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Abstract

The purpose of this study was to elucidate cognitive and behavioral mechanisms involved in the intergenerational transmission of trauma from abuse-survivor mothers to their toddler/preschool-aged children. This study investigated whether maternal trauma-related cognitions, i.e. child abuse-related appraisals (betrayal, self-blame, fear, anger, shame, alienation), disorganized memory and intrusive memory for abuse were associated with toddler internalizing and externalizing symptoms, and whether mother-child dysfunctional interactions mediated these relationships among a sample of 113 mothers who survived child abuse. When controlling for maternal trauma symptoms, maternal child abuse-related appraisals, disorganized memory, and trauma symptoms predicted toddler internalizing symptoms, whereas maternal intrusive memory and trauma symptoms predicted toddler externalizing symptoms. Maternal child abuse-related appraisals and disorganized memory were also associated with more dysfunction in the mother-child relationship. Higher levels of maternal shame were associated with more toddler internalizing and externalizing symptoms. More betrayal but less fear among abuse-survivor mothers was associated with toddler externalizing symptoms. These findings provide preliminary evidence in support of maternal trauma-related cognitions as mechanisms for the intergenerational transmission of trauma.

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First Advisor

Anne P. DePrince, Ph.D.

Second Advisor

Jennifer Erikson-Cornish

Third Advisor

Stephen Shirk

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Predictors of Emerging Psychopathology Among Toddlers and Preschoolers
of Mothers with Childhood Abuse Histories

A Dissertation

Presented to
the Faculty of Social Sciences
University of Denver

In Partial Fulfillment
of the Requirements for the Degree
Doctor of Philosophy

by

Rebecca L. Babcock Fenerci

August 2016

Advisor: Anne DePrince, Ph.D.

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Author: Rebecca L. Babcock Fenerci
Title: Predictors of Emerging Psychopathology Among Toddlers and Preschoolers of Mothers with Childhood Abuse Histories
Advisor: Anne DePrince, Ph.D.
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CHAPTER 1: INTRODUCTION

Children of parents who have experienced trauma (e.g. abuse and neglect) are at greater risk for numerous negative outcomes including: altered responses to stress (Bierer et al., 2014), exposure to maltreatment (Lieberman, Chu, Van Horn, & Harris, 2011; Milner et al., 2010), insecure or disorganized attachment (Bosquet Enlow, Egeland, Carlson, Blood, & Wright, 2014), emotion regulation difficulties (Pat-Horenczyk, et al., 2013) along with a host of mood and behavioral disorders (i.e. PTSD: Scheeringa & Zeanah, 2008; dissociation: Hulette, Kaehler, & Freyd, 2011; anxiety: Field, Muong, & Sochanvimean 2015; depression: Leen-Feldner, Feldner, Bunaciu, & Blumenthal, 2011; oppositional defiance disorder: Zajac & Kobak, 2009). The increased risk the children of trauma survivors incur is referred to as the “intergenerational transmission of trauma” (e.g. Dekel & Goldblatt, 2008; Schwerdtfeger, Lazelere, Werner, Peters, & Oliver, 2013). The intergenerational transmission of trauma is a considerable public health concern, especially given that emotion regulation difficulties have been found to emerge in children of parent survivors as early as infancy (Bosquet Enlow, Kitts, Blood, Bizarro, Hofmeister, & Wright, 2011) and symptoms as early as toddlerhood (Schwerdtfeger, Lazelere, Werner, Peters, & Oliver, 2013; Zeanah, 2000).

In order to minimize the long-term effects of the intergenerational transmission of trauma, a better understanding of how mood and behavior symptoms first develop in children who are two to five years old (i.e. toddlers and preschoolers) is needed. If at-risk toddlers/preschoolers do not receive adequate early intervention, mood and behavior concerns often persist and worsen during children's school-aged years (Campbell & Ewing, 1990; Prior, Smart, Sanson, Pedlow, & Oberklaid, 1992; Shaw, Owens, Giovannelli, & Winslow, 2001) and even adolescence (Bosquet Enlow, Egeland, Carlson, Blood, & Wright, 2014). The current study seeks to inform early intervention strategies with abuse-survivor mothers and their young children by investigating whether specific maternal trauma-related cognitions predict mood and behavioral symptoms in toddlers/preschoolers and whether a dysfunctional mother-child relationship mediated these associations.

Intergenerational Transmission of Trauma: Abuse-Survivor Mothers

Children of parents who have experienced interpersonal traumas, such as child abuse, may be particularly vulnerable to developing mood and behavior problems (Chu & DePrince, 2006; DeGregorio, 2013; Lyons-Ruth & Block, 1996). For example, a recent meta-analysis by Lambert and colleagues (2014) found that effect sizes of child psychological distress were larger for parents who had experienced interpersonal traumas than for parents who had experienced war or combat-related trauma. Schwerdtfeder and Goff (2007) found that prenatal attachment (a common predictor of child mood and behavior symptoms) was disrupted in mothers who experienced interpersonal trauma, but not among mothers who experienced non-interpersonal trauma. Moreover, a recent study

by Babcock Fenerci, Chu and DePrince (2016) found more internalizing and externalizing symptoms for school-aged children of mothers who were abused in childhood by someone with whom they were very close compared to children of mothers who were abused by someone with whom they were not close or mothers who were not abused. These results suggest that children of child abuse survivors are especially vulnerable to experiencing psychological distress, yet it is still unclear how this distress is transmitted across generations.

Cognitive and Behavioral Mechanisms of Transmission

Research thus far on the intergenerational transmission of trauma has focused primarily on links between parent survivors' psychopathology and children's psychological distress (Lambert, Holzer, & Hasbun, 2014). For example, substantial research links maternal PTSD and depression symptoms to the development of child symptoms (Chemtob, Nomura, Rajendran, Yehuda, Schwartz, & Abramovitz, 2010; VanDeMark, Russell, O'Keefe, Finkelstein, Noether, & Gampel, 2005). Although such studies have provided critical evidence conferring the risk parental trauma-related psychopathology has on children's social-emotional well-being, the specific cognitive and behavioral mechanisms through which transmission occurs are still poorly understood. Understanding how trauma and its associated psychological distress are transmitted to the next generation through cognitive and behavioral mechanisms is crucial to providing targeted cognitive-behavioral interventions to parent-child dyads.

