



## Adverse Childhood Experiences (ACEs) Questionnaire and Adult Attachment Interview (AAI): Implications for parent child relationships<sup>☆</sup>

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### ABSTRACT

Although Adverse Childhood Experiences (ACEs) are linked to increased health problems and risk behaviors in adulthood, there are no studies on the association between ACEs and adults' states of mind regarding their early childhood attachments, loss, and trauma experiences. To validate the ACEs questions, we analyzed the association between ACEs and emotional support indicators and Adult Attachment Interview (AAI) classifications in terms of unresolved mourning regarding past loss or trauma and discordant states of mind in cannot classify (U/CC) interviews. Seventy-five urban women (41 clinical and 34 community) completed a questionnaire on ACEs, which included 10 categories of abuse, neglect, and household dysfunction, in addition to emotional support. Internal psychological processes or states of mind concerning attachment were assessed using the AAI. ACE responses were internally consistent (Cronbach's  $\alpha = .88$ ). In the clinical sample, 84% reported  $\geq 4$  ACEs compared to 27% among the community sample. AAI's judged U/CC occurred in 76% of the clinical sample compared to 9% in the community sample. When ACEs were  $\geq 4$ , 65% of AAI's were classified U/CC. Absence of emotional support in the ACEs questionnaire was associated with 72% of AAI's being classified U/CC. As the number of ACEs and the lack of emotional support increases so too does the probability of AAI's being classified as U/CC. Findings provide rationale for including ACEs questions in pediatric screening protocols to identify and offer treatment reducing the intergenerational transmission of risk associated with problematic parenting.

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### Introduction

Exposure to Adverse Childhood Experiences (ACEs) including abuse, neglect, and household dysfunction is associated with multiple long-term physical and mental health problems, which include depression (Chapman et al., 2004), suicide

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(Dube et al., 2001), risk of illicit drug use, HIV and sexual risk behavior (Dube et al., 2003; Leibling, 1986; Meade, Kershaw, Hansen, & Sikkema, 2009), alcohol abuse (Dube et al., 2002), heart disease, skeletal fractures, cancer, diabetes, and overall poor health (Felitti et al., 1998). Findings from the ACE Study indicate that childhood trauma exposure was commonly reported and categories of ACEs were highly correlated with one another (Dube et al., 2003; Felitti et al., 1998). Moreover, the ACE score, which is a total count of the number of ACE categories reported, can provide a measure of cumulative stress experienced during childhood. Using the ACE score, the seminal series of ACE studies demonstrated strong and graded relationships between the total number of ACEs and physical and mental health problems across the lifespan, as summarized above.

It is plausible that the established association between ACEs and negative health outcomes in adulthood is expected among adults who have not (yet) achieved a coherent state of mind tantamount to coming to terms with one's childhood history of adversity, which may in turn affect parenting the next generation. In fact, pronounced difficulties in making sense of a history of ACEs is an outcome of internal psychological processes that are identified by the Adult Attachment Interview (AAI; Main, Goldwyn, & Hesse, 2003; Main, Hesse, & Goldwyn, 2008). Such difficulties are clear from AAI responses that refer to loss and abuse experiences in an unresolved (U) or cannot classify (CC) manner (Main et al., 2008; Steele, Steele, & Murphy, 2009).

Through probes about early loss or abuse, the AAI can elicit the psychological manifestations in the adult of not having adapted to early adversities. Specifically, with respect to interviews that include mention of past physical or sexual abuse during childhood, the failure of reality testing or a failure to monitor what is reasonable are hallmarks of unresolved responses. Interviews classified as U with regard to trauma also typically take the form of attributing responsibility for the abuse to the self (e.g., "I deserved it," or "it was my fault," or "I was bad"), or by an attempt to diminish the significance by denying (unsuccessfully) the occurrence of abuse (e.g., "It was not really abuse" and/or "It taught me a lesson").

Unresolved responses to loss are indicated by AAI narratives that include lapses in the monitoring of speech or reason evident in several ways: (a) speaking in run-on sentences with excessive attention to detail in response to a single specific query about a significant loss; (b) replacing the name of a dead loved one with the self as in "I died when I was 14 years old," without a self-monitoring correction; and (c) referring to a dead loved one as having animate living characteristics in the present, such as "she can run faster than I can" in reference to a mother who has been dead for 10 years. This pattern of speech can also be seen as a failure of reality testing (Main et al., 2003). Although psychologically understandable, and perhaps inevitable in the immediate aftermath of trauma/loss experiences, speech patterns judged U have been validated against independent psychological measures of absorption and dissociation (Hesse & van IJzendoorn, 1999).

AAIs judged CC, which often include U features, are indicated by a speaker who presents highly disparate states of mind. For example, an interviewee may be highly idealizing regarding one parent while preoccupied with anger toward the other; or devaluing and derogatory toward one parent and passive child-like and fearful regarding the other parent. Interviews that are either U and/or CC share certain patterns of thought including the failures in reality testing mentioned above, dissociation, absorption, rapid shifts in one's emotional stance, and numbing or passivity. Past work with the AAI, involving 10,000 administrations of the interview (Bakermans-Kranenburg & van IJzendoorn, 2009), reveals the utility of collapsing U and CC responses to the AAI into one group, most typical in adult respondents with a history of complex trauma. AAIs classified U/CC are also a predictor of the most troubling infant-parent relationships, in which fear and disorganization predominate (Lyons-Ruth & Jacobvitz, 2008; Steele, Steele & Fonagy, 1996; van IJzendoorn, 1995).

