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Disorganized Attachment in Young Adulthood as Partial Mediator of Relations Between Severity of Childhood Abuse and Dissociation

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Abstract

Disorganized attachment has been proposed as a mediating mechanism in the relation between childhood abuse and dissociation. However, support for mediation has been mixed when using interview or self-report measures of attachment. In the current work, relations among severity of abuse, attachment disorganization, and dissociation were assessed in young adulthood using both interview and interaction-based measures of attachment. One hundred and twelve low-income young adults were assessed for socioeconomic stresses, abusive experiences in childhood, and attachment disorganization at age 20. Attachment disorganization was assessed with the Adult Attachment Interview, coded independently for Unresolved states of mind and for Hostile-Helpless (HH) states of mind. Attachment disorganization was also measured using a newly validated assessment of young adult-parent interaction during a conflict discussion. Mediation analyses revealed that the link between childhood abuse and dissociation was partially explained by disturbances in young adult-parent interaction. Narrative disturbances on the Adult Attachment Interview were related to abuse and to dissociation but did not mediate the link between the two. Results are discussed in relation to the role of parent-child communication processes in pathways to dissociation.

Keywords

Childhood abuse; Attachment disorganization; Parent-child interaction; Adult Attachment Interview; Dissociation; Hostile-Helpless State of mind

Dissociation refers to a wide range of alterations in the normally integrative functions of identity, memory, or consciousness, including trance states, depersonalization, derealization, amnesia, and dissociative identity disorder (Waller, Putman & Carlson, 1996). The occurrence of dissociation has been strongly associated with the experience of childhood

abuse. Van IJzendoorn and Schuengel's (1996) meta-analysis of 26 studies across 2,108 subjects revealed a combined effect size of $d=.52$ for the relation between dissociation and abuse. Effect sizes were similar for physical and sexual abuse and there was very little difference in effect size as a function of trauma assessment method ($d=.56$ for interview studies; $d=.52$ for questionnaires).

Putnam (1997) has suggested that features of dissociative symptoms such as behavioral automatization, affective and informational compartmentalization, and identity alterations are defensive processes that allow children to cope with intense feelings of fear and helplessness. However, he also notes that other factors must contribute to the development of dissociative symptoms because not all children with traumatic experiences suffer from dissociation and other children without traumatic experiences also demonstrate dissociative symptoms. For example, Narang and Contreras (2005) demonstrated that physical abuse history was positively associated with dissociation only in the context of low levels of positive family environment. At high levels of positive family environment, physical abuse was unrelated to dissociation. Putnam (1997) also analyzed the roles of age, gender, culture, genetic factors, and education/intelligence as factors that might influence relations between abuse and dissociation, but none were convincingly shown to influence dissociation. Thus, it is important to identify the factors that may link childhood abuse to later dissociation.

The purpose of the current study is to investigate whether attachment disorganization in young adulthood serves as a mediator of the relation between childhood abuse and dissociation. Disorganized attachment has been repeatedly proposed as one mechanism explaining the link between abuse and later dissociation. Bowlby (1973) first suggested that infants may internalize unintegrated internal working models of their relationships with their primary caregivers, as well as of themselves in relation to those caregivers. Barach (1991) was one of the first theorists to connect attachment theory specifically with dissociation. In his paper, Barach suggested that multiple personality disorder (now known as dissociative identity disorder) was actually a variant of an "attachment disorder" and further noted that children of unresponsive caretakers were likely to engage in dissociative or "detached" behaviors. Liotti's (1992) theorizing more specifically implicated *disorganized* patterns of infant attachment behavior as potential precursors to the development of dissociation later in life. He noted that both infant disorganization and dissociation reflect a pervasive lack of behavioral or mental integration and that this primary failure of integration in infancy may result in vulnerability to dissociative phenomena later in life. Blizard (2003) elaborated clinically how disorganized attachment relationships place the child in a double-bind conflict situation and foster the development of segregated working models of attachment, which then may evolve into dissociated self-states. Main and Hesse (1990) have further hypothesized that parents of disorganized infants may engage in frightened or frightening interactions with their children, thereby presenting the infant with the paradox that the parent is both a source of threat and a source of protection. Under these paradoxical conditions, during times of stress when the attachment system is activated, contradictory internal working models of self and other that are difficult to integrate may be activated and result in dissociation.

Several sets of empirical findings support this general framework. First, meta-analytic findings have demonstrated a significant relation between childhood abuse and disorganized or insecure attachment (Cyr, Euser, Bakermans-Kranenburg & van IJzendoorn, 2010). Other studies have linked attachment disorganization to dissociation. Ogawa, Sroufe, Weinfield, Carlson and Egeland (1997) found that, in addition to later abuse, both infant disorganized attachment behavior and maternal emotional unavailability in the first two years of life predicted dissociation at age 19. In a second longitudinal study, Dutra, Bureau, Holmes, Lyubchik, & Lyons-Ruth (2009) found that maternal emotional unavailability at 18 months was the strongest predictor of dissociation at 19 years, with quality of maternal care accounting for 50% of the variance in dissociation, while severity of abuse accounted for only 9% of the variance.