In their study of transmission of psychopathology across generations, Schwartz and colleagues (1994) theorized two pathways of transmission: 1) direct, specific and 2)

indirect, general. The direct, specific pathway of transmission suggests that children develop maladaptive thinking and behavior as a direct result of being exposed to their parent's psychopathology. For instance, the child of a mother with PTSD who engages in hypervigilance may learn that the world is a dangerous place which could, in turn, increase the child's risk of developing his/her own anxiety. This pathway suggests that parents' trauma-related psychopathology directly impacts the development of child mood and behavior symptoms. On the other hand, the indirect, general pathway of transmission suggests that children develop maladaptive thinking and behavior as result of a dysfunctional relationship with their parents, not from their parents' trauma-related psychopathology itself (Schwartz, Dohrenwend, & Levav, 1994).

Initial support for the indirect, general pathway of transmission is derived from findings that maternal trauma history predicts mothers' displays of more punitive (Cohen, Hien, & Batchelder, 2008), frightening (Jacobvitz, Leon, & Hazen, 2006), hostile-intrusive (Moehler, Biringen, & Poustka, 2007) and disengaged behaviors (Chu & DePrince, 2006; Lyons-Ruth & Block, 1996) towards their young children. Recent studies have also found associations between mothers' PTSD/trauma histories, parenting styles and children's psychological distress. A study by Field and colleagues (2013) found that a role-reversal parenting style mediated the relationship between maternal PTSD and daughters' anxiety. Lang and colleagues (2010) found that a maternal history of physical abuse was associated with a poorer mother-child relationship as well as hypervigilance and difficulty recovering from distress among infants. Schwerdtfeger and colleagues (2013) found that mother survivors of interpersonal trauma displayed more

physical coercion and verbal hostility and less nurturance towards their toddlers, with verbal hostility predicting higher levels of toddler mood and behavior problems.

This literature provides empirical evidence in support of Schwartz and colleagues' (1994) indirect, general pathway of transmission by demonstrating that parents' dysfunctional relationship with their children can indeed influence the development of children's mood and behavior problems among mothers who have survived trauma. Further research is still necessary to elucidate maternal trauma-related cognitions that may impact abuse-survivor mothers' behavior towards their children, especially given that some abuse survivors do go on to abuse their own children whereas others do not (Merrick, Leeb, & Lee, 2013). The current study proposes that: a) specific ways abuse-survivor mothers think about and process their own child abuse (defined as maternal trauma-related cognitions) will be linked to a dysfunctional relationship between mothers and their young children; b) a dysfunctional mother-child relationship will explain the associations between maternal trauma-related cognitions and their toddlers'/preschoolers' mood (i.e. internalizing) and behavior (i.e. externalizing) symptoms.

Maternal Trauma-Related Cognitions

Though associations between maternal trauma history and child psychological distress are well established, the maternal cognitive mechanisms through which these relationships may operate have yet to be studied. Research in the field of trauma and attachment suggests that cognitions of abuse-survivor mothers are relevant to children's early social-emotional development, in that abuse-survivor mothers have more maladaptive cognitions of their children and these cognitions predict disrupted infant

attachment. Specifically, mothers with PTSD show more disengaged and distorted mental representations of their children (Schechter et. al, 2005) as well as more negative attributions towards their child, primary attachment figure and themselves (Schechter et. al, 2015). Child abuse-survivor mothers with unresolved trauma and low reflective functioning are more likely to have infants with insecure or disorganized attachment (Berthelot, Ensink, Bernazzani, Normandin, Luyten, & Fonagy, 2015; Iyengar, Kim, Martinez, Fonagy, & Strathearn, 2014). This literature demonstrates the impact child abuse can have on mothers' cognitions about their own children and how such cognitions can disrupt attachment in infancy. The degree to which maternal cognitions related to mothers' own child abuse experience/s (i.e. maternal trauma-related cognitions instead of cognitions related to one's own child) influence the relationship between mothers and children beyond the infancy period is still unknown. However, previous research points to variables that could be considered. For example, childhood trauma is linked to specific trauma-related cognitions, such as post-trauma appraisals (Babcock & DePrince, 2012; DePrince, Chu, & Pineda, 2011), memory disruptions (DePrince & Freyd, 2004; Freyd, 1996), and interpersonal schemas (Kaehler, Babcock, DePrince, & Freyd, 2013; DePrince, Combs, & Shanahan, 2009) that can in turn, increase survivors' trauma-related distress (DePrince et al., 2011).

Although trauma-related cognitions are associated with abuse survivors' psychological distress, the empirical literature has not examined the potential influence trauma-related cognitions have on survivors as parents. The current study sought to address critical gaps in the literature by examining whether maternal trauma-related

cognitions were significantly linked with mood and behavior concerns in their young children. Amos, Furber and Segal (2011) developed a theoretical framework for understanding how trauma-related cognitions may impact abuse-survivor parents' behavior towards their children. According to Amos & colleagues (2011), the experience of being a parent may be uniquely distressing for survivors of childhood abuse. Although one of the main goals of an early mother-child relationship is to establish a healthy, mutual attachment (Attachment theory; Ainsworth, Blehar, Waters, & Wall 1978), survivor-mothers' own early attachments have likely been disrupted by the abuse they experienced as children. Therefore, the experience of mothering and attempting to form a positive bond with one's child may trigger negative cognitions related to mothers' early experiences of abuse (Amos et al., 2011). In this triggering situation, mothers may commit a source attribution error (Briere & Scott, 2006) where they misattribute the distress they are experiencing to their child *instead* of the overall parenting context. Source attribution errors could possibly explain the increased risk that mothers with trauma histories have for maltreating or not providing adequate care to their children (Banyard, Williams, & Siegal, 2003; Amos et al., 2011).

Extending this theoretical framework, the current study hypothesized two trauma-related cognitions (detailed below) would increase the likelihood that mothers will experience distress when interacting with their toddlers/preschoolers, which may, in turn increase their children's risk of developing symptoms. First, a mother who has a high degree of negative childhood abuse-related appraisals (composed of six categories: shame, self-blame, anger, fear, betrayal, and alienation) may be more likely to experience

distress when interacting with her child and misattribute the source of that distress to her child instead of the parenting context itself. Second, when memory of past childhood abuse is disorganized a survivor-mother may be unable to process or resolve her conflicting thoughts/emotions related to her childhood abuse. As result, disorganized memory of childhood abuse may increase a mothers' distress while parenting her child as well as the likelihood that she will commit a source attribution error. In fact, disorganized or lacking memory for childhood abuse has been conceptualized as a byproduct of dissociation, of which has been transmitted across generations (Goldsmith, Barlow, & Freyd, 2004; Hulette, Kaehler, & Freyd, 2011).

