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Quality of Early Care and Childhood Trauma: A Prospective Study of Developmental Pathways to Dissociation

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Abstract

Kihlstrom (2005) has recently called attention to the need for prospective longitudinal studies of dissociation. The present study assesses quality of early care and childhood trauma as predictors of dissociation in a sample of fifty-six low income young adults followed from infancy to age 19. Dissociation was assessed with the Dissociative Experiences Scale; quality of early care was assessed by observer ratings of mother-infant interaction at home and in the lab; and childhood trauma was indexed by state-documented maltreatment, self-report, and interviewer ratings of participants' narratives. Regression analysis indicated that dissociation in young adulthood was significantly predicted by observed lack of parental responsiveness in infancy, while childhood verbal abuse was the only type of trauma that added to the prediction of dissociation. Implications are discussed in the context of previous prospective work also pointing to the important contribution of parental emotional unresponsiveness in the development of dissociation.

Keywords

Dissociation; Abuse; Trauma; Attachment; Longitudinal

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 et al., 1996). Dissociative symptoms are most commonly assessed using the Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986), with DES cut-off scores identifying approximately 5% to 15% of individuals in the general population as being "at risk" for a dissociative disorder (Kihlstrom, 2005). A taxometric analysis of the DES (Waller et al. 1996) indicated that approximately 3.3% of the general population report frequent and profound experiences of amnesia and/or depersonalization and belong to a pathological dissociative taxon, as measured by the DES-T (Waller & Ross, 1997). While several studies have concurred that the dissociative taxon membership appears to capture more extreme forms of dissociative experiences (Waelde et al., 2005; Waller et al., 2001; Waller & Ross. 1997), some researchers have questioned the clinical utility of the taxon in identifying Dissociative Disorders. The DES-T, for example, has demonstrated low test-rest reliability (Watson, 2003), poor sensitivity compared to the DES (Leavitt, 1999), and unimpressive concordance rates with dissociative disorders (Simeon et al., 2003).

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[3]The earliest version of the Infant Disorganization Scale was a five-point scale, with four additional half-points, yielding nine scale points as used here. Scores of 4, 4.5, and 5 corresponded to a classification of disorganized

While the nature of pathological and non-pathological dissociation has been debated in the field for decades, researchers and clinicians have recently turned their attention to factors associated with the etiology of dissociation. One variable that has been repeatedly advanced as a potential etiological factor is that of traumatic experiences, particularly childhood abuse. Pathological levels of stress are thought to disrupt the normally integrative functions of mental activity, leading some aspects of experience to be segregated from conscious awareness. A number of studies have demonstrated significant associations between childhood physical or sexual abuse and dissociation. For example, 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). Notably, however, most studies involved adult patients retrospectively reporting their childhood abuse histories, leading critics such as Kihlstrom (2005. p.233) to conclude that "although it is plausible that the dissociative disorders have their origins in trauma, the presently available evidence for such an etiology is far from convincing." He suggests that the best evidence for causal links to dissociation will come from prospective studies.

Other than the relation between dissociation and retrospectively reported abuse, Putnam (1997) notes that relatively little is known about the etiology and development of dissociation. The observation that non-traumatized individuals sometimes demonstrate dissociation and that many trauma survivors do not dissociate suggests that there may be more to the etiology of dissociation than trauma alone. A behavioral genetics twin study of dissociation found that 45% of the variance in DES taxon scores was accounted for by the shared environment and 53% by the non-shared environment, with no variance accounted for by genetic factors (Waller & Ross, 1997). Putnam (1997) analyzed the potential moderating roles of age, gender, culture, genetic factors, and education/intelligence and although moderating trends were found for some of these variables, existing research has not convincingly demonstrated that any of these variables significantly influence dissociation. In contrast, research has revealed a number of family environmental factors significantly associated with dissociation, including level of family risk (Malinosky-Rummel & Hoier, 1991), lack of parental care and warmth (Mann & Sanders, 1994; Modestin et al., 2002). inconsistent discipline (Braun & Sachs, 1985; Mann & Sanders, 1994), parental control (Modestin et al., 2002), and poor relationship between parents (Maaranen et al., 2004). All of these family factors are also associated with abusive environments (Wolfe, 1985).