Finally, Bailey, Moran, and Pederson (2007) tested the mediating role of Unresolved attachment states of mind (the adult analogue of infant disorganization), assessed with the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1996), on the relation between childhood physical or sexual abuse and dissociative symptoms in teen mothers. The AAI is a semi-structured, transcribed one-hour interview that asks participants in detail about attachment-related experiences with primary caretakers. To classify the speaker as Unresolved regarding loss or trauma, speakers must display signs of disorientation (lapses of reasoning or discourse) during portions of the interview probing experiences of loss (death of significant others during the person's lifetime) or abuse (experiences of physical or sexual abuse). Unresolved states of mind on the AAI are of particular interest because mothers' Unresolved states of mind predict disorganized attachment behavior in their infants and thus may have intergenerational consequences. In the Bailey et al. (2007) study, Unresolved states of mind were correlates of both sexual abuse and dissociation but were not related to physical abuse. However, the hypothesis that Unresolved states of mind would mediate the relation between sexual abuse and dissociative symptoms was not supported (Bailey et al., 2007).

In addition, there is evidence that Unresolved states on the AAI may not be a strong measure of disorganized attachment when applied to high-risk youth. To classify a young adult as Unresolved, the young adult must have experienced a loss or must report abuse in the interview in order to assess whether they talk about these experiences in a way consistent with an Unresolved state of mind. In the only prospective AAI study of high-risk youth, the youth did not show elevated rates of Unresolved states of mind on the AAI at age 19 that would be expected based on their socially at-risk status. In addition, the observed Unresolved states of mind were not predicted by disorganized attachment in infancy (Weinfield, Sroufe, & Egeland, 2000; Weinfield, Whaley & Egeland, 2004). Thus, the current study included two additional validated measures of young adult attachment, Hostile-Helpless states of mind on the AAI and disorganization in an observed young adult-parent conflict discussion. Neither of these measures rely on the young adult reporting a loss or abuse experience in order to classify the young adult as disorganized.

Hostile-Helpless (HH) states of mind are identified on the AAI by coding the entire interview for indicators of globally devaluing or explicitly contradictory emotional evaluations of caregivers (Lyons-Ruth, Yellin, Melnick, & Atwood, 2005). HH states of

mind have been validated in relation to prior experiences of abuse (Lyons–Ruth, Melnick, Atwood, & Yellin, 2003), in relation to disrupted communication between parent and child (Lyons-Ruth, Yellin et al., 2005), in relation to infant disorganized attachment (Melnick, Finger, Hans, Patrick, & Lyons-Ruth, 2008; Lyons-Ruth, Yellin et al., 2005), and in relation to maternal abuse or neglect of her child (Barone, Bramante, Lionettia, & Pastore, in press; Frigerio, Costantino, Ceppi, & Barone, 2013; Milot, Lorent, St-Laurent, Bernier, Tarabulsky, Lemelin, & Éthier, 2014).

Disorganized attachment was also assessed directly from young adult-parent interaction using the Goal-Corrected Partnership in Adolescence Coding System (GPACS; Lyons-Ruth, Hennighausen & Holmes, 2005). This measure has recently been validated as a measure of disorganized attachment at age 20 in relation to measures of parent-child attachment, romantic partner relationships, and psychopathology (Obsuth, Brumariu, Hennighausen, & Lyons-Ruth, 2014). A Confirmatory Factor Analysis of the GPACS coding scales yielded four factors: one factor for collaborative/organized interaction and three factors for disorganized interactions (punitive, disoriented, and caregiving/role-confused) that parallel similar forms of disorganization observed in infancy and childhood (Obsuth et al., 2014).

Hypotheses

The aim of this study was to evaluate whether disorganized attachment, assessed in young adulthood, partially mediates the relation between severity of childhood abuse and young adult dissociative symptoms. The first hypothesis was that severity of childhood abuse would be associated with dissociative symptoms. The second hypothesis was that severity of childhood abuse would be related to young adult attachment disorganization, as represented by Unresolved states of mind, HH states of mind, and disorganized aspects of young adult-parent interaction. The final hypothesis was that attachment disorganization would also be related to dissociation and would mediate the relation between the severity of abuse and dissociative symptoms.

