



## Child–mother attachments in the face of grandparent HIV

Mary J. Ward, Elizabeth A. Carlson, Patricia Lester, Leila Beckwith, Marian Sigman & Mary Jane Rotheram-Borus

**To cite this article:** Mary J. Ward, Elizabeth A. Carlson, Patricia Lester, Leila Beckwith, Marian Sigman & Mary Jane Rotheram-Borus (2016) Child–mother attachments in the face of grandparent HIV, *Attachment & Human Development*, 18:5, 461-472, DOI: [10.1080/14616734.2016.1189639](https://doi.org/10.1080/14616734.2016.1189639)

**To link to this article:** <http://dx.doi.org/10.1080/14616734.2016.1189639>



Published online: 19 Jul 2016.



Submit your article to this journal [↗](#)



Article views: 4



View related articles [↗](#)



View Crossmark data [↗](#)

## Child–mother attachments in the face of grandparent HIV

Mary J. Ward<sup>a</sup>, Elizabeth A. Carlson<sup>b</sup>, Patricia Lester<sup>c</sup>, Leila Beckwith<sup>c</sup>, Marian Sigman<sup>c</sup> and Mary Jane Rotheram-Borus<sup>c</sup>

<sup>a</sup>Weill Cornell Medicine, New York, NY, USA; <sup>b</sup>University of Minnesota, Minneapolis, MN, USA; <sup>c</sup>University of California, Los Angeles, Los Angeles, CA, USA

### ABSTRACT

Child–mother attachment, as observed in the Strange Situation (SSP), was assessed in 61 families affected by HIV and 18 neighborhood comparison families not affected by HIV, but of similar ethnicity and socioeconomic status. Children were aged one to three years at the assessment. Secure attachment was significantly less likely among children in the HIV-affected group than among comparison group children (36% versus 67%). The most common pattern of attachment in the HIV-affected group was disorganized/disoriented, observed in 41% of children (versus 22% of comparison children). Children from families that included a surviving grandparent with HIV showed disorganized attachments more often than children whose grandparents died (53% versus 36%). Child attachment classifications were not associated with families' participation in a family-based, cognitive-behavioral HIV intervention. These results document the inter-generational impact of young mothers' who were growing up with an HIV-infected parent. These findings suggest that families affected by HIV may benefit from interventions that address attachment issues.

### ARTICLE HISTORY

Received 6 May 2016  
Accepted 7 May 2016

### KEYWORDS

Attachment; HIV;  
parent–child interactions;  
at-risk population

Most HIV-infected parents in the United States are unmarried, heterosexual, people of color (African American or Latino), who have histories of substance use and few social and economic resources (CDC, 2010; Schuster & Kanouse et al., 2000). Multiple risks accrue to children who experience chronic parental illness, poverty, changing living conditions, unstable relationships, parental substance abuse, bereavement, and social stigma arising from HIV. Indeed, HIV seropositivity per se was associated with increased maternal depression, as well as reduced social support and family cohesiveness in a study that compared families from the same low-income neighborhood (Dyer, Stein, Rice, & Rotheram-Borus, 2012).

Before effective medication regimens were introduced in the early 1990s, HIV infection conferred serious health impairment and meant almost certain death. Effectiveness of these regimens depended on precise adherence to complex dosing schedules. Youth whose parents were HIV-infected in the 1980s and 1990s faced both the prolonged illness of their parents and the threat of their parents' impending death. When the offspring of HIV-infected adults became parents themselves, past and current

experiences of stress and loss were likely to influence their function in many areas, including parenting. Indeed, youth affected by parental HIV may be seen as exemplars of children who develop in the face of multiple and complex stressors and adversities. Given these stressors and losses, it is anticipated that daughters in HIV-affected families may be at risk in parenting their own children.

Having a parent with HIV thus could affect youth in at least two ways: experiencing early parental death and living with a chronically ill parent. Both outcomes are associated with increased rates of psychiatric disorder and social and behavioral maladjustment (Rotheram-Borus et al., 2003; Rotheram-Borus, Stein, & Lester, 2006). The death of a parent is believed to be one of life's most stressful events (Stroebe, Hanesar, Stroebe, & Schert, 2001). Chronic illness of a parent also is highly stressful for a family (Christ, Siegel, & Sperber, 1994). The demands of coping with chronic illness are an additional stress for families living within social networks where substance abuse is prevalent (Zayas & Romano, 1994). Due to the common presence of parental substance abuse, the youth in the Zayas and Romano study, as well as those reported on in the current study, frequently experienced chaotic family life even before a diagnosis of HIV. Thus, the unique threat of impending loss as a specific stressor is difficult to isolate.