The current study also tested the hypothesis that associations between maternal trauma-related cognitions and toddler/preschooler mood and behavior symptoms would be mediated by a dysfunctional mother-child relationship. Specifically, when a mother with trauma-related cognitions becomes distressed in the parenting context and makes a source attribution error, such errors may negatively influence her behavior towards her child- resulting in a dysfunctional mother-child relationship. Poor dyadic relationship quality (referred to in the current study as: dysfunctional mother-child relationship) is a well-established predictor of mood and behavior problems in children (Easterbrooks, Bureau, & Lyons-Ruth, 2012; Kim & Cicchetti, 2004), and could therefore mediate the relationship between mothers' trauma-related cognitions and children's symptoms.

Current Study

The current study evaluated links between maternal trauma-related cognitions, a mother-child dysfunctional relationship, and child mood and behavior symptoms in a

sample of abuse-survivor mothers of toddlers/preschoolers (see Figure 1 for theoretical model). First, this study tested the hypothesis that two types of maternal trauma-related cognitions would have a positive, direct effect on toddler/preschooler internalizing and externalizing symptoms (c'). The two types of maternal trauma-related cognitions were: 1) child abuse-related appraisals and 2) disorganized memory for abuse. Second, the current study hypothesized that a mother-child dysfunctional relationship would mediate the relationships between maternal trauma-related cognitions and toddlers'/preschoolers' symptoms. The current study defines a mother-child dysfunctional relationship as the degree to which mothers' and toddlers'/preschoolers' behavior towards one another is negative and/or conflictual. Thus, we hypothesized that indirect effects (axb) would be significant for each maternal trauma-related cognition (i.e. the independent variables: child abuse-related appraisals and disorganized memory) and outcome (i.e. the dependent variables: toddler internalizing symptoms and externalizing symptoms) combination with dysfunctional mother-child relationship as the mediator. In evaluating the indirect effects, we also hypothesized that effects would be significant and positive for both child abuse-related appraisals and disorganized memory on dysfunctional mother-child relationship (a), along with dysfunctional mother-child relationship on both internalizing symptoms and externalizing symptoms (b).

Given the well-established links between maternal trauma symptoms and child symptoms (e.g. Lambert, Holzer, & Hasbun, 2014) and the high prevalence of psychopathology among abuse-survivor mothers (Cohen, Hien, & Batchelder, 2008; Goodman & Gotlib, 1999), the current study also included maternal trauma symptoms as

a covariate to ensure that such parent symptoms are not a better explanation of children's emerging symptoms. Indirect effects between maternal trauma symptoms and toddler internalizing symptoms and externalizing symptoms via dysfunctional mother-child relationship was also evaluated, given that previous literature demonstrates associations between maternal symptoms and dysfunctional parenting styles (e.g. Field, Muong, & Sochanvimean, 2013). Better understanding the roles that maternal trauma-related cognitions and a mother-child dysfunctional relationship have on toddlers'/preschoolers' social-emotional functioning can help ameliorate child mood and behavior symptoms by informing early cognitive-behavioral and/or parenting interventions with these at-risk dyads.

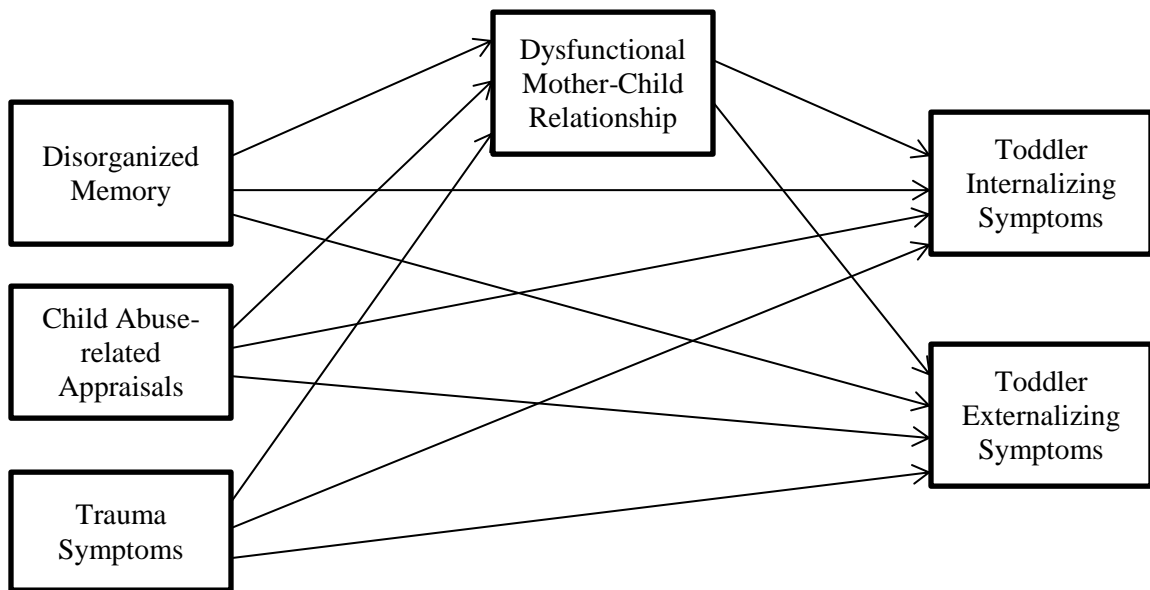


Figure 1: Theoretical model of dysfunctional mother-child relationship as mediator of maternal trauma-related cognitions and symptoms and toddler symptoms.

CHAPTER 2: METHODS

Participants

Mothers (ages 23 to 47 years old, $M = 30.2$ years) with a child between 2 and 5 years old (range: 2 to 5 years old; $M = 3.4$ years) from a metropolitan area in the Rocky Mountain West were recruited for participation in an online survey as part of the Maternal ATtachment, Coping & Health (MATCH) project ($N = 113$). Mothers were included in the online study if they reported having been a victim of at least one of the following types of child abuse: physical abuse, sexual abuse, emotional abuse, witnessing domestic violence, or neglect. A total of 124 mothers indicated interest in participating and were emailed a link to the online survey: 1 did not meet eligibility criteria, 2 never began the survey, 3 did not complete the survey and 118 completed the survey. Of the 118 mothers that completed the survey, data from 5 mothers did not pass initial validity checks (see Data Analysis section below for further details); yielding a final sample of 113.