Attachment disorganization is the most clinically relevant form of infant-parent attachment, itself predictive of externalizing disorders in later childhood (Fearon, Bakermans-Kranenburg, van IJzendoorn, Lapsley, & Roisman, 2010), post-traumatic stress disorder in middle childhood (Macdonald et al., 2008), dissociation across the teenage years evident from peer, teacher and self-ratings (Carlson, 1998), and borderline symptoms in early adulthood (Lyons-Ruth & Jacobvitz, 2008). These troubling childhood trajectories are linked not only to AAIs judged U, but also to AAIs judged CC.

Attachment theory and maltreatment research provide some clues and strategies as to how the cycle of abuse can be broken and how survivors of childhood adversity can move toward health (Dube, Felitti, & Rishi, 2013; Egeland, Jacobvitz, & Sroufe, 1988). Coherence and security in the AAI has been linked to optimal parenting in multiple longitudinal studies (Grossmann, Grossmann, & Waters, 2005). This can typically occur through establishing new relationships with a spouse or a therapist and through achieving psychological coherence and/or balance among emotional regulation, attentional processes and history of adversity (Main et al., 2008). Persons who have experienced childhood adversity, even those with exposure to multiple types of ACEs, can move toward health through the establishment of social ties that are supportive (Dube et al., 2013). In fact among adults with one or more ACEs (adult trauma survivors), Dube et al. (2013) found that those who reported having three or more family members or friends that they could talk to about their emotional problems or feelings were less likely to report depressed affect and more likely to self-report good or excellent health. Although the current report does not include measures of emotionally supportive relationships in adulthood or current life, it does include specific questions about the availability of supportive emotional relationships during the first 18 years of life, the same time period covered by the specific questions about exposure to ACEs. In this way, the benefits of such emotionally supportive experiences during childhood may be explored in connection with the likelihood of ACEs, and the likelihood of U/CC AAI responses.

This study explores the validity of the 10-category ACEs questionnaire as compared to AAI responses classified U/CC. Three questions guide the work.

- (1) Are there differences in the prevalence of ACEs and the ACE scores between an urban clinical and community sample?
- (2) Do the number of ACEs represent a significantly increased absolute risk of U/CC responses to the AAI?
- (3) Does emotional support during childhood as reported in response to the ACEs questionnaire show an association with less evidence of U/CC responding to the AAI?

## Methods

### Participants

Participants in the current study ( $N = 75$ ) were recruited from two samples: a clinical sample of mothers ( $n = 41$ ) who were participating in a Group Attachment Based Intervention (GABI; [Murphy, Steele, & Steele, 2013](#); [Steele, Murphy, & Steele, 2010](#)) for the prevention of child maltreatment, and a community sample of mothers ( $n = 34$ ) recruited to participate in parent–child attachment research. All respondents provided both AAIs and ACEs questionnaire responses.

The clinical sample was recruited from families receiving clinical services at the Center for Babies, Toddlers and Families, in the Department of Pediatrics at Albert Einstein College of Medicine, Bronx, NY. Families are referred to the intervention from pediatric screenings ([Briggs, Racine, & Chinitz, 2007](#)) and/or child welfare agencies when there is a concern regarding the “parent’s ability to meet their child’s emotional needs” ([Murphy et al., 2013](#); [Steele et al., 2010](#), p. 3). Parent–child relationship concerns may be evident due to a parent’s own childhood history of loss and trauma, loss of custody of previous children, family’s exposure to trauma, and/or potential risk for child neglect and abuse. Families were recruited for the research by the first author, who is also the lead clinician in the intervention informed by attachment theory ([Bowlby, 1988](#); [Steele et al., 2010](#)).

The community sample was recruited via postings on electronic listserves, flyers in local schools and daycare centers, and word of mouth. Assessments were conducted at the Center for Attachment Research, New School for Social Research, New York, NY.

IRB approval for the study was obtained both from The New School and from Albert Einstein College of Medicine. Clinical sample participants were given \$25 and a metro card. Funding for the work came from Einstein-Montefiore Institute for Clinical and Translational Research.

A description of the sample appears in [Table 1](#), where the differences between the community and clinical groups can be detected. [Table 1](#) indicates that there were significant differences between the clinical and community samples in terms of ethnicity, income, and education level attained. Eighty-eight percent of the clinical group was Hispanic or African American, and nearly 98% were earning less than \$20,000 (with everyone receiving Medicaid). The community sample was largely Caucasian, with 97% earning over \$40,000. The clinical sample was much less likely to have any college experience, with 49% having no high school diploma, whereas 100% of the community sample had some college. Only one woman in the clinical sample had graduate school experience compared to fifty percent of the community sample.

**Table 1**  
Frequencies and % for demographic information collected ( $N = 75$ ).

| Characteristic           | Urban community sample n (%) | Clinical sample n (%) |
|--------------------------|------------------------------|-----------------------|
| Age group                |                              |                       |
| 19–34                    | 17 (50)                      | 24 (58.5)             |
| 35–49                    | 17 (50)                      | 16 (39.1)             |
| ≥50                      | 0 (0)                        | 1 (2.4)               |
| Ethnicity                |                              |                       |
| Caucasian                | 29 (85.2)                    | 5 (12.2)              |
| Black/African American   | 1 (3.0)                      | 12 (29.3)             |
| Hispanic/Latina          | 3 (8.8)                      | 24 (58.5)             |
| Asian/Pacific Islander   | 1 (3.0)                      | 0 (0)                 |
| Income level (per annum) |                              |                       |
| Over \$80,000            | 23 (67.6)                    | 0 (0)                 |
| \$60–79,000              | 8 (23.5)                     | 0 (0)                 |
| \$40–59,999              | 2 (5.9)                      | 0 (0)                 |
| \$20–39,999              | 0 (0)                        | 1 (2.4)               |
| Less than \$20,000       | 1 (3.0)                      | 40 (97.6)             |
| Education                |                              |                       |
| No high school diploma   | 0 (0)                        | 20 (48.8)             |
| High school diploma/GED  | 0 (0)                        | 10 (24.4)             |
| Any college              | 3 (8.8)                      | 10 (24.4)             |
| College graduate         | 14 (41.2)                    | 0 (0)                 |
| Graduate school          | 17 (50)                      | 1 (2.4)               |

## Measures

**Adverse Childhood Experiences (ACEs) Questionnaire.** The ACE Study was a large epidemiological study of adults using a cohort from Kaiser Permanente managed care health group in California showing the long term deleterious physical and mental health effects of child maltreatment (Dube et al., 2003; Felitti et al., 1998). The ACE Study questionnaire (Dube et al., 2003; Felitti et al., 1998) was adapted and used to retrospectively assess forms of abuse, neglect, and household dysfunction in the current study.