A notable limitation of studies assessing the association between abuse and dissociation is that they typically do not control for family environment when investigating the effects of abuse incidents. Therefore, it is important to disentangle effects of specific abuse incidents from effects of the sustained disturbances in the parent-child relationship in which such abuse events are embedded. In a non-clinical sample, for example, Narang and Contreras (2005) demonstrated that physical abuse history was only positively associated with DES scores in the context of low levels of positive affective family environment, whereas at high levels of affective family environment, physical abuse was unrelated to DES scores. Similarly, in a sample of psychiatric inpatients, Carlson et al. (2001) assessed physical and sexual abuse, caretaker dysfunction (e.g. alcohol abuse, mental health problems), and perceived social support in childhood. Their analyses demonstrated that both caretaker dysfunction ($p < .05$) and childhood social support ($p < .01$) accounted for unique variance in predicting dissociation. Findings revealed that these family environmental factors, when entered in the first step of a hierarchical regression, accounted for 16% ($p < .001$) of the variance in predicting dissociation. Trauma and abuse variables, which were entered as the second step, accounted for an additional 16% ($p < .001$) of the variance, and childhood social support moderated the relation between sexual abuse and dissociation. These two studies suggest that the development of dissociation

in the context of trauma may be potentiated or buffered by familial environmental factors, such as supportive family relationships.

Developmental researchers, in particular, have begun to explore the role of early childhood attachment and parenting in the development of dissociation. Bowlby (1973) first suggested that infants may internalize dissociated or unintegrated internal working models of their primary caretakers, as well as of themselves. Main and Solomon (1990) then documented the existence of contradictory, confused, and disoriented behavior among some infants in the presence of the parent when needing comfort. These were termed disorganized/disoriented attachment behaviors. Subsequent meta-analyses have confirmed the association between infant disorganized attachment behavior, parental maltreatment, parental psychopathology, disturbed parent-infant interaction, and childhood behavior problems (Madigan et al., 2006; van IJzendoorn et al., 1999). Liotti (1992) further noted that there are suggestive parallels between infant disorganization and adult dissociation in that both phenomena reflect a pervasive lack of mental or behavioral integration. He speculated that this primary failure of integration in infancy may result in vulnerability to dissociation later in life. Liotti's model challenges the theory that the etiology of dissociation resides in trauma alone, although he has not suggested that disorganized attachment is the only etiological factor in dissociation. Rather, he advanced a diathesis-stress model in which he hypothesized that disorganized attachment leads to a vulnerability to dissociation in response to later trauma.

Support for the role of early attachment processes in pathways to dissociation has been provided by a 20-year longitudinal study from infancy of 126 children from low-income families. Ogawa et al. (1997) found that disorganized attachment and psychological unavailability of the caregiver during the first two years of life were the strongest predictors of clinical levels of dissociation as measured by the DES in young adulthood. These two variables alone accounted for one-quarter of the variance in dissociation. Psychological unavailability of the caregiver was the single strongest predictor of dissociation at age 19, accounting for 19% of the variance in dissociation. Surprisingly, occurrence of prospectively assessed physical or sexual abuse during childhood was not associated with dissociation scores.

The research literature as a whole, then, supports the view that both abuse experiences and early attachment experiences may be important in the developmental trajectories that eventuate in dissociation. In the current study, we evaluate predictors of dissociation in a prospective longitudinal dataset from a low-income sample. Consistent with Ogawa et al.'s (1997) findings, we predicted that quality of early care, including attachment disorganization, would be associated with dissociation in young adulthood. Additionally, in accordance with the extensive literature demonstrating a relationship between childhood trauma and dissociation (van IJzendoorn & Schuengel, 1996), we hypothesized that childhood trauma would also be associated with dissociation in young adulthood. Lastly, we predicted that quality of early care would continue to account for unique variance in dissociation in young adulthood even after accounting for variation in dissociation associated with traumatic experiences.