Within the group of families affected by HIV, increased risk for a variety of conditions exists among young parents and their offspring: teenage parenthood, psychiatric disorders, substance abuse, HIV infection, and conflict in their romantic relationships (Forehand et al., 1998; Rotheram-Borus, Lee, Gwadz, & Draitmin, 2001; Rotheram-Borus et al., 2003; Rotheram-Borus, Lee, Lin, & Lester, 2004; Rotheram-Borus, Dyer et al., 2012). When designing interventions, it is important to investigate factors that function to protect at-risk youth and children from the impacts of the very risks that threaten their development (Dutra et al., 2000).

In a 10-year longitudinal study of children at risk from poverty, Masten and colleagues (1999) found that positive parent-child relationships were one of the most important factors associated with positive adaptation for children who faced "significant threats to development" (p. 143). Similarly, the combination of positive mother-child relationship and high child coping skills was associated with significantly lower levels of depressive symptoms among children with HIV-positive mothers (McKee et al., 2007). Among children in a developing country, HIV infection per se was not associated with increased risk for anxious attachment or indiscriminant friendliness. But institutional rearing did increase risk for both attachment insecurity and indiscriminant friendliness (Dobrova-Krol, Bakermans-Kranenburg, van Ijzendoorn, & Juffer, 2010).

Goldberg (1988) first demonstrated that the quality of family stressors is crucial in affecting attachment. She found that children's serious illness per se was not associated with increased risk for anxious attachment, as the propensity of infants to form secure attachments and the propensity of parents to provide conditions for typical relationships are not easily disrupted. In contrast, Goldberg noted that when stressors directly affect mothers' abilities to provide appropriate care, increased risk for anxious attachment was observed consistently. This principle was supported in a study of attachment among HIV-positive mothers and their children in Uganda (Peterson, Drotar, Olness, Guay, & Kiziri-Mayengo, 2001). Mothers' HIV status was associated with infant attachment only when mothers had more severe HIV illness or the infants themselves also were HIV

positive. The impact of maternal illness on child attachment in this study appeared to have been moderated by mothers' positive affect in interactions.

In the current study the intergenerational impact of grandparent HIV was examined with assessment of child–mother attachments in families where there was a grandparent with HIV (GWH), either living or dead. So far as we are aware, there have been no investigations of attachment in children from HIV-affected families in the US.

The goal of this study was to investigate attachment security and disorganization in the second and third generations of families affected by HIV. Measures of attachment will be compared with data on mother's family HIV status (HIV-affected versus neighborhood comparison). Secondary analyses will investigate the impact of history of death versus survival of the HIV-positive grandparent and mothers' early childhood experiences on child–mother attachments.

In this report, HIV-positive adults will be called "grandparents"; their daughters, who are mothers of one- to three-year-old children, will be called "parents"; and offspring of the young mothers will be called "children".

## Method

### *Study design*

A longitudinal study of HIV-positive adults (grandparents in this study) and their 12–21-year-old children (parents in this study; original  $n = 223$  females) was begun in 1993. The longitudinal study also included a comparison group of adults (grandparents in this study) and their children (parents in this study; original  $n = 68$  females) selected from the same neighborhoods, but without the stress of parental illness, death, or HIV. From 2000 to 2002, parents and their children from these two samples were assessed in laboratory sessions when children were one, two, and/or three years of age.

### *Sample composition*

This section describes the selection of the parenting subjects from the larger sample:

***HIV index group.*** Of the 223 female youth (parents), 115 (52%) were known to have at least one child and/or to be pregnant and 88 (39%) were known not to have any child in their lifetimes. For 20 (9%), information about childbearing was unknown. Of the 115 parents with known children, 85 (74%) were eligible for this study; the others were excluded because their children were too old (greater than 3 years 6 months as of 1 April 2000;  $n = 18$ ), too young (less than 12 months as of 15 August 2002;  $n = 5$ ), or not yet born ( $n = 7$ ). Of the 85 parents whose children were the appropriate ages, an additional 13 (15%) were excluded by study criteria: nine because the mother was not the child's primary caregiver and four because the family lived out of state. Thus, a total of 72 parent–child dyads were eligible for this study. Of these, 61 (85%) agreed to participate. Two mothers refused participation, three could not be scheduled within the age eligibility window, three were lost to follow-up, and three were non-participants for unknown reasons.