Method

Participants

Participants were 112 low-to-moderate income young adults (67 females). The household income of 59% of the families was under \$40,000 per year; 12% of mothers had not completed high-school; 38% of mothers were single parents; 66% of young adults were Caucasian; others were of other ethnic backgrounds. Sixty-two of the 112 participants were first seen in young adulthood; 50 participants had been followed since infancy. The 62 participants seen only in young adulthood were matched to longitudinal participants on participant age, ethnicity, and mothers' single parenthood. However, family income was slightly higher among the cross-sectional participants than the longitudinal participants (family income mean range: longitudinal \$20,000–\$30,000/yr.; cross-sectional \$30,000 – \$40,000/yr. ($F(1, 110)=7.13$, $\eta=.25$, $p<.01$).

The longitudinally studied young adults were part of a cohort of 76 low-income families recruited during the first 18 months of life. Attrition was unrelated to all assessments in

infancy (effect sizes ϕ or η^2 = .14 through .13), except single parenthood: $X^2(1, N=76) = 8.66, \phi = .34, p = .01$. Half of the young adults in the longitudinal cohort were originally referred to the study by social service providers due to their concerns about the quality of care being provided to the infant; families of other young adults seen in infancy did not exhibit problems in infant care (for additional description, see Lyons-Ruth, Connell, Gunebaum, & Botein, 1990). Crossectional participants first seen in young adulthood reported no referrals for parenting help in infancy. Thus, sample composition included a range of caregiving risk.

Measures

All procedures were approved by the Hospital Institutional Review Board. Written informed consent was obtained from both parent and young adult.

Socioeconomic risk—Socioeconomic risk (0–3) was indexed by the sum of three family-of-origin risk conditions: annual household income under \$40,000 per year, mother had no partner living in the home, and mother has received no education beyond high school.

Dissociative symptoms—Dissociative phenomena were assessed using the Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986). The DES is a 28-item self-report questionnaire assessing the extent of dissociative experiences. Alpha for the current sample was .88. Meta-analysis has demonstrated convergent validity with other measures of dissociation, predictive validity with Dissociative Identity Disorder, and robust test-retest reliability ($\alpha = .93$; van IJzendoorn & Schuengel, 1996).

Severity of childhood abuse—Each individual's overall severity of abuse from birth to age 18 was classified into one of 7 levels: 1-no occurrence of abuse; 2-harsh punishment only; 3-witnessed violence only; 4-verbal abuse only; 5-physical abuse (using state guidelines for abuse), sexual abuse (using state guidelines for abuse), or protective services/foster care involvement; 6-two under level 5; 7-all those under level 5. Occurrence of physical and sexual abuse was judged by state Department of Social Services guidelines for maltreatment. For example, for physical abuse, repetitive experiences of being hit other than on the buttocks or the hand by a primary caregiver were rated a 5. Any sexual contact with a child under 16 was considered sexual abuse. Harsh punishment alone or witnessed violence alone did not lead to placement in level 5, as seen above. Reliability of the overall severity of abuse scale was ICC = .99.

These overall 7-point ratings for severity of abuse were assigned by reviewing the data from four measures of abuse experiences: the Conflict Tactics Scale-2nd version (CTS-2; Straus, Hamby, Finkelhor, Moore, & Runyan, 1998), the Traumatic Stress Schedule (TSS; Norris, 1990), and the Childhood Traumatic Experiences Scales-Revised (CTES-R; Dutra, Jenei, Long, Holmes, & Lyons-Ruth, 2005) coded from the AAI (measures described further below). In addition, because individuals often do not self-report abuse or neglect experiences, other interviews probed whether the child had been involved with state protective services, including whether the participant had been placed in any form of foster or residential care between 0–18 years. Such involvement with protective services was

considered prima facie evidence of state-defined maltreatment, even if the participant did not report abuse on the CTS-2, TSS, or AAI. Multi-method assessment of abuse was included in light of evidence that self-report and interview measures may detect different aspects of abuse experiences (Bailey et al., 2007).

Thus, to provide the most comprehensive assessment possible, coders reviewed all four sets of self-report and interview materials noted above to assign the final 7-point rating. Previous work has shown that this severity scale has good validity in relation to borderline personality features and antisocial personality disorder (Lyons-Ruth, Bureau, Holmes, Easterbrooks, & Brooks, 2013; Shi, Bureau, Easterbrooks, Zhao, & Lyons-Ruth, 2012).

Conflict Tactics Scale (2nd version): The CTS-2 (Straus et al., 1998) is a widely used 78-item self-report measure of the type and frequency of strategies used to resolve conflict between family members. Tactics include physically abusive behavior and emotionally abusive behavior, e.g. “My parent hit or kicked me; my parent insulted or swore at me.” The scale has a stable factor structure, moderate test-retest reliability and demonstrated validity (Straus et al., 1998).

