Published in final edited form as:
*Clin Child Psychol Psychiatry*. 2010 July ; 15(3): 407–422. doi:10.1177/1359104510367590.

# Childhood sexual abuse and attachment: An intergenerational perspective

**Laura E. Kwako**[1], **Jennie G. Noll**[2], **Frank W. Putnam**[2], and **Penelope K. Trickett**[3]

[1]National Institute of Nursing Research, National Institutes of Health, Bethesda, MD, USA

[2]Department of Pediatrics, Cincinnati Children's Hospital Medical Center, Cincinnati, OH, USA

[3]University of Southern California, USA

## Abstract

Childhood sexual abuse (CSA) is a recognized risk factor for various negative outcomes in adult survivors and their offspring. We used the Dynamic-Maturational Model of attachment theory as a framework for exploring the impact of maternal CSA on children's attachment relationships in the context of a longitudinal sample of adult survivors of CSA and non-abused comparison mothers and their children. Results indicated that children of CSA survivors were more likely to have extreme strategies of attachment than the children of non-abused mothers. However, because both groups were at socioeconomic risk, both were typified by anxious attachment. Explanations for findings and implications for children's development are explored.

### Keywords

attachment; childhood sexual abuse; intergenerational

## Introduction

Childhood sexual abuse (CSA) is a recognized risk factor for myriad negative outcomes in survivors. These outcomes include increased risk for mood disorders and substance abuse (Nelson, Heath, & Madden, 2002), problems in sexual development and functioning (Noll, Trickett, & Putnam, 2003), and disruptions in familial and other adult relationships (Rumstein-McKean & Hunsley, 2001). In addition, recent research has shown that survivors' children may also be negatively affected (Dixon, Browne, & Hamilton-Giachritsis, 2005; Morrel, Dubowitz, Kerr, & Black, 2003). Various mechanisms for intergenerational transmission of the risks associated with being a victim of CSA have been posited, of which one of the most compelling is attachment (Alexander, 1993).

This study used data from a long-term, longitudinal, intergenerational study of female survivors of familial CSA and non-abused controls to ask whether there is a link between maternal CSA and: (a) mothers' insecure attachments in adulthood; and (b) their children's insecure attachment to them. If the distortions are extreme, it might place the children at risk for later difficulty developing adaptive self-protective strategies, psychological flexibility, and healthy relationships.



**Corresponding author:** Laura Kwako, NINR/NIH, 9 Memorial Drive, 1S-125, Bethesda, MD 20892–0935, USA. kwako.laura@gmail.com.

We first consider the importance of attachment for mental health and then review literature on the association between attachment and CSA. Throughout, we describe our rationale for using the Dynamic-Maturational Model of attachment and adaptation (DMM) (see Farnfield, Hautamäki, Nørbech, & Sahhar, 2010, for a detailed description of the various DMM models) and then outline contributions of this study and specify our hypotheses.

## Attachment and mental health

Children with very insecure attachments are more likely both to have concurrent psychopathology in childhood and also to develop disorders in adulthood than children who have secure attachment relationships in childhood (Cicchetti, Rogosch, & Toth, 1998; Easterbrooks, Biesecker, & Lyons-Ruth, 2000). That is, highly anxious attachment strategies are associated with higher risk of psychopathology than merely anxious strategies. Further, children with a very insecure attachment to their mothers are more likely than other children to live in high-risk families and environments, thus, placing them at additional risk for the development of later psychopathology (Belsky & Nezworski, 1988; Kobak, Cassidy, Lyons-Ruth, & Ziv, 2006).

## Maternal CSA and child–mother attachment

**Danger and self-protective attachment strategies—**Crittenden (2008) has suggested that the use of rigid self-protective strategies, particularly those evinced in compulsive Type A strategies, is associated with exposure to high levels of danger and predictable lack of protection or comfort. On the other hand, unpredictable threats in the context of unpredictable protection and comfort may elicit Type C strategies.

In our sample, there were many possible sources of danger in the lives of the CSA survivors that extended beyond CSA and may be reflected in the use of extreme self-protective strategies. We have published data on children in this cohort of mothers that indicated a higher frequency of child protective service (CPS) agency involvement in the CSA group than in the comparison group (Noll, Trickett, Harris, & Putnam, 2009). These data must be interpreted with caution because the *N* is quite low (*N* = 16 children, in nine different families). However, the findings suggest that there may be more danger in the families in the CSA group than in the comparison group, with the concomitant likelihood that these children of sexually abused mothers may go to extreme lengths to protect themselves.

**Attachment strategies and familial CSA—**Research has documented the impact of maternal CSA on survivors' children (Alexander, Teti, & Anderson, 2000; DiLillo & Damashek, 2003; Rumstein-McKean & Hunsley, 2001). This impact is often indirect (Cicchetti et al., 1998). For example, a woman with a CSA history may become depressed in part due to failures in her early attachment relationships, which exposed her to CSA; this depression may then hamper her ability to select a supportive partner, increase her perceived levels of stress around parenting, and lower her availability to attend sensitively to her children. Such attachment difficulties compromise abused mothers' abilities to protect and comfort their children.

In our sample, all instances of maternal CSA were familial, that is, the perpetrator was a family member, such as the biological father, an uncle, cousin, etc. This distinction is important because it denotes the presence of distorted relationships within the family system. Gold, Hyman, and Andrés-Hyman (2004) found slightly lower levels of conflict and higher levels of independence, as measured by the Family Environment Scale, in the families with *extra*-familial CSA group as compared to the families with *intra*-familial CSA, but the effect sizes were quite small. Our interest was in discovering whether exposure to familial child sexual abuse elicited strategies marked by relationship distance, predictability,

and inhibition of negative affect (Type A) or confusion of roles, relationship struggles, and strategic exaggeration of negative affect (Type C).

To summarize, using the DMM attachment strategies permitted us to look at two aspects of attachment: type of danger (predictable A or unpredictable C) and extremeness of strategy (normative 1–2 strategies versus more extreme 3–4 strategies).