**Definition of ACEs. Abuse variables.** Emotional abuse was defined by 2 questions from the Conflict Tactics Scale (Straus, 1979): “Sometimes parents or other adults hurt children. While you were growing up, that is, in your first 18 years of life, how often did a parent, stepparent, or adult living in your home (1) swear at you, insult you, or put you down?” (2) act in a way that made you afraid that you might be physically hurt?” Responses of *often* or *very often* to the first question, and/or responses of *sometimes*, *often*, or *very often* to the second question contributed to a binary score (yes) for exposure to emotional abuse in childhood.

Physical abuse was similarly defined by 2 questions from the Conflict Tactics Scale (Straus, 1979): “While you were growing up, that is during your first 18 years of life, how often did a parent, step-parent or other adult in your home actually (1) push, grab, slap, or throw something at you? (2) hit you so hard that you had marks or were injured?” Responses of *sometimes*, *often*, or *very often* to question one, and/or *once/twice*, *sometimes*, *often* or *very often* to question two contributed to a binary (yes) score for exposure to physical abuse during childhood.

Sexual abuse was determined by four questions from Wyatt (1985): “Some people, while they are growing up in their first 18 years of life, had a sexual experience with an adult or someone at least 5 years older than themselves. These experiences may have involved a relative, family friend, or stranger. During your first 18 years of life, did an adult, relative, family friend, or stranger ever (1) touch or fondle your body in a sexual way, (2) have you touch their body in a sexual way, (3) attempt to have any type of sexual intercourse with you (oral, anal, or vaginal), or (4) actually have any type of sexual intercourse with you (oral, anal, or vaginal)?” Answering *yes* to any of the 4 questions defined sexual abuse.

**Neglect variables.** For physical neglect, three items from the Childhood Trauma Questionnaire (CTQ; Bernstein et al., 1994); were used, which were “While you were growing up, how true were each of the following statements? (1) You did not have enough to eat, (2) You had to wear dirty clothes, (3) There was someone to take you to the doctor if you needed it, and (4) Your parents were too drunk or high to take care of the family. Responses of *sometimes*, *often* or *very often* to the first, second, or fourth question, and/or *never*, *once/twice*, or *sometimes* to the third question (which is positively worded) determined physical neglect.

These three items defining emotional neglect were also used to derive a score for emotional support. Responses were assigned numeric values, as follows: responses of *very often* were assigned a numeric value of 3, responses of *often* were assigned a value of 2, and responses of *sometimes* were assigned a value of 1. The sum of the responses to these three items was calculated and used to define the amount of emotional support received in childhood, on a scale from 0 to 9. A sum score of 0–3 on this scale was taken to indicate the least supported group ( $n = 25$ ), a sum score in the 4–6 range was taken to indicate the group with some emotional support available during childhood ( $n = 13$ ), and scores in the 7–9 range were taken to indicate the group who experienced the most emotional support during childhood ( $n = 37$ ).

**Household dysfunction variables.** Witnessing domestic violence (battered mother) was assessed by four questions from the Conflict Tactics Scale (Straus, 1979) that asked, “Sometimes physical blows occur between parents. How often did your father (or stepfather) or mother’s boyfriend do any of these things to your mother (or stepmother)? (1) Push, grab, slap, or throw something at her, (2) kick, bite, hit her with a fist, or hit her with something hard, (3) repeatedly hit her for over at least a few minutes, or (4) threaten her with a knife or gun, or use a knife or gun to hurt her.” A response of *sometimes*, *often*, or *very often* to either question one or two, or any response other than *never* to either the third or fourth question defined exposure to domestic violence.

A response of *yes* to the question, “Were your parents ever separated or divorced?” defined parental separation or divorce (Dube et al., 2003). Mental illness in the household was defined by answering *yes* to either one or both of the following: (1) “Was anyone in your household mentally ill or depressed?” (2) “Did anyone attempt to commit suicide?” (Felitti et al., 1998).

Similarly, substance abuse in the household was defined by two questions (Schoenborn, 1991), “During your first 18 years of life did you ever live with anyone who was a problem drinker or alcoholic?” or “used street drugs?” A *yes* response to either question determined childhood exposure to substance abuse. An incarcerated household member (Felitti et al., 1998) was defined by a response of *once/twice*, *sometimes*, *often* or *very often* to the question, “Did anyone in your household go to prison?”

**Reliability.** Given that ACEs provide retrospective reports of one’s Adverse Childhood Experiences, we would expect test–retest reliability to provide indication that the measures used to assess ACEs will lead to stable responses over time. Previous studies have indeed found that the retrospective reports of ACEs had good to excellent test–retest reliability (Dube et al., 2003). In addition, the measures used to assess ACEs were highly interrelated and correlated. Four or more ACEs was typically observed as the threshold marking high ACE exposure linked to significantly increased likelihoods of adverse adult health outcomes (Dong, Anda, Dube, Giles, & Felitti, 2003; Dube et al., 2003). In the present study, for the 75 respondents,

Cronbach's  $\alpha = .88$  for the 10 discrete binary items (no/yes). Also indicative of this high level of internal consistency, when the occurrence of any one ACE was cross-tabulated with the likelihood of experiencing 4 or more other ACEs, high probabilities were noted. This was most marked for the experience of child sexual abuse (reported by 33 mothers) with 28 (88%) also reporting 4 or more other ACEs. In the case of mothers who reported witnessing their mother being treated violently (28 respondents), 96% (27 respondents) also reported 4 or more other ACEs.