Per mother report, toddlers/preschoolers were 50.4% ($n = 57$) male and 49.6% female ($n = 56$). In terms of their toddler/preschooler's racial/ethnic background, mothers reported the following: 63.7% White/Caucasian, 19.5% Black/African American, 5.3%

Hispanic/Latino, 3.5% Asian/Asian American, 2.7% Native American/Native Alaskan/American Indian, and 5.3% Multiracial. Mothers had a range of 1 to 3 children ($M = 1$ child); in addition to having a child in the target age range, 3% of mothers were pregnant at the time they completed the survey. Nearly all (93.8%) mothers were married. Mothers reported the following about their own racial/ethnic backgrounds: 68.1% White/Caucasian, 19.5% Black/African American, 6.2% Hispanic/Latino, 3.5% Asian/Asian American, and 2.7% Native American/Native Alaskan/American Indian. Mothers reported having the following levels of education: 7.1% some high school, 17.7% high school diploma or GED, 23.0% some college, 16.8% Associates degree, and 35.4% Bachelor's degree or beyond. Mothers reported the following in regards to their economic level: 29.2% working class, 54.0% middle class, 15.0% upper middle class, and 1.8% upper class.

Measures

Childhood Abuse-related Appraisals. Mothers' negative childhood abuse-related appraisals were assessed using the Trauma Appraisal Questionnaire (TAQ; DePrince, Zurbriggen, Chu, & Smart, 2010), a 54-item self-report questionnaire that measures six categories of posttraumatic appraisals: betrayal, self-blame, fear, alienation, anger, and shame. The TAQ has good internal consistency, reliability and validity (DePrince, Zurbriggen, Chu, & Smart, 2010). The TAQ global mean score was used to assess the level of negative child abuse-related appraisals. Chronbach's alpha for the TAQ global mean for this sample was: 0.96. Mean scores were also calculated for each posttraumatic appraisal subscale to assess the following discrete maternal child abuse-

related appraisals as part of exploratory analyses: betrayal, self-blame, fear, alienation, anger and shame. Chronbach's alphas for this sample were as follows: betrayal = 0.82; self-blame = 0.88; fear = 0.88; alienation = 0.85; anger = 0.87; shame = 0.78.

Disorganized and Intrusive Memory. Disorganized memory and intrusive memory for childhood abuse were assessed using the Trauma Memory Questionnaire (TMQ; Halligan, Michael, Clark, & Elhers, 2003), a self-report questionnaire that measures intrusive and disorganized elements of memories for traumatic events. The TMQ has good validity and reliability (Halligan, Michael, Clark, & Elhers, 2003). The 5-item Disorganized subscale, a measure of incomplete or disorganized aspects of trauma memory, was used to assess disorganized memory among mother survivors. Chronbach's alpha for this sample was: 0.77. The 8-item Intrusion subscale is a measure of the extent to which trauma memory has vivid perceptual qualities, is uncontrollable, easily triggered and/or accompanied by an experience of reliving the traumatic event. The Intrusion subscale was used to assess intrusive memory among mother survivors as part of exploratory analyses; Chronbach's alpha for this sample was 0.84.

Mother-Child Dysfunctional Relationship. Mother-child dysfunctional relationship was measured using the Parenting Stress Index-Short Form (PSI-SF; Haskett, Ahern, Ward, & Allaire, 2006), a self-report questionnaire that measures stress levels associated with parenting. The PSI-SF has good psychometric properties (Haskett et al., 2006). Items from the Parent-Child Dysfunctional Interactions (PCDI) subscale were summed to determine each participant's score. Chronbach's alpha for this sample was: 0.91.

Maternal Trauma Symptoms. Mothers' trauma symptoms were measured using the Trauma Symptom Checklist-40, a 40-item self-report measure that assesses several symptom clusters related to trauma including: anxiety, depression, dissociation, sexual problems, and sleep disturbance (TSC-40; Briere, 1996). The TSC-40 has good psychometric properties (Briere, 1996). The total score of the TSC-40 was used to assess current trauma symptom levels of mothers; Chronbach's alpha for this sample was 0.96.

Internalizing and Externalizing Symptoms. Children's internalizing and externalizing symptoms were assessed using the Internalizing and Externalizing domains of the Child Behavioral Checklist, Pre-School Version (CBCL; Achenbach & Rescorla, 2000). The CBCL is one of the most widely-used parent-report measures of social-emotional and behavioral problems in children; the measure has strong psychometric properties (Achenbach & Rescorla, 2000). The Pre-School Version of the CBCL is used to assess children ages 1.5 to 5 years old. T-scores (derived from total raw scores) from each domain were used to assess toddlers'/preschoolers' current levels of internalizing and externalizing symptoms. Chronbach's alphas for this sample were 0.93 for the internalizing domain and 0.89 for the externalizing domain.

Procedures

Abuse-survivor mothers were recruited to participate in the MATCH study's online survey through advertisements posted on online announcement boards (i.e., Craigslist, ResearchWE, abuse survivor forums) as well as printed communications (i.e., flyers placed at community organizations serving women/survivors). Mothers interested in participating emailed the project's email address provided on the flyer/advertisement

to request further information about the study. Mothers whom emailed requesting information about the study were then emailed a brief description about the study accompanied by a unique link to the study's online survey on Qualtrics.com. Mothers first completed a screening questionnaire to determine whether they met eligibility criteria for the study: 1) be 18 or older; 2) have at least one child between the ages of 2 and 5; and 3) self-identify as having experienced at least one type of childhood abuse (physical abuse, sexual abuse, emotional abuse, neglect, or witnessing domestic violence).

Mothers who met eligibility criteria were forwarded to a screen with the study's consent form followed by a consent quiz; to be considered consented into the study, participants had to answer all quiz questions correctly. Participants then completed the online survey, which included a series of measures that asked about: demographic background, prenatal care history, their toddler'/preschooler's and their own mental health, parenting experiences and relationship with their toddler/preschooler, and trauma-related appraisals and memory. Participants then completed the Response to Research Participation Questionnaire (RRPQ; Newman & Kaloupek, 2001), which asked them about how it was participating in the survey. Participants were emailed \$15 compensation via Paypal or an Amazon Gift Card. RRPQ results were monitored throughout data collection to assess cost-benefit ratio for participation (DePrince & Chu, 2008).