Traumatic Stress Schedule-Short Version: The Traumatic Stress Schedule-Short Version (TSS; Norris, 1990) is an eight-question survey asking about traumatic experiences, including exposure to hazards, natural disasters, accidents, and assaults. The TSS is a narrative measure with no established coding system or validity/reliability. The TSS was included in the study because it specifically asks about sexual abuse experiences. In assigning the rating for overall severity of abuse, only the first three questions of the TSS focusing on experiences of sexual or physical abuse were relevant to the rating.

Childhood Traumatic Experiences Scales-Revised: The CTES-R (Dutra et al., 2009; Lyons-Ruth & Block, 1996) rates the severity of abuse revealed during the AAI (George, Kaplan, & Main, 1985). In the current study, additional questions probing sexual and physical abuse experiences were added to the standard AAI protocol in order to gain fuller information on traumatic childhood experiences (see Lyons-Ruth, Yellin, Melnick, & Atwood, 2005). Interviews were transcribed and coded on four five-point scales for severity of physical abuse, sexual abuse, verbal abuse, and witnessing interpersonal violence. Inter-rater reliabilities ranged from ICC=.89 – .98. Convergent validity between total scores on the CTES-R and the CTS-2 in the current cohort was $r=.48$ (Dutra et al., 2009).

Adult Attachment Interview—The AAI is a semi-structured 1-hour interview designed to elicit a participant’s current state of mind regarding attachment experiences with significant caregivers during childhood. The interviewer asks about the quality of childhood experiences with parents, the participant’s responses to experiences of rejection, separation, loss, and trauma during childhood, and the participant’s evaluation of the effects of those experiences on his or her functioning. Interviews were transcribed and coded for the Main, Goldwyn and Hesse (2002) criteria for Unresolved states of mind and for the Lyons-Ruth, Yellin et al. (2005) criteria for Hostile-Helpless states of mind. The two measures were coded by separate teams of coders from different laboratories who were naïve to all other data.

Unresolved states of mind: AAI's were coded for autonomous, preoccupied, dismissing, unresolved, and cannot classify classifications using the Adult Attachment Scoring and Classification System (Main, Goldwyn, & Hesse, 2003). Coders were trained and certified as reliable through the standard training procedures of Main and Hesse and were naive to all other data. To assess Unresolved loss or trauma, individuals are coded on a continuous 9-point scale for degree of Unresolved indicators in the transcript. Individuals are classified as having an Unresolved state of mind if they score five or above on the nine-point scale for level of lack of resolution of loss or trauma. The reliability Kappa for classification between two coders in the present sample was $K=.71$ ($n=27$). The Adult Attachment Scoring System has good psychometric properties (see Hesse, 2008 for a review). Unresolved status has extensive metaanalytic validity as a correlate of family risk and as a predictor of infant disorganized attachment (van IJzendoorn, Schuengel, & Bakermans-Kranenburg, 1999).

Hostile-Helpless (HH) states of mind: HH states of mind regarding attachment experiences are rated on a nine-point scale for Level of HH state of mind (Lyons-Ruth et al., 2003). Transcripts rated high on the scale are characterized by evidence of opposing evaluations of central attachment relationships that are neither discussed nor reconciled by the participant (e.g., "We were friends... We were enemies."). An HH state of mind suggests that the individual has not engaged in reflection adequate to bring contradictions to a conscious level and achieve a more coherent evaluation of attachment experiences. An individual is classified as having a Hostile Helpless state of mind if they are rated at 5 or above on the scale (Reliability $K=.82$ ($n=15$). Additional detail is available in Lyons-Ruth et al. (2003), and Lyons-Ruth, Yellin et al. (2005). Transcripts were coded blind to all other data.

Disorganized adolescent-parent interaction: Young adults and their mothers separately completed an Issues Checklist on which they rated sources of disagreement in their relationship. A topic was selected by the research staff and the young adult taped a one-minute statement of his or her position. The parent and young adult were then reunited for an initial 5-minute unstructured reunion, followed by the playing of the taped statement and a 10-minute discussion of the topic of disagreement.

Interactions were videotaped and coded by coders naive to all other data using the Goal-Corrected Partnership in Adolescence Coding System (GPACS; Lyons-Ruth, Hennighausen, et al., 2005). The development of the GPACS drew on prior literature describing behavioral manifestations of security, insecurity, controlling behavior, and behavioral disorganization among younger children toward their parents after brief separations. The GPACS coding system includes the rating of each interaction on ten five-point scales. One dyadic scale, the collaborative communication scale, provides a summary measure of the extent to which the interaction is cooperative, reciprocal, and balanced for the dyad as a whole. The other nine scales rate the behavior of the young adult or the parent separately, including four scales that rate forms of young adult controlling or disorganized behavior, four scales that rate corresponding aspects of parental behavior, and a final scale for parental validating behavior. Reliability for the 10 scales ranged from $ICC=.75$ to $.96$ ($n=16$).