The previously mentioned tripartite grouping of mothers reporting low, moderate or high emotional support during childhood was used as a further test of the internal reliability of ACEs responses in the current sample. Specifically, for those who scored in the least supported group, 24/25 or 92% reported four or more ACEs; for those who scored in the group with some supportive experiences, 10/13 or 77% reported four or more ACEs; and for those whose self-reports scored in the group with most frequent experiences of emotional support during childhood, only 8/37 or 22% reported four or more ACEs.

*Adult Attachment Interview (AAI)*. Beyond mothers' adverse histories, the research sought to obtain a measure of the meaning mothers attributed to their attachment histories, in particular their states of mind with regard to attachment. This was obtained via administration of the AAI (George, Kaplan, & Main, 1996) and applying the standardized coding system (Main et al., 2003, 2008), yielding a reliable appraisal of an adult's current state of mind concerning attachment, which is particularly relevant to parent–infant work (Baradon & Steele, 2008). Interviews were assigned by raters to one of five categories: (1) secure-autonomous; (2) insecure-dismissing; (3) insecure-preoccupied; (4) unresolved with regard to past loss or trauma; or (5) cannot classify. The interviews reported on were each independently coded using the Adult Attachment Scoring and Classification System (Main et al., 2003, 2008) by the 2nd, 7th and 8th authors. All three are certified (by Mary Main) reliable coders who previously completed two-week training institutes and received certification of reliability after completing a 32 case reliability test. Inter-rater agreement on 40% (30/75 of the sample) was established across all 30 interviews on the five-way classifications for which there was 93% agreement (28/30). Disagreements were settled via conferencing among the three raters.

## Results

Results are organized into four sections. The first concerns prevalence rates of ACEs in urban community and clinical samples using the ten category questionnaire developed for this study as compared to the ACE Study data (Dube et al., 2003; Felitti et al., 1998). The second section concerns the observed prevalence of Adult Attachment Interview (AAI) classification groups in the samples studied, with comparisons to published meta-analytic norms. The third section of results concerns the observed associations between self-reported ACEs and AAI classifications. The final fourth section of results considers associations between self-reports of emotionally supportive experiences during childhood in response to the ACEs questionnaire, with an interest in seeing how such positive experiences may be linked to reduced incidence of U/CC assignments (in response to the AAI).

### ACE prevalence rates

We compared the number and type of ACEs in our community and clinical samples with those derived from the ACE Study (Dube et al., 2003). These results are shown in terms of percent exposure in Table 2.

**Table 2**

Prevalence (%) of childhood exposure to abuse, neglect and household dysfunction in current sample ( $N = 75$ ) and published ACE findings ( $N = 4,665$ ).

| Category of childhood exposure    | Community<br>$n = 34$ | Clinical<br>$n = 41$ | Dube et al. (2003)<br>$N = 4,665$ |
|-----------------------------------|-----------------------|----------------------|-----------------------------------|
| Abuse by category                 |                       |                      |                                   |
| Emotional                         | 23.5                  | 80.5                 | 12.2                              |
| Physical                          | 29.4                  | 68.3                 | 25.1                              |
| Sexual                            | 26.5                  | 58.5                 | 24.3                              |
| Neglect by category               |                       |                      |                                   |
| Emotional                         | 26.5                  | 67.5                 | 16.7                              |
| Physical                          | 17.6                  | 67.5                 | 9.2                               |
| Household dysfunction by category |                       |                      |                                   |
| Mother treated violently          | 2.9                   | 65.0                 | 13.9                              |
| Parental separation or divorce    | 44.1                  | 87.8                 | 25.4                              |
| Mental illness in household       | 44.1                  | 82.9                 | 25.3                              |
| Household substance abuse         | 23.5                  | 61.5                 | 30.5                              |
| Incarcerated household member     | 5.9                   | 65.0                 | 6.9                               |
| ACE score                         |                       |                      |                                   |
| 0                                 | 20.6                  | 2.4                  | 31.3                              |
| 1                                 | 23.5                  | 4.9                  | 24.2                              |
| 2                                 | 14.7                  | 2.4                  | 14.8                              |
| 3                                 | 14.7                  | 7.3                  | 10.4                              |
| 4 or more                         | 26.5                  | 82.9                 | 19.3                              |

**Table 3**

Percent Adult Attachment Interview classifications observed in the current and published (P), samples as given.

|                                  | Adult Attachment Interviews |    |    |      |
|----------------------------------|-----------------------------|----|----|------|
|                                  | Ds                          | E  | F  | U/CC |
| Urban clinical ( <i>n</i> = 41)  | 17                          | 2  | 5  | 76   |
| Urban community ( <i>n</i> = 34) | 9                           | 18 | 65 | 9    |
| P community ( <i>n</i> = 748)    | 16                          | 9  | 56 | 18   |
| P clinical ( <i>n</i> = 1,965)   | 23                          | 13 | 21 | 43   |
| P abuse/PTSD ( <i>n</i> = 271)   | 11                          | 7  | 14 | 68   |

Note: Published data comes from Bakermans-Kranenburg and van IJzendoorn (2009); Ds, insecure dismissing; E, insecure entangled/preoccupied; F, secure free autonomous and U/CC, unresolved regarding past loss or trauma or can't classify.