**Cross-generational strategies of self-protection—**It is commonly assumed that strategies of attachment are transmitted without change from mothers to children (Van IJzendoorn, 1995; Van IJzendoorn & Bakermans-Kranenburg, 1997). In high-risk samples, however, the process may be more complex. Security or insecurity may be relatively constant but, within the insecure group, there may be reversals of attachment strategy (Crittenden, 2008). Parents may unthinkingly repeat behavior that is consistent with their parents' values and expectations or, alternatively, they may consciously attempt to reverse the effect, but overshoot the goal, creating the opposite error. This effect was observed in an early study of maltreating and adequate families (Crittenden, Partridge, & Claussen, 1991) and later in two normative samples (Hautamäki, Hautamäki, Neuvonen, & Maliniemi-Piispanen, 2010; Shah, Fonagy, & Strathearn, 2010).

There are corroborating findings to support aspects of this hypothesis, but the whole has not been tested to date. For example, mothers with a history of being emotionally neglected by their own parents attended less and differently to their infants than did women who lacked such experiences (Leerkes & Siepak, 2006). Such mothers' attributions regarding their infants appeared to reflect past, rather than current, conditions. On the other hand, the AAI classifications of both community mothers and mothers with borderline personality disorder was unrelated to the mothers' representations of their children on Zeanah, Benoit, Hirshberg, Barton, and Regan's (1994) Working Model of the Child Interview (Crittenden & Newman, 2010). Other studies have found that mothers who were abused as children had higher rates of anxious attachment with their own children than mothers who were not abused (Lyons-Ruth & Block, 1996; Morrel et al., 2003). Further, in a three-generation study of African-American grandmothers, mothers, and children, results linked insecure attachment to increased incidence of CSA (Leifer, Kilbane, Jacobsen, & Grossman, 2004).

Further, Leerkes and Siepak (2006) speculated that mothers' level of security in important relationships may moderate the impact of their childhood abuse on their relationships with their own children. Thus, a mother with a CSA history who has been able to resolve the abuse and develop secure adult relationships would not have insecure attachment relationships with her children, whereas a mother with a similar history whose adult attachments are insecure would also have insecure attachment relationships with her children. In the DMM model, we might consider that a mother who has been able to develop flexible protective strategies would be better equipped to foster their development in and create a less dangerous environment for her children than a mother who has continued to use rigid, extreme forms of self-protection.

## Contributions of the current study

Given the links between mothers' childhood experience of CSA and insecure attachment with their children, it is important to outline the specific contributions we hope to make with this study. First, although there has been much theoretical linkage between maternal CSA histories and attachment, much of the literature documents mothers' attachment relationships with adults, rather than with their children. We considered children's attachment to their mothers and the moderating role mothers' adult attachment relationships may have on their relationships with their children. Second, most work on maternal CSA is retrospective, confounding current emotional state with abuse history. In our study, all

sexual abuse was documented during the mothers' childhood and thus many years prior to the birth of their children. Third, we used an attachment coding protocol specifically designed to assess attachment in maltreating families, allowing us to explore differences in both severity and type of organization (A versus C) within anxious attachment.

### Hypotheses

We predicted that mothers who had experienced CSA would demonstrate more insecurity in both their adult attachment relationships and also their attachment relationships with their children than would mothers who had not been abused. We also predicted that maternal stress would be associated with increased avoidance in both maternal and child attachment strategies. Further, because our sample was largely African American, and high proportions of Type A strategies are often found in African American samples, possibly due to various forms of discrimination, for example, slavery, segregation (Barnett, Kidwell, & Leung, 1998), we predicted a bias toward Type A for the whole sample. Because the CSA group had experienced familial sexual abuse, they might experience confusion of family roles, leading to higher probability of Type C for that subgroup. We also predicted children of CSA survivors would demonstrate more extreme strategies than children of comparison mothers. We further predicted mothers and children would have matching attachment strategies when both were secure and meshing attachment strategies when both were insecure. Similarly, we predicted that siblings were either match or mesh; we did not expect secure/anxious combinations. Finally, we predicted that maternal attachment strategies would moderate the impact of CSA on their attachment relationships with their children.

These hypotheses were tested using correlations, the delta prediction statistics ($\Delta_P$; Hildebrand, Laing, & Rosenthal, 1977), univariate (ANOVA) and multivariate (MANOVA) analysis of variance models, Pearson Chi-square tests, and both linear and logistic regression equations. Effect sizes were estimated using partial eta squared ($\eta^2$) for ANOVA, MANOVA and regression models, and phi ($\varphi$) for Chi-square tests (Gravetter & Wallnau, 2006). Given the number of statistical analyses conducted on a small sample, we acknowledge the increased possibility of error in this process, but, given the exploratory nature of the study determined that the trade-off was worthwhile.

## Method

This study used data from the Female Growth and Development Study (FGDS). To our knowledge, it is the longest-running longitudinal study of female familial CSA survivors and comparison females anywhere. The inclusion criteria for CSA were: (1) genital contact and/or penetration; (2) perpetration by a family member; (3) age between 6 and 16 years at time of enrollment within the study; (4) reporting made within six months prior to enrollment in the study; and (5) verification by medical and/or police authorities. Additionally, participants included a non-abusing parent or guardian, most often the biological mother.

The sample included both CSA survivors and comparison females who were demographically similar regarding SES, race/ethnicity and family constellation (one versus two parent households) at time of recruitment. It included three generations of participants (G1, G2, and G3): G1, the non-abusing parent or guardian of the abused or comparison girl; G2, the abused or comparison girl; and G3, the progeny of the G2 women. Begun in 1987, the FGDS has completed six rounds of data collection; the first five were at one to three year intervals from the study's inception. The sixth and most recent round of data collection began in 2002, approximately six years after the previous round, and concluded in 2005. This inquiry used data from Time 6 when the G2 daughters were adults with children of their own.

## Participants

The current sample included 35 original participants (G2) and their 54 children (G3). The mothers ranged from 19 to 30 years ($M$ = 25.38 years, SD = 2.92 years). Sixteen (45.71%) were in the abuse group (CSA group); 19 (54.29%) were in the non-abused comparison group (No Abuse group). Hollingshead (1975) scores for the G2's families of origin served as a proxy for socioeconomic status (SES); scores ranged from 14 to 66, ($M$ = 36.23, SD = 10.70). Almost three-quarters of the mothers were African-American, 71.4% ($N$ = 25); 25.7% ($N$ = 9) were Caucasian and 2.9% ($N$ = 1) were Latina.