Method

Participants

Participants were 56 young adults (age: $m = 19.6$, $sd = 1.39$, 33 male) and their mothers followed from infancy over 19 years. During the infant study, 41 families were referred for clinical home-visiting services due to concerns about the quality of the parent-infant relationship and 35 non-referred community families were assessed as socioeconomically-matched comparisons. Recruitment procedures in infancy are described in more detail in Lyons-Ruth and Melnick, 2004. All families were under the federal poverty level in infancy; 40% of mothers were not high school graduates; and 49% were single parents. Seventy-six percent were

Caucasian, 14% Hispanic, 6% African-American, and 4% mixed/other origin. At 19-year follow-up, 86% of families seen in infancy were relocated and contacted, 3% of those relocated were overseas, and 9% refused participation. Regarding variables assessed in this study, families lost to follow-up differed only on mother's flatness of affect score in infancy (m = . 51, sd = 1 .33) compared to returning families (m = −.11, sd = .83), F(1. 53) = 4.08, $p < .05$. The study protocol was approved by the Institutional Review Board of the Cambridge Health Alliance. Informed consent was obtained from parents and young adult participants.

Measures: Young Adult Outcome

Extent of dissociative symptoms in young adulthood was assessed using the Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986), a 28-item self-report questionnaire. Respondents indicate the percentage of time they experience particular dissociative phenomena on a scale of 0% to 100%. Meta-analysis has demonstrated convergent validity with other measures of dissociation, predictive validity with Dissociative Identity Disorder, and robust test-retest reliability (α = .93; van IJzendoorn & Schuengel, 1996). Good internal reliability (α > .90) has also been shown (Carlson & Putnam, 1993).

Measures: Infancy Predictors

Early demographic risk was indexed by a score (0–5) summing the presence of the following five factors in infancy: no maternal high school diploma, government aid recipient, no male partner in home, mother under age 20 at birth of first child, and more than two children under the age of six in the home.

Infant attachment disorganization at 18 months of age was coded using the Ainsworth Strange Situation (Ainsworth et al., 1978). In this procedure, mothers and infants are videotaped in a playroom in a series of eight 3-minute episodes, during which the mother leaves and rejoins the infant twice. Videotapes were coded for the three organized attachment classifications (secure, avoidant, ambivalent: Ainsworth et al., 1978) and for disorganized/disoriented behaviors (Main & Solomon, 1990; see Lyons-Ruth et al., 1990, for additional details). The dimensional scale for extent of disorganized behavior was used in the current study to maximize power. Agreement on the level of disorganized behavior scale between M. Main and a second coder for 32 randomly selected tapes was r = .84.

Quality of mother-infant interaction at home at 12 months of age was coded using the Home Observation of Maternal Interaction Rating Scales (HOMIRS; Lyons-Ruth et al., 1987). Naturalistic mother-infant interaction was videotaped in the home for 40 minutes when the infant was awake and alert. Videotapes were coded blind to other data in 10 4-minute intervals on 12 five-point rating scales and one timed variable, including 1) sensitivity, 2) warmth, 3) verbal communication, 4) quality of comforting touching (i.e. physical contact in the service of communicating affection, "touching-base," or reducing distress), 5) quantity of comforting touching, 6) interfering manipulation, 7) covert hostility, 8) anger, 9) quality of caregiving touching, 10) quantity of caregiving touching, 11) disengagement, 12) flatness of affect, and 13) time not spent in same room with infant. Intraclass correlations between two coders computed on a randomly selected 20% of the home videotapes ranged from .76 to .99. Principal components analysis of the 13 variables yielded four factors that were used in the current study: 1) *positive affective involvement* (45% of variance; negative loadings at >.50 for maternal disengagement, anger, and time spent out of the room; and positive loadings for maternal sensitivity, warmth, verbal communication, quality and quantity of comforting touching, and quantity of caretaking touching); 2) *hostile-intrnsiveness* (14% of variance; positive loadings for covert hostility and interfering manipulation); 3) *routine care* (10% of variance; positive loadings for quantity and quality of caretaking touch, and quality of comforting touch); and 4) *flatness of affect* (9% of variance: positive loading for flatness of affect).