**Neighborhood comparison group.** Of the 68 female youth (parents), 26 (38%) were known to have at least one child and 31 (46%) were known not to have any child in their lifetimes. For 11 (16%) information about childbearing was unknown. Of the 26 parents with known children, 25 (96%) were eligible for this study; the remaining family was excluded because the child was too old (greater than 3 years, 6 months as of 1 April 2000). Of the 25 eligible parents, an additional two (8%) were excluded by study criteria: one because the mother was not the child's primary caregiver and one because the family lived out of state. Thus, a total of 23 parent-child dyads were eligible for inclusion in this study. Of these, 18 (78%) agreed to participate. No parents refused participation, two could not be studied within the age eligibility window, and three were lost to follow-up.

## Participants

Between April 2000 and August 2002, one- to three-year-old children from the HIV-affected and neighborhood comparison samples completed at least one laboratory observation session with their mothers, as described below. Families were seen in these assessments only if the mother provided daily care for her child. Assessments were scheduled to occur up to four months after the first (12–16 months), second (24–28 months), or third (36–40 months) birthday.

Only the first assessment for one target child per family was included in analyses presented here. The target child was defined as the oldest child in a family who was assessed between the ages of 12 and 40 months. The exception to this rule occurred when there were two children in a family assessed in this age range: in those cases, the child who was younger at the first lab visit was designated the target, so that the Strange Situation procedure (SSP; Ainsworth, Blehar, Waters, & Wall, 1978) could be observed in respect to a child who was in the age range (12–18 months) for which the SSP is regarded as most valid. Non-target subjects were designated as siblings and were not included in this study.

Videotaped procedures from the first assessment for 79 target children aged one to three years were selected for this study, using the criteria described above. Three (2%) of the target SSP sessions ( $n = 2$ , one-year and  $n = 1$ , two-year) were uncodable secondary to procedural errors. For all three, a later assessment ( $n = 2$ , two-year and  $n = 1$ , three-year) was available to substitute in analyses.

Analyses thus include all 79 target subjects: 61 (77%) dyads from the index group and 18 from the comparison group. Target subjects included 37 one-year-olds (47%), 25 two-year-olds (32%), and 17 three-year-olds (21%); 40 children (51%) were male. Children were on average 24.5 months old ( $SD = 9.03$ , Range = 13–41 months) at the SSP observation. Mothers were on average 21.9 years old ( $SD = 2.28$ , Range = 17–27 years) at the assessment of the target child. Mothers' reported racial/ethnic group was 53% Latina, 37% African American, 4% Asian, and 6% bi-racial or other.

## Procedures

### Strange Situation

SSP (Ainsworth et al., 1978) is the standardized laboratory procedure that is used to assess child-parent attachment. A large body of literature confirms the validity of the

SSP as a measure of the child–mother relationship. Coding systems for infants (1–2 years) and preschoolers (3 years and older) are available and were used in this study. Based primarily on infant behavior in reunion with the mother after brief separation, attachments were classified into one of four groups described by Ainsworth and colleagues (1978) and Main and Solomon (1990): (1) Secure (Group B); (2) Anxious, avoidant (Group A); (3) Anxious, resistant (Group C); or (4) Anxious, disorganized/disoriented (Group D).

As the coding criteria for SSP are most applicable to children 12–18 months of age, coders received training focused on reliable coding of older children, using the standards developed by Marvin, Cassidy and colleagues (Cassidy & Marvin, 1992), writings by Moss and colleagues (e.g., Moss, Bureau, Cyr, Mongeau, & St-Laurent, 2004), and discussions with Moss concerning developmental transformations in disorganized/disoriented behaviors.