This subset of original (G2) participants included all mothers from the original study who brought their children to the lab for assessment and whose recorded attachment procedures met standards for classification (e.g., procedures were followed correctly, no/minimal problems with lighting or sound). We could not administer the attachment measures off-site, so mothers and children who were assessed off-site were not included in this subsample. The 54 (G3) children in this sample ranged in age from 11 months to 11.75 years ($M$ = 55.09 months, SD = 33.03 months). Exactly half were female. Three-quarters were African-American (children of mixed African-American and Caucasian parents were classified as African-American, $N$ = 41); 20.9% ($N$ = 11) were Caucasian and 4.7% ($N$ = 2) were Latino/a. Among the 54 children, 36 were siblings from 16 different mothers; while 18 were singletons. Mothers had between one and three children. Descriptive statistics for G3 participants, organized by group, appear in Table 1.

## Procedures

The protocol was approved by the Institutional Review Boards of the University of Southern California and the Catholic University of America (CUA), and consent was obtained for all participants, and the G3 participants also provided assent when appropriate. Trained research assistants contacted the adult participants by telephone or letter and conducted the in-lab assessments for the Time 6 assessment. Participants were paid $110 for their participation.

Children aged 5 years or younger participated in a Strange Situation (Ainsworth, Blehar, Waters, & Wall, 1978), then completed a series of additional assessments appropriate for their age level. Children older than five years participated in the School-Age Assessment of Attachment (SAA), and completed other age-appropriate measures. Mothers provided information on children's health, behavior, and demographic status via a booklet of measures that was sent prior to the interview and returned when the families came in for the on-site visit.

## Assessments

**Maternal attachment—**We assessed maternal attachment using the Experiences in Close Relationships self-report measure for adults (ECR: Brennan, Clark, & Shaver, 1998). This 36-item measure yields two continuous scales measuring attachment-related avoidance (ECR-Avoid) and anxiety (ECR-Anxiety), as well as a categorical variable (ECR-Categorical) with four attachment classifications: Secure, Preoccupied, Dismissing, and Fearful. We used both continuous scales and the categorical variable, along with a dichotomous (secure/insecure, ECR-Dichotomous) variable. The latter was derived by combining the three insecure categories (Preoccupied, Dismissing, and Fearful) into one. In addition, we treated the fearful category as a proxy for specific DMM categories. The developers of the ECR (Brennan et al., 1998) report good reliability for both scales, ECR-Avoid ($\alpha$ = .94) and ECR-Anxiety ($\alpha$ = .91). However, Waters, Crowell, Elliot, Corcoran, & Treboux, (2002) found that the ECR, like other self-report measures of attachment, has low correlation with both the Strange Situation Procedure (SSP) and the Adult Attachment

Interview (AAI); the latter finding was supported by Riggs and colleagues (2007) in a separate study. Funding was not available to cover administering and coding AAIs.

**Maternal stress—**We assessed maternal stress through the Parenting Stress Index-Short Form (PSI) (Abidin, 1990), a 36-item self-report measure intended to assess levels of parenting-related stress. Higher scores reflect higher self-reported stress. Reitman, Currier, and Stickle (2002) found that it has strong internal consistency, and identified three specific subscales, Parental Distress (PSI-Distress), Difficult Child (PSI-Difficult), and Parent-Child Dysfunctional Interactions (PSI-Dysfunctional), as the strongest using confirmatory factor analysis and regression equations. We used these three subscales, along with a fourth, Defensive Responding (PSI-Defensive) in our data analysis.

**Child attachment—**We used the Strange Situation Procedure (SSP), classified in two ways, one for infants from 11 to 23 months (Ainsworth, et al., 1978, modified by Crittenden, 2002) and one for toddlers and preschool-aged children from 2 to 5 years (PAA: Crittenden, 1992). The entire procedure was filmed through a one-way mirror by a research assistant, with two other research assistants playing the roles of stranger and manager.

For the infants, we used the original Ainsworth ABC classificatory method with added DMM categories to account for the anomalous behavior of severely threatened children (Farnfield et al., 2010). The Type A strategies included Avoidant (A1–2) and Pre-Compulsive (A+); the Type B strategies included Reserved (B1–2), Comfortable (B3), and Reactive (B4–5); and the Type C strategies included Resistant/Passive (C1–2) and Pre-Coercive (C+).

For children between the ages of 2 and 5 years, we used the Preschool Assessment of Attachment (PAA). The PAA is similar to the SSP, although its categories account for the increased developmental complexity present in preschool-aged children as compared to infants. Because the infant and preschool methods had both the same procedure and also parallel outcome categories, we combined the SSP and PAA classifications for analysis.

The SSP tapes were coded by a research assistant who had met reliability standards (above 80%) for this procedure. The PAA tapes were coded by two of the authors of this paper who had received training in the PAA system. Differences in PAA classifications were reviewed by both coders and resolved by conference, with Crittenden coding disputed classifications to resolve the differences. Crittenden was entirely blind to group status; the other two coders had knowledge of group status for occasional dyads, but were blind to group status for the great majority of cases. The differences between number of coders for the SSP and PAA do not reflect differences in reliability between the classificatory systems.

For children between 6 and 11 years of age, we used the School-age Assessment of Attachment (SAA: Crittenden, 1997–2005). The SAA consists of seven picture cards of minor to major threats that school-age children might face: going out alone, peer rejection, moving, bullying, father leaving, running away, and mother going to hospital. For each card, the child was asked to tell a fantasy story about the boy or girl in the picture and then asked to tell a recalled episode from their own life about something similar that had happened to them. Specified follow-up questions were asked. The video-recorded discourse was transcribed verbatim and analyzed with a developmentally attuned version of the AAI discourse analysis (Farnfield, et al., 2010). Possible classifications included B1–5, A1–2, A3–4, C1–2, C3–4, C5–6, and A/C as well as markers for unresolved traumas mentioned by the child and possible depression across the series of seven cards.

Each of four coders, trained by Crittenden and blind to all aspects of the study, coded all of the transcripts. The final classifications reflected consensus among the coders. The mean of coder Kappas (κ) for four major categories was .56 and for lack of resolution was .46; the mean Pearson correlation for depression was .46. Consensus was very low for the eight 6-year-olds and the classifications tended to be more extreme than for older children, that is, not only anxious, but also C4 (helpless) and depressed (silent and calling all negative affect "sad"). Classifications for the 12 older children were more varied and reflected greater agreement among the coders.