Data Analysis

Before beginning data analysis, a series of preliminary data checks were conducted to evaluate the validity of online survey responses to ensure that data obtained

was from actual mothers and not online bots. The question “are you a male or female?” was used as an initial validity check to ensure that each participant responded appropriately to a very basic survey question. Data from participants who responded “male” were removed from the final sample (one case was removed based on this criterion). The amount of time participants took to complete the survey was used as a second validity check to ensure that participants had enough time to read through the survey questions before responding. Participants who took less than fifteen minutes to complete the survey were removed from the final sample (4 cases were removed based on this criterion, for a final sample of 113).

Imputation. Of the 113 participants in the study, 72 (64%) had complete data for all key variables and 36% of participants had missed items on one or more key measures. Therefore, imputation was conducted to ensure that analyses had adequate power to detect effects and to avoid bias associated with case-wise deletion. Mean imputation at the item-level was used for all key measures, only if 10% or less of items were missing for a particular case (based on CBCL scoring guidelines; Achenbach, 2015). Based on recommendations by Rubin (1987), multiple imputation was used to impute the remaining missing values for all key variables (TAQ global mean and subscale mean scores, TMQ Disorganized and Intrusion subscale scores, TSC total score, PSI PCDI subscale score, CBCL Internalizing T score, CBCL Externalizing T score) yielding a final N of 113. The WinMICE software program was utilized to conduct multiple imputation of the data set using a linear mixed model (5 iterations) and chained equation process where imputations are updated at each iteration allowing for the imputations at

the final cycle to be retained resulting in one final dataset (Azur, Stuart, Frangakis & Leaf, 2011).

Mediation Analysis. To examine whether dysfunctional mother-child relationship (i.e. Mediator variable=M) mediated the relationships between maternal child abuse-related appraisals, disorganized memory, trauma symptoms (i.e. Independent Variables=IVs), and toddler internalizing symptoms and externalizing symptoms (Dependent Variables=DVs) the bias-corrected bootstrapping method developed by Preacher and Hayes (Hayes, 2009; Hayes and Preacher, 2004, 2008) was used. This method estimates a sampling distribution by resampling the distribution of the original sample (with replacement) 5,000 times, generating point estimates of indirect effects at a 95% confidence interval. If a zero is not included in the confidence interval, the indirect effect is considered significant. This mediation analysis was conducted using the PROCESS macro for SPSS developed by Hayes. The bias-corrected bootstrapping method for testing mediation reduces the likelihood of Type I error in that it allows for the testing of indirect effects without first needing to determine significant direct effects (Hayes, 2009). The macro also allows for other IVs to be included as covariates in the model when testing the indirect effect for each IV.

CHAPTER 3: RESULTS

Before beginning analyses, distributions of all continuous variables were assessed for skew, kurtosis, and outliers. Skew and kurtosis were satisfactory for all variables.

Outliers 2.5 SD above or below the mean were windsorized; however, because analyses

Table 1

Descriptive Statistics for all Key Variables (N = 113)

	Mean (SD)	Range	%
Child-Abuse Related Appraisals	2.46 (0.69)	1.12 – 3.85	-
Clinical Level	-	-	20.4%
Non-Clinical Level	-	-	79.6%
Betrayal	2.55 (0.90)	0.80 – 4.14	-
Self-Blame	2.28 (0.93)	0.00 – 3.91	-
Fear	2.24 (0.90)	0.07 – 4.00	-
Alienation	2.51 (0.86)	0.22 – 3.82	-
Anger	2.21 (0.95)	0.00 – 4.00	-
Shame	2.35 (0.83)	0.48 – 4.00	-
Disorganized Memory	6.58 (3.97)	0.00 – 14.00	-
Intrusive Memory	12.17 (6.00)	0.00 – 24.00	-
Maternal Trauma Symptoms	36.79 (20.72)	4.13 – 84.10	-
Mother-Child Dysfunc. Relationship	32.49 (10.26)	12.00 – 51.00	-
Clinical	-	-	54.0%
Non-Clinical	-	-	46.0%
Internalizing Symptoms (T Score)	63.16 (13.47)	29.00 – 86.00	-
Clinical	-	-	54%
Non-Clinical	-	-	46%
Externalizing Symptoms (T Score)	75.74 (12.19)	50.33 – 100.00	-
Clinical	-	-	82.3%
Non-Clinical	-	-	17.7%

performed with transformed variables did not produce different results, the original variables are reported here. Table 1 displays descriptive statistics for all variables used in analyses. Table 2 displays the results of bivariate correlations performed to explore relationships between all variables included in the analyses: child abuse-related appraisals, disorganized memory, maternal trauma symptoms, mother-child dysfunctional relationship, internalizing symptoms, externalizing symptoms. Initial bivariate

Table 2

Bivariate Correlations Among Variables Used in Mediation Analyses

	1	2	3	4	5
- Child Abuse-related Appraisals	.70***	.85***	.78***	.87***	.69***
1. Disorganized Memory		.61***	.64**	.72***	.52***
2. Trauma Symptoms			.70***	.83***	.80***
3. Mother-Child Dysfunctional Interactions				.75***	.51**
4. Internalizing Symptoms					.77***
5. Externalizing Symptoms					-

** $p < .01$; *** $p < .001$

correlations indicated that high correlations (.70 or above) existed between certain predictor variables, therefore multicollinearity statistics were derived for all predictor variables to determine whether conducting multiple regression and mediation analyses with these variables could be problematic. Results indicated all VIF values were less than 5 suggesting that multicollinearity did not preclude conducting multiple regression or bootstrapping mediation analyses.