In total, 125 SSPs were scored by two teams of senior coders: 89 sessions for one- and two-year-olds were coded by a senior coder who was blind to data on individual subjects' group membership and maternal history. This coder also trained on the Cassidy/Marvin (C/M) system, but was not certified. When behaviors displayed by two-year-olds covered by the C/M, but not the infant system were encountered, decisions about classification were made using criteria from the C/M and infant systems jointly. A second senior coder (with only general knowledge of the sample characteristics and no information about individual subjects) independently scored 20 (22%) of the 89 one- and two-year-olds SSPs completed by Coder 1. These two coders agreed on A/B/C/D classification for 14 of 20 cases (70%; kappa = .583). The level of inter-rater agreement was low, due to the complexity of attachment behaviors observed in this sample. Disagreements were resolved through repeated review until consensus was reached, resulting in three codes in favor of each of the two coders.

Thirty-seven SSPs for three-year-olds were coded by two coders who were trained by R. Marvin or E. Moss and achieved reliability with these expert coders on a separate sample of tapes. Inter-rater reliability was calculated on 25% of the sample (10 tapes). All discrepancies were resolved by review of the tapes until consensus was reached. Overall agreement for the major classifications (A, B, C, and D), was 87% (kappa = 0.80).

In addition, the rating of disorganization/disorientation from Episodes 5 and 8 (reunion episodes) also was available for analyses.

Of the 79 cases included in analyses below, 62 (78%) were completed by Coders 1 and 2 and 17 were completed by the team of Coder 3. All SSP coders were unaware of data for individual subjects on group status, family history, and loss.

### *Intervention trial*

Youth (parents in this study) in the HIV-affected cohort were randomly assigned to an intervention or standard care group. The family-based, cognitive-behavioral intervention was delivered to 25 (41%) of the 61 parents from the HIV-affected group several years before the births of children in this sample. The intervention was focused on custody planning, estate planning, and family communication about parental illness and potential death. It is important to note that the intervention protocol did not address issues directly relevant to attachment and so was not predicted to show associations with

individual differences in child–mother attachment. An extensive, detailed manual contains the specific goals, activities, and scripts for each session (<http://chipts.ucla.edu>).

### *Loss and childhood experiences*

Data from the larger study were examined to provide additional information about the early life experiences of the mothers in this sample. First, information about the death of grandparents before the SSP assessment was recorded. Second, data on mothers' self-reported family history at the time of the SSP was available for 70 of the 79 mothers. Some participants chose not to complete these interviews. The following information was obtained from a session that involved administration of an Adult Attachment Interview (AAI): history of maltreatment, history of separations from caregivers, history of parental substance abuse, parental chronic illness. A team of two coders searched uncoded AAI transcripts together for the variables above. Reliability was not calculated. At the time this report was written, AAI classifications were not available.

## **Results**

### *Distribution of target SSP classifications*

Target child attachment classifications across the two groups ( $n = 79$ ) using the four-group (A/B/C/D) system described by Main and Solomon (1990) were 43% secure (B); 16% anxious, avoidant (A); 4% anxious, resistant (C); and 37% anxious, disorganized (D). This distribution represents an increased rate of disorganized and a decreased rate of secure patterns, compared with normative distributions (see van Ijzendoorn, Schuengel, & Bakermans-Kranenburg, 1999). Following customary practice, CC cases were grouped with the D group for data analyses. Gender of child showed no significant association with attachment classification.

### **Target SSP classifications and group membership**

Associations between attachment and the primary and secondary variables were tested using the uncertainty coefficient  $U$ . The kappa ( $K$ ) statistic also was computed where applicable. Table 1 illustrates that children in the HIV-affected group were significantly more likely than comparison group children to show patterns of insecure attachment.

Specifically, the HIV-affected group showed a significantly higher frequency of anxious attachment (64% versus 33%) and a lower frequency of secure attachment (36% versus 67%) than the index group ( $U = .055$ ,  $T = 1.17$ ,  $p < .05$ ;  $K = .233$ ,  $T = 2.30$ ,  $p < .05$ ). Children in the HIV-affected group were almost twice as likely to be classified disorganized/disoriented (41% versus 22%) and were significantly less likely to be classified secure (46% versus 75%) as children in the comparison group ( $U = .055$ ,  $T = 1.07$ ,  $p < .05$ ;  $K = .22$ ,  $T = 2.03$ ,  $p < .05$ ).