**Computing attachment variables—**Across the SSP and PAA, attachment was defined either dichotomously (secure/insecure, G3 Dichotomous) or by assigning a number to different categories to create a quasi-continuous variable (G3 Continuous): "0" = Secure; "1" = C1–2; "2" = A1–2; "3" = C3–4; "4" = A3–4; "5" = A/C, Dp, or IO. This ordering was made with Crittenden's input. In each case, the C classifications were considered less extreme than the correspondingly numbered A classifications. The SAA data were primarily analyzed and are presented separately, as these data are among the first to test the SAA, and thus may differ in reliability and validity from the more established SSP and PAA. For the SAA, we also used a categorical (secure/insecure) and quasi-continuous variable, using the same system described above. Children classified as C5–6 using the SAA were given a score of "5" in the quasi-continuous coding system.

## Results

After describing the distributions of the major variables for the whole sample, we explored the validity of the attachment variables by testing the relations between maternal stress and attachment strategies in both adults and children. We then tested the maternal attachment data for a main effect of group status on both the continuous and categorical maternal attachment variables, followed by similar analyses of the child attachment data for the PAA and SSP, and the SAA. We did combine all three G3 attachment measures to explore possible differences in attachment relationships between siblings, and considered these findings exploratory in nature. The relation between maternal and child strategies was tested and we also tested whether there was a moderating effect of maternal attachment on the relation between group status and child attachment, using both the categorical maternal attachment variable and the severity scale.

### Distributions of attachment strategies

Based on the mothers' self-report on the ECR, 11 of the 33 mothers for whom we had attachment data reported being securely attached and 22 anxiously attached (of these, five were preoccupied, six were dismissing, and 11 were fearful). Of the 35 children classified using the SSP ($N = 7$) or PAA ($N = 28$), nine were securely attached, 11 had a normative anxious attachment (i.e., A1–2 or C1–2), and 15 had an extreme strategy of attachment (i.e., the DMM A3–4, C3–4, A/C, and IO strategies). Of the children with a normative anxious strategy, 73% were classified as Type C1–2. Children with an extreme strategy showed greater variability: seven had an A3–4 strategy, four a C3–4 strategy, and three an A/C strategy. Of the 20 children classified using the SAA, one was securely attached and 19 were anxiously attached, with six of these using a normative strategy. Of the 14 with an extreme strategy, four were compulsively compliant (A4), eight used a coercive C3–4 strategy and three the more extreme C5–6 strategy.

### Maternal stress

Correlations were used to explore the relations between the four maternal Parenting Stress Index variables and maternal ECR attachment anxiety and avoidance scales, as well as child

attachment strategies. Significant positive correlations were found between ECR-Avoid and PSI-Defensive, $r = .61$, $p < .001$, and PSI-Distress, $r = .64$, $p < .001$, and between ECR-Anxiety and three of the four subscales: PSI-Defensive, $r = .64$, $p < .001$, PSI-Distress, $r = .61$, $p < .001$, and PSI-Difficult, $r = .48$, $p < .01$. There were also significant positive correlations between children's attachment strategies (G3 Continuous) and PSI-Dysfunctional, $r = .40$, $p < .05$ and PSI-Difficult, $r = .43$, $p < .05$, suggesting higher use of more extreme forms of self-protection when mothers reported the higher levels of relationship dysfunction and perceived difficulty of the child.

## Maternal attachment

Mothers' dichotomous (secure/anxious) attachment showed a significant group difference between the CSA and control groups, with a higher frequency of CSA mothers classified as insecure, $\chi^2(1) = 3.97$, $\varphi = .35$, $p < .05$. To test the group difference in security versus fearfulness, we used the delta prediction statistic (Hildebrand, Laing, & Rosenthal, 1977). The delta prediction statistic is particularly suitable for testing cell-specific hypotheses regarding categorical variables in small samples. We predicted, but did not find, a significant difference in fearful attachments between the CSA and the control mothers ($\Delta_P = .05$, $\chi^2(5) = 0.45$, $p = .33$). A MANOVA model was used to test differences in the continuous subscales of the ECR based on maternal abuse status. Age, race and SES were included as covariates. The main effect of abuse status on ECR-Anxiety approached significance, $F(1, 32) = 3.82$, $p = .06$, partial $\eta^2 = .12$, such that mothers in the CSA group reported more attachment-related anxiety on the ECR than mothers in the control group. We did not find a significant main effect of abuse status on ECR-Avoid, $F(1, 32) = 2.24$, $p = .15$, partial $\eta^2 = .07$. Descriptive statistics are found in Table 2.

## Child-mother attachment

**SSP and PAA—**We tested the relation of maternal abuse status to children's (G3) attachment strategies in three ways: with categorical classifications, the dichotomous secure/anxious variable, and the quasi-continuous severity variable. The delta prediction statistic was used to test the hypothesis that Types C3–4 and A/C would be more frequent among the G3 children of CSA mothers, whereas Types B and C1–2 would be more frequent in the control group. Using the delta prediction statistic permitted us to differentiate extremeness of strategy from type of strategy. The test was significant: $\Delta_P = .37$, $\chi^2(5) = 2.81$, $p = .003$. Cell by cell examination of the contingency table (see Table 3) indicated two major group differences: the CSA group was characterized by fewer Type B and C1–2 classifications and substantial numbers of C3–4 and A/C classifications whereas the NA group was the reverse: many Type B and C1–2 classifications, no C3–4 classifications and only one A/C classification. There was no difference in the probability of children being classified as Type A.

For the dichotomous (secure versus insecure) maternal attachment variable, logistic regression models showed no main effect of group status on children's attachment security, Wald $\chi^2(1) = 2.04$, $p = .16$.