Maternal Trauma-related Cognitions, Dysfunctional Mother-Child Relationship and Toddler Internalizing and Externalizing Symptoms

Table 3 displays the results of mediation analyses which include unstandardized coefficients for direct effects (IVs on DVs), indirect effects (to evaluate mediation) and total effects according to the study's theoretical model. In terms of the effects of IVs on M (a), child abuse-related appraisals and disorganized memory significantly predicted dysfunctional mother-child relationship, whereas maternal trauma symptoms was not significant. Regarding the effects of M on the DVs (b), dysfunctional mother-child

Table 3

Results of Analyses Examining Dysfunctional Mother-Child Relationship as Mediator between Maternal Trauma-related Cognitions and Toddler Symptoms

DVs	M	IVs	Effect of IV on M (a)	Effect of M on DV (b)	Direct Effect (c')	Indirect Effect (axb; 95% CI)	Total Effect (c)
Internal. Sx	Dysfunc. M-C Relat.	Abuse-related	8.39 ***	0.14	7.64***	1.20 (-0.61 to 4.02)	8.84***
		Appraisals	0.44*		0.63**	0.06 (-0.012 to 0.37)	0.70***
		Disorganized Memory					
		Trauma Sx	0.06		0.20***	0.01 (-0.01 to 0.06)	0.21***
External. Sx	Dysfunc. M-C Relat.	Abuse-related	-	-0.22 [^]	2.58	-1.82 (-4.74 to -0.0002) [^]	0.76
		Appraisals	-		0.21	-0.10 (-0.35 to 0.01)	0.11
		Disorganized Memory (IV)	-				
		Trauma Sx	-		0.45***	-0.01 (-0.07 to 0.01)	0.44***

Note: unstandardized coefficients displayed. Abbreviations: DVs= Dependent variables; M= Mediator; IVs= Independent variables; a= effect of IV on M; b= effect of M on DV; axb=indirect effect; c= total effect; c'=direct effect; Internal. Sx = Internalizing Symptoms; External. Sx= Externalizing Symptoms; Dysfunc. M-C Relat.=Dysfunctional Mother-Child Relationship

[^]p<.10; *p<.05; **p<.01; ***p<.001

relationship was not a significant predictor of either toddler internalizing symptoms or externalizing symptoms (although a trend towards significance was found for externalizing symptoms in the opposite direction of hypotheses). Indirect effects were not significant for child abuse-related appraisals, disorganized memory or trauma symptoms in either the internalizing symptoms or externalizing symptoms models. Thus, dysfunctional mother-child relationship did not mediate the associations between maternal trauma-related cognitions and toddler symptoms, nor did it mediate the relationship between maternal trauma symptoms and toddler symptoms. In the internalizing symptoms direct effect model (c'), child abuse-related appraisals and disorganized memory significantly predicted internalizing symptoms even with maternal trauma symptoms (which was a significant covariate) included in the model. In the externalizing symptoms direct effect model (c'), maternal trauma symptoms was the only significant predictor of externalizing symptoms, neither of the maternal trauma-related cognition variables were significant. Both of total effect models (c) were significant overall [Internalizing Symptoms: $R^2 = 0.80$, $F(3, 109) = 146.57$, $p < .001$; Externalizing Symptoms: $R^2 = 0.64$, $F(3, 109) = 64.53$, $p < .001$] and showed the same pattern of significant coefficients as the direct models (c').

Exploratory Analyses

Since the global means used in the mediation tests were made up of subscales, exploratory analyses were conducted to evaluate whether specific maternal child abuse-related appraisals (i.e. betrayal, self-blame, fear, alienation, anger, shame) predicted

Table 4

Bivariate Correlations Among Variables in Exploratory Multiple Regression Analyses

	1	2	3	4	5	6	7	8	9	10
- Betrayal	.70**	.64**	.79**	.68**	.64**	.38**	.44**	.49**	.60**	.58**
1. Self-Blame		.80**	.86**	.82**	.78**	.58**	.52**	.58**	.66**	.54**
2. Fear			.79**	.90**	.81**	.54**	.48**	.51**	.66**	.41**
3. Alienation				.81**	.77**	.50**	.55**	.62**	.70**	.57**
4. Anger					.83**	.54**	.56**	.49**	.71**	.53**
5. Shame						.45**	.47**	.54**	.70**	.58**
6. Disorg. Mem.							.57**	.45**	.66**	.48**
7. Intrusive Mem.								.30*	.57**	.52**
8. Trauma Sx									.68**	.59**
9. Internal. Sx										.77**
10. External. Sx										

* $p < .01$; ** $p < .001$

toddler internalizing symptoms and externalizing symptoms. Maternal intrusive memory for child abuse was also evaluated in addition to disorganized memory to further clarify which types of traumatic memory disturbances among mothers may predict toddler internalizing and/or externalizing symptoms. The relative contribution of mothers' child abuse-related appraisals and memory were assessed using simultaneous multiple regression models, while controlling for maternal trauma symptoms. Table 5 depicts the correlations among key variables used in these exploratory multiple regression analyses. Multicollinearity statistics were derived for all key variables with a correlation above $r = .69$; VIF values were within acceptable limits (all less than 5). Table 6 displays the results of the two models with internalizing symptoms and externalizing symptoms as outcomes, and the following maternal trauma-related cognitions as predictors: betrayal, self-blame, fear, alienation, anger, shame, disorganized memory, and intrusive memory.

Table 5

Regression Coefficients for Simultaneous Multiple Regressions of Maternal Child Abuse-related Appraisals and Memory Predicting Toddler Symptoms

Outcome Measure	Predictor Variable	B	SE B	β	R²
Internalizing Sx	Betrayal	1.78	1.23	0.12	0.75***
	Self-Blame	-3.04	1.62	-0.21 [^]	
	Fear	-1.64	1.86	-0.11	
	Alienation	0.40	1.96	0.03	
	Anger	3.84	1.94	0.27 [^]	
	Shame	4.03	1.61	0.25*	
	Disorganized Memory	0.97	0.23	0.29***	
	Intrusive Memory	0.28	0.15	0.13 [^]	
	Trauma Symptoms	10.01	1.91	0.35***	
Externalizing Sx	Betrayal	3.97	1.38	0.29**	0.61***
	Self-Blame	-0.82	1.82	-0.06	
	Fear	-8.25	2.10	-0.61***	
	Alienation	-1.22	2.20	-0.09	
	Anger	3.83	2.18	0.30 ^t	
	Shame	5.69	1.81	0.39**	
	Disorganized Memory	0.49	0.26	0.16 [^]	
	Intrusive Memory	0.43	0.17	0.21*	
	Trauma Symptoms	9.06	2.16	0.35***	

[^] $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

Both of the full models were significant overall [Internalizing Symptoms: $R^2 = 0.75$, $F(9, 103) = 33.74$, $p < .001$; Externalizing Symptoms $R^2 = 0.61$, $F(9, 103) = 17.77$, $p < .001$]. Maternal shame significantly predicted toddler internalizing symptoms as well as externalizing symptoms, even when controlling for maternal trauma symptoms, which was also significant in both models. Maternal disorganized memory was significantly associated with internalizing symptoms, whereas maternal intrusive memory was significantly associated with externalizing symptoms. In the externalizing symptoms model, higher levels of betrayal but lower levels of fear appraisals among mothers

significantly predicted child externalizing symptoms even when controlling for maternal trauma symptoms. Trends ($p < .10$) were identified for the contributions of: anger, intrusive memory, and self-blame in the internalizing symptom model; anger and disorganized memory in the externalizing symptom model.