Table 2 presents three columns of percentages, next to each of the ACE questions, for the community (*n* = 34) and clinical groups (*n* = 41), and for the ACE Study (Dube et al., 2003) of female respondents (*n* = 4,665). For each of the 10 categories of adversity shown in Table 2, the clinical sample reported significantly higher levels of exposure to ACEs than was the case for either the community sample or the ACE Study (Dube et al., 2003) prevalence rates. As well, there was a marked and significant contrast in terms of exposure to four or more ACEs (Table 2). 82.9% of the clinical sample reported 4 or more ACEs, whereas a greatly smaller number in the community sample did so (26.5%), and a still smaller number in the ACE Study (19.3%; Dube et al., 2003). For the clinical sample, Table 2 reveals that the most marked exposure to ACEs was with respect to reporting having grown up with parents who were separated or divorced (87.8%), growing up with a household member who was mentally ill (82.9%), and growing up with the experience of emotional abuse (80.5%). Table 2 displays a consistently high level of ACEs exposure for the clinical sample, with the lowest level of exposure to any single category of adversity being 58.5% for sexual abuse. By contrast, Table 2 shows that the community sample of mothers closely resembled the ACE Study (Dube et al., 2003) with rates of exposure in the 20% range. Table 2 indicates that one of the most marked significant contrasts in terms of exposure to ACE (among the three samples) concerns the experience of witnessing domestic violence. Mother is reported as having been treated violently when the respondent was growing up by 2.9% of the community sample, 13.9% of the ACE Study (Dube et al., 2003), and 65% of the clinical sample in the present study.

#### Prevalence of Adult Attachment Interview (AAI) classifications in the samples studied and in the published literature

In order to locate the prevalence rates of AAI classifications observed in the current two samples studied (clinical and community groups) we considered the percentage of interviews falling in each of the AAI categories: secure (free/autonomous), insecure (dismissing or preoccupied), and U/CC, and mapped these against published norms from meta-analytic studies (Bakermans-Kranenburg & van IJzendoorn, 2009). These percentages are shown in Table 3.

Table 3 shows that the community sample studied in the present work resembles the published norms for community samples (*n* = 748), with over 50% classified as secure (F), less than 20% insecure-dismissing (Ds), less than 20% insecure-preoccupied (E), and less than 20% U/CC. Table 3 also shows that in order to locate a comparison in the published literature for the clinical group studied in the present work, we had to look beyond summary data on clinical samples (*N* = 1,965) to data on samples of adults with abuse histories and post-traumatic stress disorder (PTSD) (*n* = 271; Bakermans-Kranenburg & van IJzendoorn, 2009). The clinical sample in the present study resemble the abuse/PTSD norm, insofar as 76% of the AAI from the current sample, compared to 68% of the abuse/PTSD samples, were classified U/CC. And whereas 14% of the AAI from the published abuse/PTSD samples were secure (F), only 5% of the interviews from the clinical sample were classified into this secure group. Table 3 highlights the trauma histories of the mothers in the clinical sample presently participating in the intensive Group Attachment Based Intervention (Steele et al., 2010) to improve parent-child relationships and prevent child maltreatment.

#### ACEs prevalence rates and the probability of unresolved (U) or discordant (CC) states of mind

To investigate the question of how ACE exposure was associated with U/CC status in response to the AAI, the ACE scores (0–10) were split into five groups, those reporting zero, one, two, three, or four or more ACEs. This five-way grouping for ACE responses was cross-tabulated with the binary AAI variable (no versus yes U/CC status) and the resulting percentages of are shown in Table 4.

Table 4 reveals that as reported exposure to ACEs increases, so does the probability of the respondent's AAI being classified U/CC, (Chi Sq = 17.50, *df* = 4, *p* = .002). Table 4 shows that when exposure to ACEs is low, in the zero-two range (*n* = 24), then incidence of U/CC AAI classifications remains less than 20% (the community norm as shown in Table 3). But as ACEs exposure rises to three (*n* = 8) discrete types of adverse experiences, U/CC rates increase to 38% (similar to the level seen in clinical non-PTSD samples as shown in Table 3). Further, Table 4 indicates that when ACEs exposure rises to four or more discrete types of adversity (*n* = 43), U/CC frequency rises to 65% (similar to the level observed in samples with abuse histories and PTSD, as shown in Table 3).

**Table 4**

Prevalence (%) of Adult Attachment Interviews assigned to unresolved regarding past loss or trauma/can't classify group by ACE scores and level of exposure to ACEs (N = 75).

| AAls judged unresolved/can't classify (U/CC) |    |
|--|----|
| Category of ACEs                             |    |
| Abuse  |    |
| Emotional                                    | 61 |
| Physical                                     | 61 |
| Sexual                                       | 61 |
| Neglect                                      |    |
| Emotional                                    | 61 |
| Physical                                     | 62 |
| Household dysfunction                        |    |
| Mother treated violently                     | 75 |
| Parental separation or divorce               | 61 |
| Mental illness in household                  | 55 |
| Household substance abuse                    | 66 |
| Incarcerated household member                | 71 |
| Levels of exposure to ACEs <sup>a</sup>      |    |
| 0  | 13 |
| 1  | 10 |
| 2  | 17 |
| 3  | 38 |
| 4 or more                                    | 65 |

<sup>a</sup> Chi Sq (df = 1) 17.50, df = 4,  $p = .002$ .

**Table 5**

Percent Adult Attachment Interviews assigned to unresolved regarding past loss or trauma group or can't classify group by levels of emotional support recalled during childhood (N = 75).

| Levels of emotional support | AAls judged U/CC |
|-----------------------------|------------------|
| Low (0–3)                   | 72               |
| Moderate (4–6)              | 39               |
| High (7–9)                  | 29               |

Chi Sq (df = 1) 11.06,  $p < .005$ .