In additional analyses, the HIV-affected and comparison groups were compared on disorganization scores, using  $t$ -tests. On disorganized/disoriented behavior, the HIV-affected group ( $M = 4.21$ ,  $SD = 2.65$ ) received significantly higher scores ( $t[61] = 2.06$ ,  $p < .05$ ) than the comparison group ( $M = 2.67$ ,  $SD = 2.06$ ). These findings confirm that

**Table 1.** Attachment classifications in study groups.

Study group	HIV-affected ( <i>n</i> = 61)	Neighborhood comparison ( <i>n</i> = 18)
Attachment group		
Secure (B)	22 (.36)	12 (.67)
Avoidant (A)	11 (.18)	2 (.11)
Resistant (C)	3 (.05)	0
Disorganized (D)	25 (.41)	4 (.22)

Note: Analyses conducted for Group B versus Groups A, C, and D.

$U = .055$ ,  $T = 1.17$ ,  $p < .05$

$K = .233$ ,  $T = 2.30$ ,  $p < .05$

Note: Analyses conducted for Group B versus Group D.

$U = .055$ ,  $T = 1.07$ ,  $p < .05$

$K = .22$ ,  $T = 2.03$ ,  $p < .05$

Note: Values in parentheses are column proportions.

the two groups differ on both categorical and continuous measures of disorganized and disoriented behavior.

### SSP classifications and loss

Among mothers in the HIV-affected cohort, 42 (70%) experienced the death of at least one caregiver and 19 had not. Most deaths occurred before the target child's birth ( $M = 36.5$  months before), but three occurred within the year after the child's birth and at least one year before the lab session was conducted. Child attachment was associated with history of maternal loss ( $U = .058$ ,  $T = 1.43$ ,  $p < .05$ ), as demonstrated in Table 2.

Disorganized infant attachment was significantly *more* common (58% versus 36%) among dyads where the mother *had not* experienced loss, suggesting that ongoing interactions with a chronically ill parent with HIV may present parenting stresses for young mothers. These two loss groups did not differ on security function scores or on ratings of disorganized behaviors.

### Childhood experience

Two sets of analyses were performed on the five childhood experience variables extracted from the Adult Attachment Interview: maltreatment, chronic family stressors, stable caregiving, maternal substance use, parental chronic illness (mother or father). The childhood experience variables were coded nominally, with 0 indicating that the

**Table 2.** Attachment classifications in loss groups.

HIV-affected family loss status	Grandparent deceased ( <i>n</i> = 42)	Grandparent alive ( <i>n</i> = 19)
Attachment group		
Secure (B)	14 (.33)	7 (.37)
Avoidant (A) or Resistant (C)	13 (.31)	1 (.05)
Disorganized (D)	15 (.36)	11 (.58)

Note:  $U$  (symmetric) = .058,  $T = 1.43$ ,  $p < .05$

Note: Values in parentheses are column proportions

experience was not reported and 1 indicating that it was reported. First, the HIV-affected and comparison groups were compared on the five variables: The groups differed on two variables: (1) Mothers in the HIV-affected group were more likely to report chronic stressors in the family during childhood (85% versus 40%;  $U = .16, T = 1.68, p < .01$ ); (2) Mothers in the HIV-affected group were more likely to report that their children's grandmothers abused substances during their own childhoods (42% versus 7%;  $U = .10, T = 1.65, p < .01$ ).

Second, the disorganization rating and security function score were compared on the five childhood experience variables for the HIV-affected group. Contrary to expectations, mothers' reports of major childhood separations from their own mothers were associated with *higher* security scores ( $t[56] = 3.03, p < .01$ ) and *lower* disorganization scores ( $t[56] = -2.04, p < .05$ ) in their children. These findings may reflect inaccuracies arising from self-report measures. They also may suggest that, in this sample of mothers who grew up with HIV-positive parents, childhood separations led to more stable and supportive caregiving arrangements. Experiences in more supportive environments, in turn, would increase the likelihood that mothers would later provide secure parenting for their own children.

### **SSP classifications and intervention status**

Child attachment classification was not associated with HIV-group intervention status ( $X^2 [1] < 1.0, NS$ ). Twenty-eight percent of children from the intervention group were coded secure and 42% of non-intervention children were coded secure. Consistent with prediction, the role of intervention experience was not of relevance to the measure of attachment. The two groups also did not vary on the security function score or ratings of disorganization.