CHAPTER 4: DISCUSSION

The current study tested links between mothers' trauma-related cognitions and maternal reports of toddlers/preschooler's mood and behavior symptoms, and whether a dysfunctional relationship between abuse-survivor mothers and their toddlers/preschoolers mediated these relationships. Results are consistent with previous literature in that trauma symptoms among abuse-survivor mothers were associated with internalizing symptoms and externalizing symptoms in their toddlers (e.g. Lambert, Holzer, & Hasbun, 2014). The correlations between maternal trauma symptoms and toddler symptoms were higher than those of previous studies (i.e. Lambert et al., 2014 meta-analysis: $r = 0.41$ to 0.60 with interpersonal violence-survivor parents; current study $r = 0.83$ for internalizing and $r = 0.80$ externalizing). Given that high correlations were also found between maternal trauma symptoms and trauma-related cognitions ($r = 0.61$ to $r = 0.85$), it is possible that highly symptomatic abuse-survivor mothers may have difficulty differentiating between cognitive, emotional, and behavioral constructs in themselves and/or their children; future research is necessary to assess this explanation.

In regards to the role of maternal trauma-related cognitions, higher levels of child abuse-related appraisals and disorganized memory for abuse were associated with more

toddler/preschooler internalizing symptoms, even when controlling for maternal trauma symptoms (which was also significant). Maternal trauma-related cognitions (child abuse-related appraisals and disorganized memory) were not significantly associated with toddler/preschooler externalizing symptoms. Although mother-child dysfunctional relationship did not significantly mediate these relationships, both maternal child abuse-related appraisals and disorganized memory for abuse predicted higher levels of dysfunction in the mother-child relationship, whereas maternal trauma symptoms was not a significant predictor.

Though causality could not be tested in this study, these findings suggest that mothers' child abuse-related appraisals and disorganized memory for abuse may increase the risk that their toddlers will develop mood symptoms. It is possible that mother's trauma-related cognitions may exert a particularly strong influence on young children's mood symptoms given the large body of evidence in the cognitive-behavioral therapy literature (e.g., dating back to Beck, 1971) that highlights the impact negative cognitions can have on an individual's mood. For example, abuse-survivor mothers with high levels of negative child abuse-related appraisals may be providing their toddlers/preschoolers with negative interpretations of their early environment, which may lead to early disturbances in toddlers'/preschoolers' mood as they learn that the world is an unsafe, unfriendly, and/or unpredictable place. Abuse-survivor mothers with high levels of child abuse-related appraisals may be particularly likely to provide such interpretations in the parenting context, since this context may be distressing for these mothers (Amos, Furber, & Segal, 2011; Briere & Scott, 2006). On the other hand, early impulsive or disruptive

behavior may be less driven by parental cognitions and instead acquired through social learning processes, i.e. modeling specific behaviors of their symptomatic parents (Bandura, 1971).

In terms of disorganized memory, mothers with disorganized memories of their own child abuse histories may be unable to adequately integrate the often contradictory, scary, confusing, and/or disturbing aspects of their own childhoods. This lack of integration may prevent these mother survivors from developing a cohesive life narrative or make meaning of these early life traumas, a process that evidence-based treatments have found as critical to recovery from child abuse (Cloitre, Koenen, Cohen, & Han, 2002; Cohen, Mannarino, & Deblinger, 2006). Thus, mothers with disorganized memory for trauma (i.e. less of an integrated understanding of their own child abuse) may be more vulnerable to committing source attribution errors (Briere & Scott, 2006) while parenting their children, resulting in dysfunctional mother-child interactions and subsequent early mood symptoms in their toddlers. Mothers' child abuse-related appraisals and the organization of their own child abuse memories could be as critical of factors to assess as mothers' trauma symptoms when attempting to understand and treat toddler/preschooler mood symptoms and/or improve the mother-child relationship.

It is important to note that since the current study was based only on maternal report, mothers' disorganized memory and/or trauma symptoms may have influenced their evaluation of their own toddler/preschoolers' behaviors and symptoms. Future research that incorporates multiple reporters (e.g. teacher and/or father reports of child symptoms) and/or diverse methodology (e.g. cognitive experimental paradigms,

behavioral observation) is needed to further clarify the role trauma-related cognitions among abuse-survivor mothers play in regards to the mother-child relationship as well as toddlers'/preschooler's mood problems. Longitudinal research is also necessary in order to infer causation between maternal child abuse-related appraisals, disorganized memory, trauma symptoms, mother-child dysfunctional relationship and toddler/preschooler internalizing symptoms. Nevertheless, this preliminary evidence proposes that targeting child abuse-related appraisals and the disorganized nature of mothers' memory may prove clinically useful for practitioners who are working to enhance the mother-child relationship and/or reduce child mood symptoms as part of treatment with abuse-survivor mothers and their young children.

Exploratory Analyses

A series of exploratory analyses were conducted to evaluate relationships between individual child abuse-related appraisals and toddlers'/preschoolers' internalizing symptoms and externalizing symptoms in order to increase specificity in understanding these relationships, while still accounting for maternal trauma symptoms. Given well-established links between maternal PTSD and child symptoms, intrusive memory of abuse (a primary symptom of PTSD; American Psychiatric Association, 2013) was investigated along with disorganized memory to add further specificity in regards to associations between memory disturbances reported by abuse-survivor mothers and symptoms in their toddlers/preschoolers. This study is the first of which we are aware that has attempted to elucidate whether specific trauma-related cognitions (i.e. appraisals

and alterations in traumatic memory) may play a role in the transmission of trauma symptoms across generations.