To further explore the link between reported ACEs and U/CC occurrence in response to the AAI, each of the 10 categories of ACEs measured were cross-tabulated with U/CC (no/yes) AAI status. The resulting 10 cross-tabulations were all significant and yielded percentage rates of U/CC responses to the AAI for mothers reporting each category of adversity. These results are also shown in Table 4, which shows that each of the 10 categories of adversity was strongly linked to the incidence of U/CC responses to the AAI. The range extends from 55% to 75% likelihood of U/CC. Notably Table 4 reveals that only two types of ACEs exposure are linked to U/CC likelihood above 70% (recall four or more ACEs exposure was linked in Table 4 to U/CC AAI status in 65% of cases). Table 4 indicates that the report of mother having been treated violently during one's childhood is associated to a 75% probability of the reporter's AAI being classified U/CC. And the lowest probability (55%) of an AAI being classified U/CC is the ACE of growing up with a parent who was mentally ill.

#### *Emotionally supportive experiences during childhood: Less evidence of U/CC AAls in adulthood?*

In order to explore the question of what self-reported childhood experiences may protect an individual against the phenomenon of a U/CC interview, comparisons between responses to the ACEs questions probing for emotionally supportive experiences were cross-tabulated with the binary AAI groups. The nine-point emotional support score was grouped three-way into low ( $n = 25$ ), moderate ( $n = 13$ ) and high ( $n = 37$ ) experiences of emotional support. Incidences of U/CC AAls for each of these three groups are shown in Table 5.

Table 5 reveals that the incidence of U/CC AAI responses were systematically linked to the groupings reflecting emotionally supportive experiences during childhood (Chi Sq = 11.06,  $df = 2$ ,  $p < .005$ ). When emotionally supportive experiences were reported as having occurred *often* or *very often* (the highly supported group), U/CC interviews were observed in only 29% of cases (slightly more than community norms); when supportive experiences were reported as having occurred *sometimes* and *often* (the moderately supported group), U/CC interviews were observed in 39% of cases (similar to clinical norms), but when supportive experiences were reported as having occurred *never*, *once or twice*, or *sometimes* (the low support group) frequency of U/CC AAls was at its highest, at 72% (a rate to be expected for adults with abuse histories and PTSD).

## **Discussion**

The findings will be discussed with respect to the study aim of offering novel validation of the ACEs questionnaire in three sections: (i) prevalence of ACEs and AAI classifications in the samples studied; (ii) observed links

between ACE levels and AAI responses judged in terms of whether the interviews were unresolved regarding past loss or trauma (U) or indicative of a radically discordant state of mind so that it was judged cannot classify (CC); and (iii) the role of emotionally supportive experiences in childhood in contributing to less evidence of U/CC in adulthood.

#### *Prevalence of ACEs and AAI classifications*

The current study found significantly higher rates of four or more categories of ACEs in an urban clinical sample, compared with either an urban community sample or with the original ACE Study cohort from Kaiser Permanente (Dube et al., 2003). These findings from the clinical sample warrant attention as these adults face myriad difficulties underscoring the need for prevention and intervention services so that their experiences of adversity are not repeated with their children. Interrupting the cycle of maltreatment must be a high public health priority (Shonkoff, Richter, van der Gaag, & Bhutta, 2012), and screening with the ACEs questionnaire may help identify those most in need of clinical support. By contrast the community sample reported on in the current study most closely resembled the prevalence rates in the original ACE Study (Dube et al., 2003; Felitti et al., 1998). Thus, the ACEs questionnaire may be a useful tool in standard family and pediatric practices in order to quickly identify patients for appropriate services.

In a similar vein, in terms of the AAI classifications the community sample most closely resembled the meta-analytic responses from samples similar in SES and risk status. The most noteworthy of these AAI prevalence findings is that the clinical sample in this study resulted in the lowest frequency of secure attachment classifications. The clinical sample also had the highest number of U/CC classifications compared to other samples, including the clinical sample from meta-analytic studies (Bakermans-Kranenburg & van IJzendoorn, 2009), and exceeding even the average from past studies of adults with abuse histories and PTSD. Individuals with U/CC AAI and high ACE burdens merit clinical attention. Their U/CC AAI put them at risk of significant challenges to parenting their children. Specifically, parents whose AAI are classified U/CC are prone to being overwhelmed at times by frightened or frightening responses to their children (Hesse & Main, 2006). In addition, these frightened/frightening parental behaviors are significantly linked in multiple prior studies to disorganized child-parent patterns of attachment (Lyons-Ruth & Jacobvitz, 2008). Disorganized attachments in early childhood are linked to externalizing problems in later childhood (Fearon et al., 2010).

#### *Observed links between ACEs and AAI*

All types of ACEs reported by participants in the current study, across both clinical and community group respondents, were individually linked to AAI judged U/CC. This was most evident in respect to adults who witnessed mother being treated violently during childhood, an ACE highly associated with four or more other ACEs in the current study. It is interesting to note that the ACE category of growing up with a parent who had mental illness was the least likely experience to on its own be linked to an AAI judged U/CC. Two explanations for this lower rate present themselves. One reason may be that the question is too broad to ascertain the meaning insofar as a yes answer may reflect a range of mental illnesses from mild to so severe. Another explanation may be that a mental health diagnosis in and of itself does not assume one carries a U/CC attachment classification or seriously adverse parenting behaviors.