## **Discussion**

These findings suggest that a constellation of factors present in families affected by HIV were associated with reduced rates of security and increased levels of disorganization in mother-child attachments. Specifically, increased risk of disorganized attachments was observed in children whose grandparents were HIV positive. Although this finding is intriguing, it is important to note that the specific factors leading to the observed patterns of attachment cannot be determined from these data. The data were derived from a larger study that was not designed to investigate the development of attachments.

As anticipated, secure child-mother attachments were significantly more common among young children in families without HIV illness than among those affected by HIV. The increased risk for anxious, disorganized/disoriented attachment in HIV-affected families suggests that grandparent HIV illness has consequences for developing relationships among family members over time, perhaps especially when the grandparents live for many years with HIV disease.

The observation of 41% disorganized/disoriented infants among children from families affected by HIV is notably higher than typically observed among non-risk samples (15%) and low SES samples (25%). The rate of disorganized/disoriented

attachment among children from families affected by HIV matches the levels observed in clinical samples, such as the offspring of women with substance abuse disorders (43%) and maltreated children (48%). In contrast, the occurrence of the disorganized/disoriented classification among neighborhood comparison children (22%) is entirely consistent with proportions seen among other economically disadvantaged families (see van Ijzendoorn et al., 1999). The meta-analytic data of van Ijzendoorn and colleagues derive from nearly 80 studies involving more than 6000 mother–child dyads.

It is important to note here that attachment disorganization is thought to result from caregiving experiences that disrupt or interfere with the formation of a coherent pattern of attachment behavior. In the sample studied here, these experiences are likely to reflect effects of mothers' unresolved trauma or loss (not measured in the current study) arising from environmental and relationship stressors as well as experiences related to the *process* of coping with loss and impending loss. Increased risk of attachment disorganization among these families suggests that focus on family dynamics and maternal caregiving competence would appear to be crucial in services to families affected by HIV. The experiences shared by many HIV-affected families are known to be risk factors for disorganization (e.g., illness in the mother's parent, substance use in the family, multiple stressors and trauma).

We report these findings with some hesitancy. This hesitancy arises from the concern that these data could be misinterpreted as blaming mothers for attachment disorganization in their children. HIV still is associated with stigma and parents clearly will be harmed by experience of blame. We believe that any implication of blame toward mothers is misdirected. Disturbances in relationships arise out of complex interactions among many contributing factors. Providing useful intervention requires that we acknowledge such complexity as we search for opportunities for change.

It is important to note that the population of children affected by grandparent HIV illness and death clearly is not a monolithic one: in this sample, more than one-third of the children showed secure attachments. Somewhat unexpectedly, *survival* of the HIV-positive grandparent was associated with increased risk for anxious child–mother attachment in this sample, as compared with children whose HIV-positive grandparent had died. This finding suggests that the experience of ongoing chronic illness and anticipatory loss of her parent with HIV poses notable challenges to a young mother's capacity to provide a secure base for her child. In addition to coping with their own distress, young women with HIV-positive parents often are expected to assume responsibility for the ill grandparent's physical and emotional needs, as well as to care for younger siblings (Stein, Riedel, & Rotheram-Borus, 1999).

Previous study of the larger cohort of youth whose parents have HIV has shown that for youth experiencing parental death, the designated caretaker is more likely to hold a job and have less emotional distress, as well as being less likely to use substances than the parent with HIV (Rotheram-Borus et al., 2002). Although loss of their own parents certainly would be stressful for young mothers, that loss appears to have allowed greater opportunity for many of them to attend to serving safe haven/secure base functions for their own children.

Indeed, in a study (Rotheram-Borus et al., 2002) of all male and female youth from the larger HIV-affected cohort, few differences in adolescent emotional and behavioral function were observed between bereaved and non-bereaved youth. Adolescents

whose parents had HIV illness experienced the highest levels of emotional distress more than a year prior to the death of their parents. This pattern of distress was marked by isolation and fearfulness of others, irritability and angry impulses, in addition to depressive symptoms and somatic complaints. In the year immediately prior to the parent's death, the adolescents' emotional distress declined. A decline in stressful life events reported by the adolescents paralleled the decline in overall distress and behavioral problems during the same period. Future research with HIV-affected families can help specify factors that may have contributed to the increased risk for infant insecurity observed in families with surviving grandparents.