A one-way ANOVA model was used to test differences in the quasi-continuous child extremeness of attachment variable as a function of maternal abuse status. Mothers' race and SES were included as covariates. Because some of the children included in the study were siblings, intra-class correlations (ICC) were calculated to account for non-independence of data. These indicated significant familial similarities; ICC = .76, $p = .06$, for the dichotomous attachment variable and ICC = .68, $p = .10$ for the severity scale. Given the significance of these findings, sibling status (yes/no) was included as an independent variable in models for which child attachment was the outcome variable. Descriptive

statistics for G3 participants on attachment measures appear in Table 3. There was a significant effect of maternal abuse status on their children's attachment strategies, such that mothers who had experienced CSA had more severely insecurely attached children than those in the control group, $F$ (1, 35) = 7.48, $p < .01$, partial $\eta^2 = .20$.

**SAA—**We tested the relationship between maternal attachment status and children's attachment as measured by the SAA by comparing group (abuse versus control) differences in the frequencies of the eight subcategories. The results approached a significant group difference $\chi^2(7) = 13.51$, $p = .06$. Clustering the sub-classifications as secure, normative anxious (A1–2 and C1–2), and extreme (A3–4 and C3–6), the difference was clear; all children of abused mothers used extreme strategies whereas only 40% of the comparison children did so, $\chi^2(2) = 7.89$, $p < .02$. Using the continuous attachment variable for SAA children, there was a strong mean difference with the children of mothers in the abuse group having more extreme attachment ($M = 3.78$) than the children of comparison mothers ($M = 2.20$, $t$ (17) = 3.23, $p < .005$). Looking at the proportions of Type A versus Type C, there was no group difference, with both groups having more children classified as Type C. There were no group differences in depression or unresolved trauma; the traumas were usually tied to physical abuse, domestic violence, or the absence of the father.

### Family attachment relationships

To determine whether children's strategy of anxious attachment matched or meshed with their mothers', we used the Pearson Chi-square statistic to explore differences among cell frequencies. Using a 4 (maternal ECR category) by 4 (child A, B, C, A/C strategy) analysis, the results were not significant, that is, there was no consistent pattern between maternal and child attachment strategies as measured by the SSP and PAA (Table 4).

There were 16 sibling groups; where there were three siblings, we used only the first- and second-born in the analyses of sibling matches. We looked for matches and meshes in security, 3-group major patterns (A, B, C, A/C-other), and DMM sub-patterns (A+, A1–2, B, C1–2, C+); the two A/Cs were forced into the higher numbered category. We also looked for and found birth order effects with older siblings more likely being classified as Type A, and younger as Type C ($\Delta_P = .30$, $\chi^2(5) = 1.89$, $p = .03$). There were significant sibling matches in security ($\Delta_P = .60$, $\chi^2$ (1) = 1.54, $p = .06$), 3-group major patterns ($\Delta_P = .45$, $\chi^2$ (2) = 2.81, $p = .004$, and 5-group major patterns ($\Delta_P = .31$, $\chi^2(4) = 2.52$, $p = .006$); the final analysis also reflects A/C meshes and the absence of most B combinations.

### Moderating effect of maternal attachment on children's attachment

To examine whether maternal attachment strategies, as measured by the ECR, moderated the relationship between mothers' abuse status and their attachment relationship with children, an ANOVA model was included with the continuous child attachment variable as the dependent variable and maternal abuse status and dichotomous maternal attachment variable as the fixed independent variables. Maternal race and SES were included in the model. Results indicated no significant interaction between maternal abuse status and maternal attachment, although the main effect of maternal abuse status remained significant; partial $\eta^2 = .004$.

## Discussion

### Summary of results

With respect to maternal attachment, we found that women with a CSA history were more likely to be classified insecure and to report higher levels of attachment-related anxiety than

women in the control group. Maternal attachment anxiety and avoidance were also significantly positively correlated with maternal stress.

We also found that children of mothers in the CSA group were more likely to have high-subscript DMM attachment classifications as measured by all three assessments of attachment (the SSP, PAA, and SAA), that is, they used more extreme anxious self-protective strategies than children of non-abused mothers. However, when the extreme A3–4 and C3–4 classifications were combined with the normative A1–2 and C1–2 classifications (i.e., an A, B, C, A/C comparison), the group difference was lost. On the child dichotomous (secure versus insecure) attachment variable, there was no significant effect of maternal group status on child attachment security.

Our data also indicate that young children of mothers in the control group used balanced and normative coercive strategies (i.e., C1–2) with relatively similar frequency, whereas children in the CSA group tended to use extremely coercive (C3–4) or compulsive (A3–4) strategies. Older children rarely were classified as secure on the SAA. Our data cannot indicate whether the SAA over-identifies anxious attachment or whether older children from at risk populations are less likely to be securely attached than younger children from the same socioeconomic group. We did not see this effect in the more middle-class Australian SAA sample (Crittenden, Kozlowska, & Landini, in press). We do know that even the comparison children had many stressors in their homes, ranging from teenage and single mothers to domestic violence and child protection supervision, with almost no child being entirely free of family-specific risks. If the SAA over-identifies risk, the problem could lie in the picture card procedure or the discourse coding guidelines, or both. Alternatively, because eight of our children were at the minimum age of 6 years for the SAA, these disadvantaged children may have lacked the verbal skills to be classified as secure on the SAA. We were quite aware that these eight children found it very difficult to tell the stories that form the basis of the SAA; their SAAs stood out for providing the least discourse and the most disagreement among coders of the 20 in the sample.

There were no group differences in the use of Type A strategies in this largely African American sample (Figure 1), but we did find a strong effect for first born children in this high risk sample being classified as Type A and second borns as Type C. Sibling matches exceeded sibling meshes and all meshes were a first born A+ meshed with a second born C +. Finally, maternal attachment classification did not moderate the relationship between abuse status and attachment security with their children.

## Explanations for the findings

**The G2 mothers—**There is a clear effect of maternal CSA history on attachment security, such that women reporting abuse report both greater frequency of insecurity and higher attachment-related anxiety than women without such abuse histories. In particular, our finding that G2 mothers in the No Abuse group were more likely to be in the Secure category, suggests that they felt significantly safer, that is, less anxious or avoidant, than did the mothers who had been sexually abused as children. The finding that higher levels of attachment-related avoidance and anxiety were associated with higher levels of parental stress, regardless of abuse status, supports the validity of the ECR measure of maternal attachment (without regard to group membership), and suggests a positive relationship between parenting stress in general and stress related specifically to the attachment relationship. The lack of a relation between mothers' self-reported attachment and children's attachment adds to the set of studies suggesting that self report and observational assessments do not tap the same construct.