A Confirmatory Factor Analysis of the ten scales confirmed a four-factor model: one factor indexing collaboration and three factors indexing the three types of disorganization,

including punitive interaction, role-confused/caregiving interaction, and disoriented interaction (Obsuth et al., 2014). The GPACS has demonstrated validity in relation to disorganized attachment in infancy, to attachment classification on the AAI at age 25, to parent and young adult self-reports of role-confusion, and to quality of young adult romantic relationships (Hennighausen, Bureau, David, Holmes, & Lyons-Ruth, 2011; Obsuth et al., 2014; Vulliez-Coady, Obsuth, Torreiro Casal, Ellertsdottir, & Lyons-Ruth, 2013).

Analytic Procedures

Missing data were imputed through the Markov Chain Monte Carlo procedure (MCMC; Gilks, Richardson, & Spiegelhalter, 1995), using SPSS Version 21 software. The rate of missing data ranged from 0% to 5%, with no missing data on abuse, dissociation, or Hostile-Helpless states of mind, 2% on Unresolved states of mind, and 5% on young adult-parent interaction. Five data sets were generated, indicating excellent efficiency (98%) to detect a significant effect according to Rubin's (1987) guidelines. Because DES scores for the current sample were not normally distributed (kurtosis = 6.26; skewness = 2.09), we conducted analyses both with square-rooted scores, which normalized the distribution, and with the original scores. The analyses of the square-rooted scores yielded the same findings as the original data. Therefore, analyses of the original data are reported here, because the original data are most consistent with the distribution of scores found in the general population. Due to the greater power of continuous measures, as well as the preference for continuous measures in analyses of mediation, continuous scales rather than classifications were used in the initial analyses of the attachment data. Preacher and Hayes' (2008) INDIRECT macro for SPSS Version 21 was used to estimate the total and indirect effects of the independent variable (severity of abuse) on the outcome (dissociative symptoms) through the proposed mediators (assessments of adolescent attachment disorganization). Bootstrapped confidence intervals were generated for the indirect effects of predictors on outcomes (see Preacher & Hayes, 2008), as the preferred method of analysis for assessing mediation (Dearing & Hamilton, 2006).

Results

Descriptive Data

Means and *SD*'s for the study variables are presented in Tables 1 and 2. Descriptively, 9.8% of the sample scored 30 or higher on the DES ($n=11$), an empirically identified cut-off score for assessing pathological dissociation with the DES (Leavitt, 1999). Commonly used DES cut-off scores identify approximately 5% to 15% of individuals in the general population (Kihlstrom, 2005). Regarding abuse, 44.6% experienced at least one type of abuse and 15.2% had two types of abusive experiences. For the AAI, 19.6% of the sample ($n = 22$) were classified as having an Unresolved state of mind, with 80.4% ($n = 90$) judged Resolved; 50.9% ($n = 57$) were classified as having a HH state of mind, with 49.1% ($n = 55$) judged not Hostile-Helpless. Thirty-two percent of the participants with an Unresolved state of mind were also classified as having an HH state of mind ($n=7$).

Control Variables: Preliminary Analyses

Zero-order correlations indicated that higher levels of dissociative symptoms were significantly related to lower levels of young adult education ($r=-.22, p<.05$). Greater severity of abusive experiences in childhood were significantly associated with higher family socioeconomic risk ($r=.28, p<.01$) and lower young adult educational level ($r=-.38, p<.001$). Unresolved loss or trauma was not significantly associated with any covariate. However, when Unresolved loss and Unresolved trauma were analyzed separately, higher level of Unresolved trauma was related to lower level of young adult education level ($r=-.19, p<.05$). Higher level of HH state of mind was significantly associated with greater family socioeconomic risk ($r=.25, p<.01$) and with lower young adult educational level ($r=-.23, p<.05$). Regarding the GPACS attachment variables, higher level of collaboration was significantly related to *lower* family socioeconomic risk ($r=-.30, p<.01$), being female ($r=-.19, p<.05$), *higher* young adult level of education ($r=.33, p<.001$), and older age ($r=.19, p<.05$). Higher level of punitive interaction was associated with younger age ($r=-.23, p<.05$). Higher level of disoriented interaction was related to higher level of family socioeconomic risk ($r=.23, p<.05$), lower young adult level of education ($r=-.30, p<.01$), and younger age ($r=-.25, p<.01$). Finally, higher level of caregiving/role-confused interaction was associated with higher level of family socioeconomic risk ($r=.20, p<.05$) and younger age ($r=-.20, p<.05$). Given these associations, in testing Hypotheses 1, 2, and 3, we conducted both zero-order correlations and partial correlations controlling for any control variables that were related to the dependent variable.

Severity of Abuse and Dissociative Symptoms

Consistent with our first hypothesis, severity of childhood abuse was significantly related to dissociative symptoms (Table 2), and this relation remained significant after controlling for relevant demographic variables (young adult education level, $r=.20, p<.05$).

