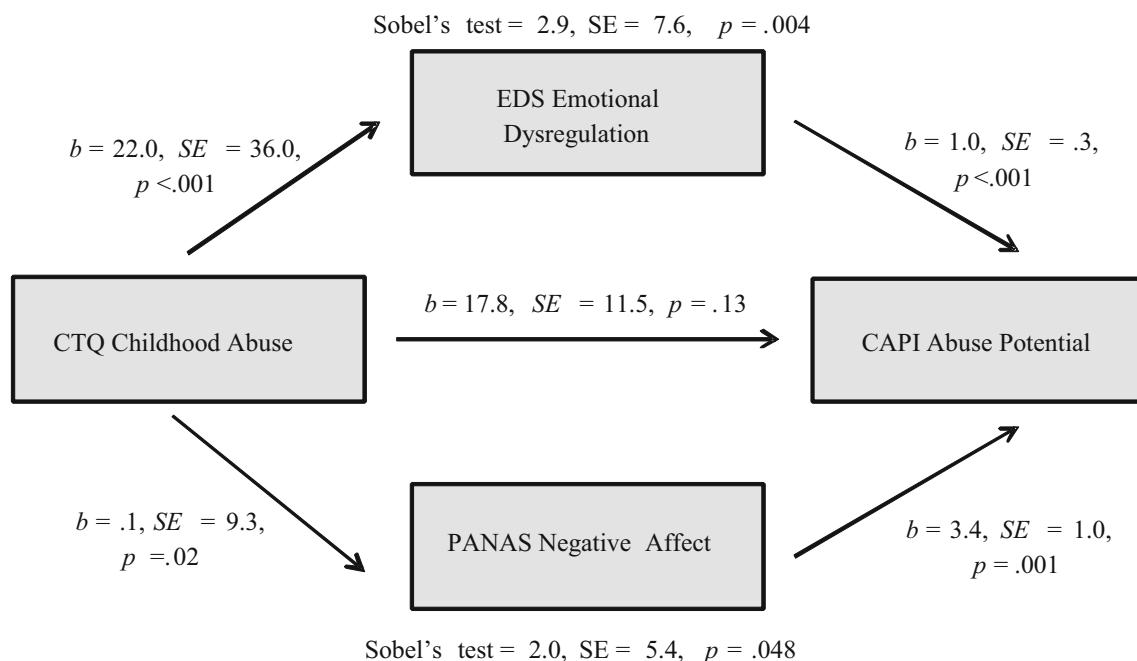


Fig. 1 The relationship between experiencing childhood abuse and potential for child abuse as an adult is significantly and fully mediated by emotional dysregulation and negative affect

impaired social competency (Shields and Cicchetti 1998). Encumbered with unmanageable distress, the now adult parent may have limited ability to cope with emotions in interpersonal situations, may misattribute the source of emotional distress as coming from the child, and may respond with withdrawal and aggression—neglect and abuse (Marzali et al. 2003).

Our findings should be considered with respect to several important limitations. First, data were collected cross-sectionally, and longitudinal studies may afford clearer identification of factors associated with inter-generational risk for child abuse. Second, our sample was homogeneous in terms of both race and income, thereby limiting the generalizability of our findings. We consider this limitation counterbalanced by the fact that our data were gathered in a population of mothers who are at extraordinarily high risk for trauma exposure and associated adverse outcomes, including increased risk for stress-related psychological disorders. Third, our study presents only data collected via retrospective self-report methods, which can result in underestimation of exposure to childhood abuse (Shaffer, Huston, and Egeland 2008), as well as potential for socially-desirable responding to questions regarding current harsh or abusive parenting. To address this limitation, we used well-validated instruments, specifically the CTQ and the CAPI. We used validated norms for moderate and severe abuse in order to create our variables reflecting parental history of abuse. While this approach has some advantages, including balancing the risk of false positives and false negatives and standardizing criteria used for abuse across studies, it also has some limitations and may not

yield the same data as other approaches to assessing abuse history (DiLillo et al. 2006; Hardt and Rutter 2004).

Further, given the sole reliance on self-report measures in our study, future research would benefit from assessing parenting behavior and other assessments of parenting that utilize additional methods of measurement such as observation or behavioral tasks. Finally, in assessing the impact that these traumatic experiences have had on parenting and other behavioral endophenotypes, research should examine if the mediational process of these behavioral endophenotypes, such as emotional dysregulation and negative affect, differ among various subsamples of mothers with a history of childhood maltreatment (e.g., mothers at high risk for abuse for child abuse in comparison to those at low risk).

Despite the limitations described, the results of this study have important clinical implications. Study participants were recruited from hospital clinic waiting rooms, mostly primary care and OB/GYN, as well as some from a child psychiatric clinic. African American and low-income individuals are more likely, relative to white and higher-income individuals, to discuss emotional distress or seek mental health treatment in general medical settings, such as primary care clinics, rather than traditional mental health settings (Cooper-Patrick et al. 1999; Leaf et al. 1985). Given this role in mental health treatment, as well as the results of this study, medical professionals may be in a unique position to intervene in the intergenerational cycle of abuse and should consider screening mothers for traumatic exposure, particularly childhood abuse, as well as general emotional distress. Offering education, treatment, or appropriate referrals to these mothers may

reduce potential for child abuse via strategies to decrease negative affect and improve emotional regulation. While a number of treatment approaches are effective in reducing negative affect and improving emotional regulation, cultural considerations should be taken into account. Some research suggests that mindfulness-based interventions are effective in treating African American women with stress-related disorders, utilizing culturally-relevant strategies such as prayer, meditation, and family-oriented tasks (Dutton, Bermudez, Matas, Majid, and Myers 2011; Woods-Giscombe and Black 2010).

Additionally, children of the mothers in our study are developing in adverse contexts, and may themselves benefit from strategies to improve emotional regulation (Calkins and Hill 2007). Parenting interventions that improve children's effective emotional regulation may further reduce the risk of child abuse in subsequent generations by addressing at least one key component in the cycle. Attachment-based parenting approaches (Cicchetti, Rogosch, and Toth 2006) may help to improve child emotion regulation. Similar to our findings that negative affect and emotional dysregulation mediate the relationship between experiencing abuse as a child and risk for perpetrating abuse as an adult, a study of maltreated children found that child emotional dysregulation mediated the relationship between maltreatment and psychopathology but only for insecurely attached children (Alink et al. 2009). For securely attached mother-child pairs, maltreatment was not related to emotional dysregulation at all. The intergenerational cycle of abuse is complex and not quickly broken by any single strategy; however, by identifying important factors contributing to that cycle, such as negative affect and emotional dysregulation, we may be better equipped to interrupt it.

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