**The G3 children—**The primary effect for children of CSA mothers was in rates of extreme self-protective strategies, specifically the increased rates of C+ strategies in CSA group dyads. That is, familial sexual abuse appears to be associated with higher rates of the coercively angry/desire for comfort C3–6 strategies. Further, there was a striking absence of the normative B A1–2, and C1–2 strategies among the children of CSA survivors, together with a predominance of extreme strategies (84.6% in the CSA group versus 25% in the comparison group). As discussed in the introduction, other data in our study indicate higher levels of child protection involvement in the CSA families than in the NA families (Noll et al., 2009), suggesting a higher level of threat in the former.

That maternal abuse status did not significantly predict children's dichotomous attachment security may be understood both developmentally, as modest levels of attachment-related anxiety are normative, and culturally, as the transition to verbal representation may occur later in children from low income homes. Normative anxious attachment appeared with relatively equal frequency in both the CSA and control groups. It is the extreme A and C classifications, that are considered indicative of increased risk, which our use of the DMM model allowed us to detect. In particular, children's C4 classification was associated exclusively with mothers' CSA status. On the other hand, it would be inappropriate to focus solely on the risk from mothers' CSA. All the families in our sample experienced the disadvantages associated with low income status and this may have affected the children's development adversely.

The lack of support for an interaction between maternal abuse status and adult attachment strategies in predicting child–mother attachment relationships may be due to the strong main effects that we found when we differentiated A and C subgroups within anxious attachment. Previous research has either dichotomized (secure/anxious) or tricotomized (secure/anxious/disorganized) attachment. Our finding suggests that both extremeness and type of organization are important variables. With these variables, direct effects may be sufficient to account for group differences. On the other hand, our low sample size may have limited our power to detect interactions. Finally, our data indicate that both birth order and an older sibling's pattern of attachment affects which strategy an individual child will find effective. This suggests that studies of vulnerability need to move beyond individual and dyadic perspectives to viewing individuals within family constellations.

## Clinical considerations

Motherhood may affect CSA survivors differently than it affects non-survivors, possibly because it evokes memories in survivors of failures in their own safety, or by asking them to do what their own mothers had not done, that is, provide protection from abuse. Women who have not resolved their abuse may be particularly vulnerable to its impact when they become parents, in that they have not yet learned more flexible forms of protection, either for themselves or for their children. This suggests an effect of unresolved trauma, which our measure of maternal attachment did not address (Crittenden & Newman, 2010).

Our data indicate children of CSA survivors used more extreme self-protective strategies than children of controls. In particular, highly inhibited children may attempt to function independently in ways that they cannot, while highly coercive children may exaggerate displays of negative affect to obtain parental attention, thus appearing to have behavior problems. Clinicians could potentially intervene with opposite treatment strategies, such as exploring dependency needs with highly self-reliant children and fostering self-regulatory abilities in highly coercive children.

### Study limitations and future directions

This study was a small pilot using an existing dataset to test a few theory-derived hypotheses to determine whether they warranted a fully developed design, larger sample, and more precise set of assessments. Given these conditions, the risks of generalization and of over-interpretation of our findings are substantial. The most obvious limitation is the small sample size, which renders the findings vulnerable to the vagaries of individual cases and affects our power to detect complex effects. It also limits our ability to test hypotheses adequately, but, at the same time, provides an economical means of generating hypotheses for future study. In the future, larger samples that permitted all hypotheses to be tested using the same assessment of attachment are essential. Our low sample size also does not afford complete data analysis at the family level. In addition, our measure of mothers' attachment was dependent upon self-report and was, therefore, vulnerable to self-deception and social desirability. Further, it had too few categories to different important subgroups and had no means of addressing unresolved trauma. An additional concern is that there were no African-American families in the families whose children were administered the PAA and SSP, so race presented a potential confound. While we included race as a covariate in all statistical models to address this issue, greater racial variety in both groups would be preferable. Similarly, our data on siblings are intriguing, but the number of such pairs is too few and reflects only high-risk American families. Finally, the use of a self-report attachment measure for adults and observational attachment assessments for children may obscure our ability to detect relations between maternal and child attachment strategies. These issues confirm the pilot nature of our study and the need for replication on a different and larger sample.

Our findings suggest several directions for future research. Further exploration of factors influencing attachment strategies in CSA survivors is indicated; possible factors include mothers' mental health, parenting practices, and social support. A particularly important issue will be having a large enough sample to test the joint effects of type and severity of self-protective strategies. A similar inquiry into variables affecting self-protective strategies in the offspring of CSA survivors is also warranted. These variables could include family-level data and general assessments of children's functioning. Further work in developing theory, testing it empirically, and developing treatment applications may help promote flexible ways of protecting the self, thus reducing risk for intergenerational transmission of troubled relationships.

## Author biographies

**Laura Kwako** PhD is a postdoctoral fellow at the National Institute for Nursing Research, of the National Institutes of Health. Her research focuses on trauma-related disorders, with an emphasis on psychological and biological co-morbidities and mechanisms of risk and resilience. She obtained her degree in Clinical Psychology from the Catholic University of America in 2008, and is a licensed psychologist in the District of Columbia.

**Jennie Noll** PhD is an Associate Professor of Pediatrics and the Director of Research in the Division of Behavioral Medicine at Cincinnati Children's Hospital Medical Center. She has been the Principal Investigator of several NIH-funded studies examining the long-term developmental effect of childhood abuse. She received her degree in Developmental Psychology and Statistical Methodology from the University of Southern California in 1996.

**Frank Putnam** MD is Director of the Mayerson Center for Safe and Healthy Children and the Trauma Treatment Replication Center at Cincinnati Children's Hospital Medical Center. He has directed numerous studies of the impacts of child maltreatment on development, with

particular emphasis on dissociation and treatment of trauma. Dr Putnam received his medical degree from Indiana University in 1975.

**Penelope Trickett** PhD is a Professor of Social Work and Psychology at The University of Southern California, where she is also the David Lawrence Stein/Violet Goldberg Sachs Professor of Mental Health. She has directed several studies on the long-term developmental effects of child maltreatment and the family contexts in which they occur. Dr Trickett earned her degree in Psychology at the New School for Social Research in 1976.