Severity of Abuse and Disorganized Attachment

Regarding Hypothesis 2, zero-order correlations showed that overall severity of abuse was also significantly associated with Unresolved loss or trauma on the AAI (Table 2). There were no relevant covariates for this association. When Unresolved loss and Unresolved trauma were analyzed separately, severity of abuse was significantly associated with Unresolved trauma but not Unresolved loss. The relation between severity of abuse and Unresolved trauma remained significant after controlling for relevant demographic variables (young adult education level, $r=.34, p<.001$). It should be noted that a relation between Unresolved trauma and severity of abuse would be expected because Unresolved trauma cannot be coded in the absence of references to abuse experiences on the AAI.

Overall severity of abuse was also significantly related to HH states of mind on the AAI (Table 2). This relation remained significant after controlling for relevant demographic variables (family socioeconomic risk and young adult educational level, $r=.39, p<.001$). In addition, severity of abuse was related to three of the four GPACS factors (Table 2). Young adults with *lower* severity of abuse showed higher levels of collaboration in interaction with their mothers. However, after controlling for relevant demographic variables, severity of abuse was no longer related to collaborative interactions (family socioeconomic risk, young

adult gender, young adult educational level, and age, $r=-.15$, $p=n.s.$). Young adults with *higher* severity of abuse displayed higher levels of punitive or disoriented interaction with their mothers. Both punitive and disoriented interaction remained significantly related to severity of abuse after controlling for relevant demographic variables (for punitive, age controlled, $r=.24$, $p<.05$; for disoriented, family socioeconomic risk, young adult education level and age controlled, $r=.27$, $p<.01$). Severity of abuse was only marginally related to caregiving/role-confused interactions, and this relation was no longer significant after controlling for relevant demographic variables (family socioeconomic risk and age, $r=.11$, $p=n.s.$). Figure 1 summarizes the associations between abuse and all indicators of disorganized attachment.

Disorganized Attachment and Dissociative Symptoms

Unexpectedly, in relation to Hypothesis 3, higher levels of Unresolved loss or trauma were not related to dissociative symptoms (Table 2). When Unresolved loss and Unresolved trauma were analyzed separately, however, Unresolved trauma was marginally significantly related to dissociative symptoms, while Unresolved loss had no significant association. However, after controlling for the relevant demographic variable (young adult education level), none of the Unresolved scores were associated with dissociative symptoms (for Unresolved loss or trauma, $r=.03$, $p=n.s.$; for Unresolved loss, $r=-.02$, $p=n.s.$; for Unresolved trauma, $r=.14$, $p=n.s.$).

Given the lack of an expected relation between Unresolved status and dissociation, an additional analysis was run using the dichotomized classification for U/non U states of mind. However, the classification results were similar to the continuous scores, with no significant relation to dissociation once controlling for the relevant demographic variable, $\eta=.11$, $p=n.s.$ In addition, a second analysis using only the taxon scores from the DES (Dell, 2009; Waller, Putnam, and Carlson, 1996) also failed to show a relation between Unresolved state of mind and dissociation (for Unresolved loss and trauma, $\eta=.21$, $p=n.s.$; for Unresolved loss, $\eta=.16$, $p=n.s.$; for Unresolved trauma, $\eta=.18$, $p=n.s.$).

In contrast, higher levels of HH states of mind were associated with significantly higher levels of dissociative symptoms (Table 2). The relation remained significant after controlling for the one relevant demographic variable (young adult education level, $r=.22$, $p<.05$).

With regard to attachment-related *interactions*, young adults with higher levels of collaborative interaction with their mothers had significantly *lower* levels of dissociative symptoms. In addition, higher levels of disoriented interactions and higher levels of caregiving/role-confused interactions were associated with *higher* levels of dissociative symptoms. However, higher levels of punitive interactions were only marginally associated with higher levels of dissociative symptoms (Table 2). The relations were similar after controlling for the one relevant demographic variable (young adult education level; for collaborative interaction, $r=-.25$, $p<.01$; for punitive interaction, $r=.17$, $p<.10$; for disoriented interaction, $r=.30$, $p<.01$; for caregiving/role-confused interaction, $r=.22$, $p<.05$). Figure 1 summarizes the associations between all indicators of disorganized attachment and dissociation.

Attachment Disorganization as Mediator of Relations between Abuse and Dissociation

In order to assess which variables might mediate the observed relation between severity of abuse and dissociation, we conducted a series of bootstrapped analyses, following Preacher and Hayes (2008). In all models, dissociation was the dependent variable, the relevant demographic factor (young adult educational level) was controlled first, the proposed mediators were entered second, and severity of abuse, the independent variable, was entered third.