Results demonstrate that higher levels of maternal shame were associated with higher levels of *both* internalizing symptoms and externalizing symptoms in toddlers/preschoolers, even beyond what was accounted for by maternal trauma symptoms. Mothers' with high levels of shame regarding their own child abuse histories may be especially vulnerable to experiencing distress and committing source attribution errors while parenting their own toddlers, since the act of parenting can elicit their own self-deprecating feelings about themselves and the abuse they experienced as a child. Moreover, maternal betrayal was significantly, positively related to toddler externalizing symptoms while maternal fear was significantly, negatively related to externalizing symptoms. In accordance with source attribution error theory (Briere & Scott, 2006), mothers with high levels of betrayal may be more likely to experience distress while parenting their children, since the parenting context may act as a trauma reminder that gives rise to a mothers' negative child abuse-related appraisals. Future research should evaluate whether high levels of betrayal and/or low levels of fear contribute to punitive or hostile-intrusive parenting behaviors (Cohen, Hien, & Batchelder, 2008; Moehler, Biringen, & Poustka, 2007) that can lead to child behavior problems (e.g. Easterbrooks, Bureau, & Lyons-Ruth, 2012). Empirical studies that explicitly measure the incidence of source attribution errors and specific parenting behaviors among abuse-survivor mothers are necessary to determine whether this theory can account for links between maternal

child abuse-related appraisals, disorganized memory and mood and behavior symptoms in their toddlers/preschoolers.

With regard to memory for child abuse, maternal disorganized memory was significantly associated with higher levels of toddler internalizing symptoms even when intrusive memory was added to the model. These exploratory analyses also uncovered a significant relationship between maternal intrusive symptoms and toddler externalizing symptoms. Perhaps mothers that reported intrusive memory of abuse are also more intrusive and/or controlling while interacting with their toddlers, giving rise to toddler behavior symptoms. On the other hand, mothers with disorganized memory of abuse may also behave in a manner that is disorganized or inconsistent towards their toddlers, which could be more likely to result in toddler mood symptoms. Future research that utilizes multiple reporters and methods is necessary to further clarify the associations between mothers' alterations in memory for child abuse and mood/behavior symptoms in their young children. Nevertheless, these findings do address gaps in the literature on intergenerational transmission of trauma by providing evidence as to the potential impact abuse-survivor mothers' cognitions have on both the mother-child relationship and the development of early mood and behavior symptoms in the next generation.

Limitations and Future Research

The current study is cross-sectional in design; therefore, causal relationships cannot be inferred. Prospective research is necessary to establish temporal precedence of maternal trauma-related cognitions and symptoms as they relate to the development of toddler/preschooler mood and behavioral symptoms. Longitudinal research is also needed

to understand the trajectory of intergenerational transmission- to determine whether toddler and preschooler early mood and behavior symptoms persist as these children enter grade school. Mothers were not asked to indicate whether their toddlers/preschoolers had been abused or neglected, therefore abuse/neglect could also explain variance in toddler/preschooler mood and behavior symptoms in this sample. The current study relied on maternal and self-report measures for assessment of all variables; such measures are subject to potential reporting biases and/or inaccurate recall. Future studies should utilize multiple methods, such as structured clinical interviews and/or multiple reporters to assess toddler/preschooler symptoms as well as cognitive laboratory techniques (e.g. lexical decision-making paradigms; DePrince, Combs, & Shanahan, 2009) to assess maternal trauma-related cognitions.

In regards to measuring dysfunction in the relationship between mothers and their toddlers, behavioral observation methods, attachment inventories, and/or parenting style measures may be useful in better elucidating the behavioral mechanisms of intergenerational transmission. Since only abuse survivor mothers were surveyed, possible links between fathers' trauma-related cognitions, symptoms and toddlers'/preschoolers' symptoms were not evaluated. Future studies that incorporate fathers as participants could provide additional evidence to further advance the field's comprehension of the intergenerational transmission of trauma. The current study drew from attachment theory and its applications (Ainsworth, Blehar, Waters, & Wall, 1978; Amos, Furber, & Segal, 2011) as well as the theoretical concept of source attribution errors (Briere & Scott, 2006) to conceptualize and develop hypotheses regarding the

relationships between maternal trauma-related cognitions, mother-child dysfunctional relationship, and toddler/preschooler mood and behavior symptoms. Further research is necessary to determine whether specific child abuse-related appraisals, disorganized and/or intrusive memory result in actual source attribution errors, and whether such errors predict a dysfunctional mother-child relationship or toddler/preschooler symptoms. Other classic theoretical models such as Social Learning Theory (Bandura, 1971) could also be relevant to understanding the intergenerational transmission of trauma and should be integrated into future research.

Conclusions

The current investigation surveyed abuse-survivor mothers to evaluate whether trauma-related cognitions (child abuse-related appraisals, disorganized and intrusive memory for abuse) among mothers who survived child abuse were associated with mood and/or behavior symptoms in their toddler/preschool-aged children. Findings from this investigation address gaps in the literature by providing initial evidence indicating that child abuse-related appraisals and disorganized memory for abuse among survivor mothers are linked to toddler/preschooler internalizing symptoms, even when controlling for maternal trauma symptoms. Child abuse-related appraisals and disorganized memory of child abuse were also linked to more dysfunction in the relationship between survivor mothers and their young children. Moreover, intrusive memory among abuse-survivor mothers was associated with higher levels of toddler externalizing symptoms, beyond maternal trauma symptoms. These findings further the field's understanding of the intergenerational transmission of trauma by providing support for specific alterations in

traumatic appraisals and memory as potential mechanisms of transmission. These results also inform practitioners working with abuse-survivor mothers and their toddlers by providing preliminary evidence suggesting that the way mothers think about and recall their own child abuse may be relevant factors to address as part of treatment aimed at improving the mother-child relationship and toddler/preschooler symptoms. Future research using multi-method, longitudinal approaches is necessary to clarify whether promoting the organization of traumatic memories (e.g. through a trauma narrative), restructuring child abuse-related appraisals, or reducing intrusions among abuse-survivor mothers can positively impact mothers' relationship with their young children or reduce toddlers/preschoolers mood and behavior symptoms.

The current study also found that mothers who reported higher levels of specific child abuse-related appraisals, such as shame and betrayal, were more likely to have children with mood and behavior symptoms. These findings may assist practitioners in providing evidence-based, trauma-informed interventions to survivor mothers and their children by increasing awareness of how specific appraisals endorsed by mothers like shame, betrayal, lack of fear or the nature of mothers' trauma memory may influence children's mood and behavior even in their earliest years of life. The current findings warrant future research to investigate trauma-related cognitions among abuse-survivor parents to further elucidate how these thought and memory processes can impact the parent-child relationship as well as children's early social-emotional development.

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