As expected, the family-based, cognitive behavioral intervention provided for mothers and grandparents with HIV several years before the births of children in this sample was not associated with quality of child attachment. This intervention has been demonstrated to provide a range of psychological coping advantages over many years to youth with HIV-positive parents (see Rotheram-Borus et al., 2004), but was not focused on issues specific to attachment. Furthermore, an intervention delivered before a child's birth would not be likely to enhance secure attachment in the child, as interventions to promote secure attachments in young children are most efficacious when focused on enhancing behaviors associated with sensitive caregiving (Bakermans-Kranenburg, van Ijzendoorn, & Juffer, 2003).

These findings do provide important information about the impact of family HIV across generations, as well as guidance about the timing and focus of such interventions. That the children of mothers living with a parent with HIV are at greater risk of disorganized/disoriented attachment than those of bereaved young mothers may indicate an ongoing period of vulnerability within these high risk families, one which suggest an opportunity for intervention. Interventions for HIV-affected families could profitably include efforts to assist young parents with acquiring competent caregiving skills, which would necessitate a longitudinal approach to ameliorating the ongoing effects of parental HIV on the extended family.

## Acknowledgements

Portions of this paper were presented at the International Conference on Infant Studies (April 2002), Toronto, and the biennial meetings of the Society for Research in Child Development (April 2003), Tampa, FL. The authors wish to thank Mindy Finklestein, Diana Gutierrez, Melissa B. Iardi, and Elyes Perez for invaluable help in running procedures and coding data. Special gratitude belongs to the mothers and children who gave their time so generously to benefit this work. Marian Sigman was deceased after the completion of this project.

## Disclosure statement

No potential conflict of interest was reported by the authors.

## Funding

This research was supported by a grant from the National Institute of Mental Health [grant number R01 HD27261] to M.J. Rotheram-Borus.

## References

- Ainsworth, M.D.S., Blehar, M., Waters, E., & Wall, S. (1978). *Patterns of attachment*. Hillsdale, NJ: Erlbaum.
- Bakermans-Kranenburg, M.J., van Ijzendoorn, M.H., & Juffer, F. (2003). Less is more: Meta-analyses of sensitivity and attachment interventions in early childhood. *Psychological Bulletin*, *129*, 195–215. doi:10.1037/0033-2909.129.2.195
- Cassidy, J., & Marvin, R.S. (1992). *Attachment organization in three- and four-year olds: Coding guidelines* (Unpublished manuscript). Charlottesville, VA: University of Virginia.
- Centers for Disease Control and Prevention. (2010). *HIV/AIDS surveillance report* (Vol. 22). Atlanta, GA: Centers for Disease Control and Prevention.
- Christ, G.H., Siegel, K., & Sperber, D. (1994). Impact of terminal cancer on adolescents. *American Journal of Orthopsychiatry*, *64*(4), 604–613. doi:10.1037/h0079569
- Dobrova-Krol, N.A., Bakermans-Kranenburg, M.J., van Ijzendoorn, M.H., & Juffer, F. (2010). The importance of quality of care: Effects of perinatal HIV infection and early institutional rearing on preschoolers' attachment and indiscriminate friendliness. *Journal of Child Psychology and Psychiatry*, *51*, 1368–1376. doi:10.1111/j.1469-7610.2010.02243.x
- Dutra, R., Forehand, R., Armistead, L., Brody, G., Morse, E., Morse, P.S., & Clark, L. (2000). Child resiliency in inner-city families affected by HIV: The role of family variables. *Behaviour Research and Therapy*, *38*, 471–486. doi:10.1016/S0005-7967(99)00070-4
- Dyer, T.P., Stein, J.A., Rice, E., & Rotheram-Borus, M.J. (2012, February 4). Predicting depression in mothers with and without HIV: The role of social support and family dynamics. *AIDS Behavior*. epub ahead of print. doi:10.1023/A:1017581412328
- Forehand, R., Steele, R., Armistead, L., Morse, E., Simon, P., & Clark, L. (1998). The family health project: Psychological adjustment of children whose mothers are HIV-infected. *Journal of Consulting and Clinical Psychology*, *66*, 513–520. doi:10.1037/0022-006X.66.3.513
- Goldberg, S. (1988). Risk factors in infant-mother attachment. *Canadian Journal of Psychology*, *42*, 173–188. doi:10.1037/h0084182
- Main, M., & Solomon, J. (1990). Procedures for identifying infants as disorganized/disoriented in the Ainsworth strange situation. In M. T. Greenberg, D. Cicchetti, & E. M. Cummings (Eds.), *Attachment in the preschool years* (pp. 121–160). Chicago: University of Chicago.
- Masten, A.S., Hubbard, J.J., Gest, S.D., Tellegen, A., Garmezy, N., Ramirez, M. (1999). Competence in the context of adversity: Pathways to resilience and maladaptation from childhood to late adolescence. *Development and Psychopathology*, *11*, 143–169.
- McKee, L., Jones, D.J., Roland, E., Coffelt, N., Rakow, A., & Forehand, R. (2007). Maternal HIV/AIDS and depressive symptoms among inner-city African American youth: The role of maternal depressive symptoms, mother-child relationship quality, and child coping. *American Journal of Orthopsychiatry*, *77*, 259–266. doi:10.1037/0002-9432.77.2.259
- Moss, E., Bureau, J.F., Cyr, C., Mongeau, C., & St-Laurent, D. (2004). Correlates of attachment at age 3: Construct validity of the preschool attachment system. *Developmental Psychology*, *40*, 323–334. doi:10.1037/0012-1649.40.3.323
- Peterson, N.J., Drotar, D., Olness, K., Guay, L., & Kiziri-Mayengo, R. (2001). The relationship of maternal and child HIV infection to security of attachment among Ugandan infants. *Child Psychiatry and Human Development*, *32*, 3–17.
- Rotheram-Borus, M.J., Lee, M., Leonard, N., Lin, Y.Y., Franzke, L., Turner, E. . . . Gwadz, M. (2003). Four year behavioral outcomes of a coping skills intervention for parents living with HIV and their adolescent children. *AIDS*, *17*, 1217–1225. doi:10.1097/00002030-200305230-00014
- Rotheram-Borus, M.J., Lee, M., Lin, Y.Y., & Lester, P. (2004). Six-year intervention outcomes for adolescent children of parents with the human immunodeficiency virus. *Archives of Pediatrics and Adolescent Medicine*, *158*, 742–748. doi:10.1001/archpedi.158.8.742
- Rotheram-Borus, M.J., Lee, M.B., Gwadz, M., & Draimin, B. (2001). An intervention for parents with AIDS and their adolescent children. *American Journal of Public Health*, *91*, 1294–1302. doi:10.2105/AJPH.91.8.1294