The first analysis tested the role of Unresolved trauma as a potential mediator, because it was the only Unresolved variable with significant or marginal relations to both abuse and dissociative symptoms. However, as shown in Table 2, Unresolved trauma did not mediate the link between severity of abuse and dissociation.

The second analysis tested HH state of mind as a mediator. As shown in Table 2, despite the relations of Hostile-Helpless state of mind to both severity of abuse and to dissociation, HH state of mind was not a significant mediator of the link between the two variables, and so seems to represent a pathway to dissociation that is partially separate from abuse.

Finally, we conducted bootstrapped analyses on the four aspects of young adult-parent interaction. Because these were moderately correlated with one another (Table 1), all four aspects were included together on Step 3, consistent with prior work (Obsuth et al., 2014). As shown in Table 2, the overall quality of young adult-parent interaction, including all four factors, partially mediated the link between childhood abuse and current dissociation, with a point estimate of .65. With regard to specific aspects of interaction, only disorientation in young adult-parent interaction made a unique contribution to mediation with other aspects of interaction controlled, with a point estimate of .44. While caregiving interaction was also associated with dissociation (Table 1), it did not mediate the link between abuse and dissociation, thus representing a pathway to dissociation distinct from abuse.

Discussion

While dissociation has been consistently linked to childhood abuse, less is known about the factors that explain this association. The aim of this study was to assess whether disorganized attachment might be one factor mediating the link between childhood abuse and later dissociation. First, as expected, we found that severity of childhood abuse was robustly related to dissociation. In addition, severity of abuse was significantly related to Unresolved states of mind, but Unresolved states of mind were not related to dissociation. However, both abuse and dissociation were related to Hostile-Helpless states of mind, as well as to less collaborative and more punitive and disoriented interactions between young adults and their parents. Punitive interactions, though robustly associated with childhood abuse, were only marginally associated with dissociation.

The lack of a mediational role for Unresolved states of mind is consistent with the findings of Bailey et al. (2007). As previously discussed, Unresolved status has been questioned as a sensitive indicator of disorganized states of mind in high-risk samples of adolescents (Weinfield et al., 2000; Main, Hesse, & Kaplan, 2005). Thus, observed interaction may

provide a better window into disturbed attachment relationships among socially at-risk youth. In less socially at risk samples, Unresolved status may be a better marker of pathways toward pathological dissociation (Thomson & Jaque, 2012).

The significant relation between HH states of mind and dissociation was a new finding, suggesting that the maintenance of pervasively contradictory representations of attachment experiences has important implications for lack of integration in other areas of thinking. In addition, HH states of mind were strongly related to severity of childhood abuse. However, HH states of mind did not explain the link between abuse and dissociation, pointing to the importance of mediation analyses to identify variables with an explanatory role. In other work, HH states of mind *were* found to mediate the relation between childhood abuse and borderline or antisocial features, suggesting that HH states of mind may be important in explaining other abuse-related developmental pathways (Finger, Byun, Melnick, & Lyons-Ruth, 2014).

However, mediational analysis confirmed that the quality of concurrent young adult-parent interaction partially explained the link between childhood abuse and young adult dissociation. In particular, it was the odd, out-of context behaviors indexing disorientation during a conflict discussion with the parent, such as trailing off in mid-sentence, freezing all movement momentarily, or wandering around the room during the conflict discussion, that were particularly strong mediators of the relation between abuse and dissociation. In fact, the strength of the association between disorientation in interaction and dissociation suggests that disorientation may also explain additional variance in dissociation beyond that accounted for by abuse.

Punitive interactions, while associated with childhood abuse, were not associated with dissociation and hence appear to be part of a non-dissociative, abuse-related developmental pathway. Caregiving interactions, in contrast, were associated with dissociation but not abuse, and hence may represent a non-abuse related pathway to dissociation.

An important limitation of the study is that we used a continuous measure of dissociation in a non-clinical sample, and most participants did not show high levels of dissociation consistent with dissociative disorders. Specifically, only 11 individuals (9.8%) had pathological levels of dissociation (scores of 30+). In addition, only 17 participants (15.2%) had experienced the multiple types of abuse that are more characteristic of those with pathological dissociation. In samples with more pathological levels of dissociation and more malignant abuse experiences, dissociation may have different correlates, and the relation between abuse and dissociation may have different mediators. Thus, it will be important to replicate these findings in cohorts with dissociative disorders. Finally, we assessed childhood abuse history, attachment disorganization, and dissociation concurrently in young adulthood. Although all assessments of abuse focused on the period from birth to age 18, we cannot be sure that prospective assessment would yield similar results. Thus, the current study needs to be replicated using prospective assessment of abuse in order to disentangle possible bidirectional effects, for example, that dissociative youth or youth with more disturbed family interactions report higher levels of childhood abuse.