## References


Abidin, RR. Parenting Stress Index – Short Form: Test manual. Pediatric Psychology Press; Charlottesville, VA: 1990.

Ainsworth, MDS.; Blehar, MC.; Waters, E.; Wall, S. Patterns of attachment. Erlbaum; Hillsdale, NJ: 1978.

Alexander PC. Application of attachment theory to the study of sexual abuse: Adult survivors of childhood sexual abuse. Journal of Consulting & Clinical Psychology. 1993; 60:185–195. [PubMed: 1592947]

Alexander PC, Teti L, Anderson CL. Childhood sexual abuse history and role reversal in parenting. Child Abuse & Neglect. 2000; 24(6):829–838. [PubMed: 10888021]

Barnett D, Kidwell SL, Leung KH. Parenting and preschooler attachment among low-income urban African American families. Child Development. 1998; 69(6):1657–1671. [PubMed: 9914645]

Belsky, J.; Nezworski, T. Clinical implications of attachment. In: Belsky, J.; Nezworski, T., editors. Clinical implications of attachment. Lawrence Erlbaum Associates; Hillsdale, NJ: 1988. p. 3-17.

Brennan, KA.; Clark, CL.; Shaver, PR. Self-report measurement of adult attachment: An integrative overview. In: Simpson, J.; Rholes, W., editors. Attachment theory and close relationships. Guilford Press; New York: 1998. p. 46-76.

Cicchetti D, Rogosch FA, Toth SL. Maternal depressive disorder and contextual risk: Contributions to the development of attachment insecurity and behavior problems in toddlerhood. Development and Psychopathology. 1998; 10:283–300. [PubMed: 9635225]

Crittenden PM. Quality of attachment in the preschool years. Development and Psychopathology. 1992; 4:209–241.

Crittenden, PM. School-age assessment of attachment coding manual. Miami, FL, USA: 1997–2005. Unpublished manuscript

Crittenden, PM. A guide to expansions and modifications of the Infant Strange Situation. 2002. Unpublished manuscript, available from the author

Crittenden, PM. Raising parents: Attachment, parenting, and child safety. Willan Publishing; Cullompton, UK: 2008.

Crittenden PM, Kozlowska K, Landini L. Assessing attachment in school-age children. Clinical Child Psychology and Psychiatry. in press.

Crittenden PM, Newman L. Comparing models of borderline personality disorder: Mothers' experience, self-protective strategies, and dispositional representations. Clinical Child Psychology and Psychiatry. 2010; 15(3):433–451. [PubMed: 20603429]

Crittenden PM, Partridge MF, Claussen AH. Family patterns of relationships in normative and dysfunctional families. Development and Psychopathology. 1991; 3:491–512.

DiLillo D, Damashek A. Parenting characteristics of women reporting a history of childhood sexual abuse. Child Maltreatment. 2003; 8:319–333. [PubMed: 14604178]

Dixon L, Browne K, Hamilton-Giachritsis C. Risk factors of parents abused as children: A mediational analysis of the intergenerational continuity of child maltreatment (Part I). Journal of Child Psychology and Psychiatry. 2005; 46:47–57. [PubMed: 15660643]

Easterbrooks MA, Biesecker G, Lyons-Ruth K. Infancy predictors of emotional availability in middle childhood: The roles of attachment security and maternal depressive symptomatology. Attachment & Human Development. 2000; 2:170–187. [PubMed: 11707909]

Farnfield S, Hautamäki A, Nørbech P, Sahhar N. DMM assessments of attachment and adaptation: Procedures, validity and utility. Clinical Child Psychology and Psychiatry. 2010; 15(3):313–328. [PubMed: 20603420]

Gold SN, Hyman SM, Andrés-Hyman RC. Family of origin environments in two clinical samples of survivors of intra-familial, extra-familial, and both types of sexual abuse. Child Abuse & Neglect. 2004; 28:1199–1212. [PubMed: 15567024]

Gravetter, FJ.; Wallnau, LB. Statistics for the behavioral sciences. Thomson Wadsworth; Belmont, CA: 2006.

Hautamäki A, Hautamäki L, Neuvonen L, Maliniemi-Piispanen S. Transmission of attachment across three generations: Continuity and reversal. Clinical Child Psychology & Psychiatry. 2010; 15(3): 347–354. [PubMed: 20603422]

Hildebrand, DK.; Laing, LP.; Rosenthal, HR. Prediction analysis of cross classifications. Wiley; New York: 1977.

Hollingshead, AF. Four factor index of social status. Yale University; New Haven, CT: 1975. Unpublished manuscript

Kobak, R.; Cassidy, J.; Lyons-Ruth, K.; Ziv, Y. Attachment, stress, and psychopathology: A developmental pathways model. In: Cicchetti, D.; Cohen, D., editors. Developmental psychopathology. 2nd edn. John Wiley and Sons; Hoboken, NJ: 2006. p. 333-369.

Leerkes EM, Siepak KJ. Attachment linked predictors of women's emotional and cognitive responses to infant distress. Attachment & Human Development. 2006; 8:11–32. [PubMed: 16581621]

Leifer M, Kilbane T, Jacobsen T, Grossman G. A three-generational study of transmission of risk for sexual abuse. Journal of Clinical Child and Adolescent Psychology. 2004; 33:662–672. [PubMed: 15498734]

Lyons-Ruth K, Block D. The disturbed caregiving system: Relations among childhood trauma, maternal caregiving, and infant affect and attachment. Infant Mental Health Journal. 1996; 17:257–275.

Morrel TM, Dubowitz H, Kerr MA, Black MM. The effect of maternal victimization on children: A cross-informant study. Journal of Family Violence. 2003; 18:29–41.