- Rotheram-Borus, M.J., Leonard, N.R., Lightfoot, M., Franzke, L.H., Tottenham, N., & Lee, S.J. (2002). Picking up the pieces: Caregivers of adolescents bereaved by parental AIDS. *Journal of Clinical Child Psychology, 7*, 115–124.
- Rotheram-Borus, M.J., Stein, J.A., & Lester, P. (2006). Adolescent adjustment over six years in HIV-affected families. *Journal of Adolescent Health, 39*, 174–182. doi:[10.1016/j.jadohealth.2006.02.014](https://doi.org/10.1016/j.jadohealth.2006.02.014)
- Schuster, M.A., et al. (2000). HIV infected parents and their children in the United States. *American Journal for Public Health, 90*, 1074–1081. doi:[10.2105/AJPH.90.7.1074](https://doi.org/10.2105/AJPH.90.7.1074)
- Stein, J.A., Riedel, M., & Rotheram-Borus, M.J. (1999). Parentification and its impact among adolescent children of parents with AIDS. *Family Process, 38*, 193–208. doi:[10.1111/j.1545-5300.1999.00193.x](https://doi.org/10.1111/j.1545-5300.1999.00193.x)
- Stroebe, M.S., Hanelar, R.O., Stroebe, W., & Schert, H. (2001). *Handbook of bereavement research*. Washington, DC: American Psychological Association.
- van Ijzendoorn, M.H., Schuengel, C., & Bakermans-Kranenburg, M.J. (1999). Disorganized attachment in early childhood: Meta-analysis of precursors, concomitants, and sequelae. *Development and Psychopathology, 11*, 225–249. doi:[10.1017/S0954579499002035](https://doi.org/10.1017/S0954579499002035)
- Zayas, L.H., & Romano, K. (1994). Adolescents and parental death from AIDS. In B. O. Dane & C. Levine (Eds.), *AIDS and the new orphans* (pp. 59–76). Westport, CT: Auburn House.