Notably, however, these findings are consistent with prior longitudinal studies predicting dissociation from parent-child interaction in infancy. For example, two independent labs found that the maternal emotional unavailability in infancy predicted dissociative symptoms 20 years later, independently of abuse (Ogawa et al., 1997; Dutra et al., 2009). Such converging prospective data make it more likely that the relation between dissociation and disoriented interaction observed here reflects a substantive association between the quality of parent-child interaction and the likelihood of dissociation, and is not simply due to the overreporting of dissociation among those who are currently experiencing difficult interactions with parents.

This emphasis on the two-person dialogue in generating dissociative tendencies also shifts the emphasis from earlier, more intrapsychic hypotheses. For example, Liotti (1992) postulated that early disorganization of attachment strategies toward the caregiver sets up an unintegrated internal mental state that confers early psychological vulnerability to dissociation. Instead, the accumulated literature now points to *early and continued disturbance in the interaction between parent and child* as the factor most strongly associated with dissociation.

In summary, our results underscore the importance of the quality of the parent-child relationship in mediating the effects of abuse on dissociation. That is, what the parent allows into the early and continuing affective dialogue may have an important relation to what the child allows himself or herself to think about in later life. Attachment literature gives particular priority to the child's sharing of upset, frightened, or distressed reactions with the parent as one contributor to the child's ability to think freely and arrive at an integrated understanding of their positive and negative life experiences (e.g. Cassidy, 2008). Consistent with this view, the parent-child attachment relationship is a critical regulator of the child's physiological response to stress (e.g. Dozier, Peloso, Lewis, Laurenceau, & Levin, 2008). Therefore, it is likely that the regulation of emotions around traumatic experiences is shaped in critical ways by the quality of dialogue that has taken place in the intense affective field of primary attachment relationships. From this perspective, processes such as dissociation can be viewed as emerging from socially constructed ways of relating around heightened affective experiences, rather than being rooted only in intrapsychically generated responses to traumatic events.

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Figure 1.
Summary of Partial Correlations Between Study Variables

Table 1
Descriptive Data and Strength of Associations Among Dependent and Independent Variables

	<i>M (SD)</i>	Range	1	2	3	3a	3b	4	5	6	7
1. Dissociative symptoms	15.35 (13.29)	1–82.5									
2. Severity of abuse	3.36 (2.02)	1–7	.26**								
3. Unresolved AAI (scaled)	2.03 (1.97)	0–8	.07	.23*							
3a. Unresolved loss only AAI (scaled)	2.40 (2.01)	0–8	–.01	.09	.88***						
3b. Unresolved Trauma only AAI (scaled)	0.84 (1.5)	0–5	.17 ^x	.38***	.45***	.08					
4. Hostile-Helpless AAI (Scaled)	4.71 (1.67)	2–8	.26**	.45***	.09	.01	.22*				
5. GPACS – Collaborative	2.89 (0.87)	1.5–5	–.30**	–.28**	–.11	–.02	–.24*	–.36***			
6. GPACS – Punitive	2.23 (0.85)	1–4.5	.19 ^x	.26**	.06	–.03	.23*	.24*	–.61***		
7. GPACS – Disoriented	1.35 (0.44)	1–3.25	.34***	.37***	.20*	–.03	.43***	.21*	–.40***	.34***	
8. GPACS – Caregiving/Role Confused	2.16 (1.01)	1–5	.23*	.18 ^x	.05	.00	.13	.13	–.40***	.33**	.33**

Note. *N*=112.

^x *p*<.10.

* *p*<.05.

** *p*<.01.

*** *p*<.001.

Table 2

Attachment Disorganization as Mediator of Relations between Severity of Abuse and Dissociation

<i>Potential mediators</i>	Bootstrapped Bias Corrected and Accelerated 95% CI			
	<i>Point estimate (SE)</i>	<i>Lower</i>	<i>Upper</i>	<i>Mediation</i>
Unresolved State of Mind				
Unresolved loss or trauma	-.0386 (.1537)	-.4206	.2260	No
Unresolved trauma	.0863 (.3911)	-.4123	1.6285	No
Hostile-Helpless State of Mind				
Hostile-Helpless state of mind	.4007 (.2688)	-.0449	1.0680	No
Young Adult-Parent Interaction (Simultaneous Entry)				
Overall Quality of Interaction	.6499 (.3148)	.1637	1.4518	Yes
GPACS – Collaboration	.1681 (.1597)	-.0187	.6571	No
GPACS – Punitive	-.0784 (.1709)	-.4753	.2251	No
GPACS – Disorientation	.4378 (.2647)	.0595	1.1860	Yes
GPACS – Role-confusion	.1225 (.1324)	-.0640	.4861	No

Note. 5,000 bootstrapped samples. If the confidence intervals contain zero, mediation is rejected. Young adult education level was controlled.