Nelson E, Heath A, Madden P. Association between self-reported childhood sexual abuse and adverse psychosocial outcomes: Results from a twin study. Archives of General Psychiatry. 2002; 59:139–146. [PubMed: 11825135]

Noll JG, Trickett PK, Putnam FW. A prospective investigation of the impact of childhood sexual abuse on the development of sexuality. Journal of Consulting and Clinical Psychology. 2003; 71:575–586. [PubMed: 12795580]

Noll JG, Trickett PK, Harris WW, Putnam FW. The cumulative burden borne by offspring whose mothers were sexually abused as children: Descriptive results from a multigenerational study. Journal of Interpersonal Violence. 2009; 24:424–449. [PubMed: 18451100]

Reitman D, Currier RO, Stickle TR. A critical evaluation of the Parenting Stress Inventory – Short Form (PSI-SF) in a head start population. Journal of Clinical Child and Adolescent Psychology. 2002; 31:384–392. [PubMed: 12149976]

Riggs SA, Paulson A, Tunnell E, Sahl G, Atkison H, Ross CA. Attachment, personality, and psychopathology among adult inpatients: Self- reported romantic attachment style versus adult attachment interview states of mind. Development & Psychopathology. 2007; 19:263–291. [PubMed: 17241494]

Rumstein-McKean O, Hunsley J. Interpersonal and family functioning of female survivors of childhood sexual abuse. Clinical Psychology Review. 2001; 21:471–490. [PubMed: 11288610]

Shah P, Fonagy P, Strathearn L. Is attachment transmitted across generations? The plot thickens. Clinical Child Psychology & Psychiatry. 2010; 15(3):329–345. [PubMed: 20603421]

Van IJzendoorn MH. Associations between adult attachment representations and parent–child attachment, parental responsiveness, and clinical status: A meta-analysis of the predictive validity of the strange situation. Psychological Bulletin. 1995; 117:387–403. [PubMed: 7777645]

Van IJzendoorn, MH.; Bakermans-Kranenburg, MJ. Intergenerational transmission of attachment: A move to the contextual level. In: Atkinson, L.; Zucker, K., editors. Attachment & Psychopathology. Guilford Press; New York: 1997. p. 135-167.

Waters E, Crowell J, Elliot M, Corcoran D, Treboux D. Bowlby's secure base theory and the social/personality psychology of attachment styles: Work(s) in progress. Attachment & Human Development. 2002; 4:230–242. [PubMed: 12467517]

Zeanah CH, Benoit D, Hirshberg L, Barton ML, Regan C. Mothers' representations of their infants are concordant with infant attachment classification. Developmental Issues in Psychiatry and Psychology. 1994; 1:9–18.

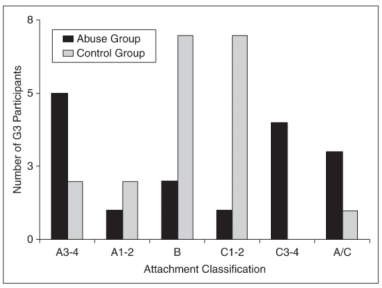


**Figure 1.**
Attachment classifications of G3 children (for PAA and SSP categories) compared by group status

**Table 1**

Descriptive statistics and Pearson chi-square tests for G3 (child) participants, organized by group

| | G3 | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Abuse group (*N* = 26)** | | **Control group (*N* = 28)** | | **Total (*N* = 54)** | | **$\chi^2$(df)** |
| **Age in months** | *M* | SD | *M* | SD | *M* | SD | .35(53)† |
| | 57.04 | 37.32 | 53.29 | 29.07 | 55.09 | 33.03 | |
| **Gender** | *N* (percent) | | *N* (percent) | | *N* (percent) | | .90(1) |
| Male | 13 (50.0%) | | 14 (50.0%) | | 27 (50.0%) | | |
| Female | 13 (50.0%) | | 14 (50.0%) | | 27 (50.0%) | | |
| **Race** | *N* (percent) | | *N* (percent) | | *N* (percent) | | 4.98(2) |
| Caucasian | 8 (30.8%) | | 3 (10.7%) | | 11 (20.4%) | | |
| African-American | 18 (69.1%) | | 23 (82.1%) | | 41 (75.9%) | | |
| Latina | 0 | | 2 (7.2%) | | 2 (4.7%) | | |

*Notes:* Tests of difference for gender and race are Pearson Chi-square; for age the test is a two-sided t-test.

† Age was compared using a univariate Analysis of Variance model, so the statistic presented is the *F* statistic, with degrees of freedom in parenthesis.

*Clin Child Psychol Psychiatry*. Author manuscript; available in PMC 2011 August 25.

## Table 2

Descriptive statistics of G2 (mother) adult attachment strategies, organized by group

| | **G2** | | | |
|---|---|---|---|---|
| | **Abuse group (*N* = 14)** | | **Control group (*N* = 19)** | |
| **Attachment variables** | *M* | SD | *M* | SD |
| ECR-Anxiety | 4.13 | 1.11 | 3.00 | 1.44 |
| ECR-Avoid | 3.61 | 0.93 | 3.03 | 1.05 |
| Dichotomous classification | Secure | Insecure | Secure | Insecure |
| | 2 | 12 | 9 | 10 |

**Table 3**

Descriptive statistics of G3 (child) attachment strategies, organized by group for PAA and SSP

| | **G3** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **Abuse group (*N* = 16)** | | | | | | | | |
| Security scale | 0 (*N* = 2) | | | 1 (*N* = 2) | | 2 (*N* = 12) | | | |
| Attachment category | B1–2 | B3 | B4–5 | A1–2 | C1–2 | A3–4 | C3–4 | A/C | IO |
| | 1 | | 1 | 1 | 1 | 5 | 4 | 2 | 1 |
| | Control group (*N* = 19) | | | | | | | | |
| Security scale | 0 (*N* = 7) | | | 1 (*N* = 9) | | 2 (*N* = 3) | | | |
| Attachment category | B1–2 | B3 | B4–5 | A1–2 | C1–2 | A3–4 | C3–4 | A/C | IO |
| | 2 | 1 | 4 | 2 | 7 | 2 | 0 | 1 | 0 |

**Table 4**

Attachment categories of mothers and children (for PAA and SSP categories)

| ECR Categories | G3 | | | | |
|---|---|---|---|---|---|
| | **Secure** | **Ambivalent** | **Avoidant** | **Ambivalent/ Avoidant** | **Total** |
| Secure | 4 | 5 | 2 | 2 | 13 |
| Preoccupied | 2 | 1 | 2 | 0 | 5 |
| Dismissing | 0 | 3 | 1 | 2 | 6 |
| Fearful | 3 | 2 | 4 | 1 | 10 |
| Total | 9 | 11 | 9 | 5 | 34 |