Looking at responses to the ACEs questionnaire in relation to the AAI classifications a significant dose–response link was observed, whereby exposure to greater numbers of ACEs increased the likelihood of AAI responses judged U/CC. The most striking finding was the strong link between the report of four or more ACEs (long known to predispose one toward physical and mental health problems) and the significantly large percentage of AAI responses where loss or trauma were spoken about in ways that indicated lapses in the monitoring of speech or reason, unique mental and emotional troubles known to foreshadow difficulties in the parenting role (Hesse & Main, 2006). These results are the first demonstration of such a link between explicit (conscious) responses to the ten ACE categories and responses to the AAI with its intention to “surprise the unconscious” (George et al., 1996) and focus on the individual’s internal psychological processes when discussing childhood attachment experiences, including past loss or trauma (Main et al., 2008). Interviews are deemed U by trained raters in a variety of ways. For example, responses that include an excessive attention to detail or show a lapse in the monitoring of reason when a speaker refers to a dead person in the present tense suggesting they perceive them as if she/he were alive. A classification of U is assigned when respondents refer to an abusive figure with awe, without assigning responsibility to the abuser, and instead claim there were positive lessons from the abusive experience. Others receive this classification for at once acknowledging abusive experiences but then denying them albeit unsuccessfully. Given the associations previously reported between U/CC classifications and adult mental health problems (Bakermans-Kranenburg & van IJzendoorn, 2009), and the well known-links to profound parent–child difficulties (e.g., Madigan et al., 2006), there is great clinical value in having a screening measure available that may be a marker of such difficulties in the parenting role.

Collecting parents’ responses to the 10-category ACEs questionnaire could inform pediatric and family service providers as to who is most at risk for disturbed parent–child relationships. It may even be sufficient for those service providers wary of asking questions about past abuse to focus simply on the extent to which parents can endorse queries about whether emotionally supportive experiences were present during childhood.

### The role of emotionally supportive experiences

The current work, in addition to extending validation of the ACE Study findings, points to the possibility that asking about the prevalence of exposure to positive emotionally supportive experiences may hold unique predictive value. Specifically, the current results show that when parents were unable to endorse as *often* true or *very often* true that they felt protected, special/important, or loved, then there was a significantly increased frequency of AAls with U/CC states of mind. Whether asking these three questions alone would be sufficient to yield this association cannot be identified by the current research. In the current work, 25 items relevant to the 10 categories of ACEs (including abuse, neglect, and household dysfunction) were asked about in questionnaire form. Three of these 25 items were the positively worded probes for exposure to emotionally supportive experiences. A full account of the extent to which an adult encountered emotionally supportive experiences during the first 18 years of life would need to consider sibling and extended family relationships, peers, teachers, neighbors, and community leaders (e.g., church leaders). Yet a simple index of whether someone was available during childhood to help make one feel protected, special, and loved, has utility.

The ACEs questionnaire is being used in an increasing number of clinical services as a screening tool. The present results urge caution and special attention with respect to those respondents who score very low in response to the emotionally supportive experience questions, or very high (4 or more) in terms of exposure to ACEs. Where a fuller picture is sought of the internal psychological struggles and resources of the adult with high ACEs or low supportive experiences, the AAI is to be recommended (Steele & Steele, 2008; Steele et al., 2009).

Limitations to the current results include the small sample size of respondents, and the lack of a non-clinical low SES comparison group. Despite the demographic differences between the clinical and community groups studied, the community respondents with four or more ACEs were nearly double the proportion with this high-ACE burden identified in the original ACE Study (Dube et al., 2003; Felitti et al., 1998). And, the dramatically higher prevalence of ACEs in the clinical sample commands attention especially to those working in the field of research, clinical services, and policy with parents, children, and families.

The findings from this study provide validating evidence for the utility of a 10-category ACEs questionnaire used to identify those individuals most vulnerable, that is those with 4 or more childhood adversities or the absence of emotionally supportive experiences. The ACEs questionnaire is recommended for wide use in pediatric, mental health, and other health settings where intervention promoting secure parent–child relationships as a protection against child maltreatment is the central goal.

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### References

- Bakermans-Kranenburg, M. J., & van IJzendoorn, M. H. (2009). The first 10,000 adult attachment interviews: Distributions of adult attachment representations in non-clinical and clinical groups. *Attachment and Human Development, 11*, 223–263.
- Baradon, T., & Steele, M. (2008). Integrating the AAI in the clinical process of psychoanalytic parent–infant psychotherapy in a case of relational trauma. In H. Steele, & M. Steele (Eds.), *Clinical applications of the Adult Attachment Interview* (pp. 195–212). New York, NY: Guilford Press.
- Bernstein, D. P., Fink, L., Handelsman, L., Foote, J., Lovejoy, M., Wenzel, K., & Ruggiero, J. (1994). Initial reliability and validity of a new retrospective measure of child abuse and neglect. *The American Journal of Psychiatry, 151*, 1132–1136.
- Bowlby, J. (1988). *A secure base: Parent–child attachment and healthy human development*. New York, NY: Basic Books.
- Briggs, R. D., Racine, A. D., & Chinitz, S. (2007). Preventive pediatric mental health care: A co-location model. *Infant Mental Health Journal, 28*, 481–495.
- Carlson, E. A. (1998). A prospective longitudinal study of attachment disorganization/disorientation. *Child Development, 69*, 1107–1128.
- Chapman, D. P., Whitfield, C. L., Felitti, V. J., Dube, S. R., Edwards, V. J., & Anda, R. F. (2004). Adverse childhood experiences and the risk of depressive disorders in adulthood. *Journal of Affective Disorders, 82*, 217–225.
- Dong, M., Anda, R. F., Dube, S. R., Giles, W. H., & Felitti, V. J. (2003). The relationship of exposure to childhood sexual abuse to other forms of abuse, neglect and household dysfunction during childhood. *Child Abuse & Neglect, 27*, 625–639.
- Dube, S. R., Anda, R. F., Felitti, V. J., Valerie J. Edwards, V. J., & Croft, J. B. (2002). Adverse childhood experiences and personal alcohol abuse as an adult. *Addictive Behaviors, 27*, 713–725.
- Dube, S. R., Anda, R. F., Felitti, V. J., Chapman, D., Williamson, D. F., & Giles, W. H. (2001). Childhood abuse, household dysfunction and the risk of attempted suicide throughout the life span: Findings from Adverse Childhood Experiences Study. *Journal of the American Medical Association, 286*, 3089–3096.
- Dube, S. R., Felitti, V. J., Dong, M., Chapman, D. P., Giles, W., & Anda, R. F. (2003). Childhood abuse neglect and household dysfunction and the risk of illicit drug use: The Adverse Childhood Experiences Study. *Pediatrics, 111*, 564–572.
- Dube, S. R., Felitti, V. J., & Rishi, S. (2013). Moving beyond childhood adversity: Associations between salutogenic factors and subjective well-being among adult survivors of trauma. In M. Linden, & K. Rutkowski (Eds.), *Hurting memories and beneficial forgetting: Posttraumatic stress disorders, biographical developments and social conflicts* (pp. 139–153). Waltham, MA: Elsevier.
- Egeland, B., Jacobvitz, D., & Sroufe, L. A. (1988). Breaking the cycle of abuse. *Child Development, 59*, 1080–1088.
- Fearon, R. P., Bakermans-Kranenburg, M. J., van IJzendoorn, M. H., Lapsley, A. M., & Roisman, G. I. (2010). The significance of insecure attachment and disorganization in the development of children's externalizing behavior: A meta-analytic study. *Child Development, 81*, 435–456.
- Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., & Marks, J. S. (1998). The relationship of adult health status to childhood abuse & household dysfunction. *American Journal of Preventive Medicine, 14*, 245–258.
- George, C., Kaplan, N., & Main, M. (1996). *Adult attachment interview* (3rd ed.). University of California at Berkeley (Unpublished manuscript).
- Grossmann, K. E., Grossmann, K., & Waters, E. (2005). *Attachment from infancy to adulthood: The major longitudinal studies*. New York, NY: Guilford Press.
- Hesse, E., & Main, M. (2006). Frightened, threatening, and dissociative parental behavior in low-risk samples: Description, discussion and interpretations. *Development and Psychopathology, 18*, 309–343.

- Hesse, E., & Van IJzendoorn, M. (1999). Propensities towards absorption are related to lapses in the monitoring of reasoning or discourse during the Adult Attachment Interview: A preliminary investigation. *Attachment and Human Development, 1*, 67–91.
- Leibling, C. (1986). Child abuse as precursor to adult abuse of alcohol and drugs. *Medical Law, 5*, 239–245.
- Lyons-Ruth, K., & Jacobvitz, D. (2008). Attachment disorganization: Genetic factors parenting contexts, and developmental transformations. In J. Cassidy, & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (2nd ed., pp. 666–697). New York, NY: Guilford Press.
- Macdonald, H. Z., Beeghly, M., Grant-Knight, W., Augustyn, M., Woods, R. W., Cabral, H., & Frank, D. A. (2008). Longitudinal association between infant disorganized attachment and childhood posttraumatic stress symptoms. *Development and Psychopathology, 20*, 493–508.
- Madigan, S., Bakermans-Kranenburg, M. J., van IJzendoorn, M. H., Moran, G., Pederson, D. R., & Benoit, D. (2006). Unresolved states of mind, anomalous parental behavior, and disorganized attachment: A review and meta-analysis of a transmission gap. *Attachment and Human Development, 8*, 89–111.
- Main, M., Goldwyn, R., & Hesse, E. (2003). *Adult attachment classification system (Version 7.2)*. University of California at Berkeley (Unpublished manuscript).
- Main, M., Hesse, E., & Goldwyn, R. (2008). Studying differences in language use in recounting attachment history. In H. Steele, & M. Steele (Eds.), *Clinical applications of the Adult Attachment Interview* (pp. 31–68). New York, NY: Guilford Press.
- Meade, C. S., Kershaw, T. S., Hansen, N. B., & Sikkema, K. J. (2009). Long-term correlates of childhood abuse among adults with severe mental illness: Adult victimization, substance abuse, and HIV sexual risk behavior. *AIDS Behavior, 13*, 207–216.
- Murphy, A., Steele, M., & Steele, H. (2013). From out of sight, out of mind to in sight and in mind: Enhancing reflective capacities in a Group Attachment Based Intervention. In J. E. Bettmann, & D. D. Demetri Friedman (Eds.), *Attachment-based clinical work with children and adolescents*. NY: Springer.
- Schoenborn, C. A. (1991). Exposure to alcoholism in the family: United States, 1988. *Advance Data From Vital and Health Statistics, 30*(205), 1–13.
- Shonkoff, J., Richter, L., van der Gaag, J., & Bhutta, Z. (2012). An integrated scientific framework for child survival and early childhood development. *Pediatrics, 129*, 46–472.
- Steele, H., & Steele, M. (2008). *Clinical applications of the Adult Attachment Interview*. New York, NY: Guilford Press.
- Steele, H., Steele, M., & Fonagy, P. (1996). Associations among attachment classification of mothers fathers and their. *Child Development, 67*, 541–555.
- Steele, H., Steele, M., & Murphy, A. (2009). The Adult Attachment Interview: A clinical tool for facilitating and measuring process and change in psychotherapy. *Psychotherapy Research, 19*, 633–643.
- Steele, M., Murphy, A., & Steele, H. (2010). Identifying therapeutic action in an attachment-based intervention with high-risk families. *Clinical Social Work Journal, 38*, 61–72.
- Straus, M. A. (1979). Measuring intrafamily conflict and violence: The Conflict Tactics (CT) Scales. *Journal of Marriage and Family Therapy, 41*, 75–88.
- van IJzendoorn, M. H. (1995). Adult attachment representations, parental responsiveness and infant attachment: A meta-analysis on the predictive validity of the Adult Attachment Interview. *Psychological Bulletin, 117*, 387–403.
- Wyatt, G. E. (1985). The sexual abuse of Afro-American and White-American women in childhood. *Child Abuse & Neglect, 9*, 507–519.