Disrupted maternal communication with the infant at 18 months of age was coded using the Atypical Maternal Behavior Instrument for Assessment and Classification (AMBIANCE: Lyons-Ruth et al., 1999) over all episodes of the Ainsworth Strange Situation. The AMBIANCE coding protocol yields a scaled score (1–7) for overall Level of Disrupted Communication that takes into account five subtypes of maternal disrupted communication: 1) affective communication errors (e.g. giving contradictory cues; non-response or inappropriate response to clear infant cues), 2) role confusion (e.g. self-referential or sexualized behavior), 3) negative-intrusive behavior (i.e. verbal or physical intrusiveness), 4) fearful-disoriented behavior (e.g. appearing frightened by infant: disoriented wandering), and 5) withdrawal (e.g. fails to greet infant: backs away from infant approach). Reliability computed on 15 randomly selected tapes yielded a weighted kappa = .93. Meta-analysis (N>300; Madigan et al., 2006) has confirmed the validity of the AMBIANCE codes for disrupted parent-infant interaction in relation to infant attachment disorganization, as well as to maternal unresolved classification on the Adult Attachment Interview. Validity was equally strong whether coded from the Ainsworth Strange Situation or from a separate laboratory assessment. Stability over periods up to five years was also good (r = .56: N = 203: Madigan et al., 2006).

Measures: Trauma Assessments

State protective services involvement from infancy to age 7-years due to verified child maltreatment was coded as present/absent for each participant. Protective services involvement was assessed by interview at age 12-months, 18-months, 5-years and 7-years for all families. During infancy, involvement of protective services was verified by a clinical home visitor.

Extent of physical and emotional abuse by mothers was reported by young adults on the Conflict Tactics Scale-Second Edition (CTS-2; Strauss, 1990). The CTS-2 is a widely used, 78-item measure of strategies used to resolve conflict between family members. Each item rates the frequency with which a physically or emotionally abusive tactic occurred in the past year on an eight-point scale. Sample items include “My mother hit or kicked me” and “My mother insulted or swore at me.” From this study, only the 23 items coding serious physical and emotional parental abuse of the child were included in the total scale score (α = .85).

Overall severity of childhood abuse and witnessed violence was also assessed using the Childhood Traumatic Experiences Scales - Revised (CTES-R: Lyons-Ruth & Block, 1996: Dutra et al., 2005[1]) which rates severity of physical, sexual, and verbal abuse and witnessed violence revealed on the one-hour narrative of the Adult Attachment Interview (AAI: George et al.. 1985[2]). The AAI is a semi-structured, transcribed interview that probes the participant’s childhood attachment-related experiences with caregivers, including experiences of rejection, separation, loss, and abuse. For this study, additional questions regarding sexual and physical abuse (Herman et al., 1989) were included to elicit fuller information regarding abuse-related experiences. Inter-rater reliabilities ranged from ICC = .89 (verbal abuse) to .98 (sexual abuse). The CTES-R has also demonstrated convergent validity with other measures of childhood abuse (Dutra et al., 2005). The four scale scores were summed to yield a total abuse scale score.

Plan of Analysis

Missing data on infant and childhood predictors of young adult dissociation were imputed using 20 imputations and the Markov Chain Monte Carlo (MCMC) method (Schafer, 1997).

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[1]Dutra, L., Jenei. J., Long, N., Holmes, B., & Lyons-Ruth, K. (2005, November). *Childhood Traumatic Experiences Scale: Using the AAI to assess trauma.* Poster session presented at the 21 st Annual Meeting of the International Society for Traumatic Stress Studies, Toronto, Canada.

[2]George. C., Kaplan. N., & Main. M. (1985). Adult Attachment Interview. Unpublished Manuscript. University of California, Berkeley.

SAS PROC MIANALYZE was then used to calculate final parameter estimates. The rate of missing data prior to imputation ranged from 0% to 26.8%.

Models were tested using hierarchical multiple regression analyses (Baron & Kenny, 1986). Given the modest sample size, variables were entered into multiple regression analyses in conceptual groupings of constructs, representing 1) control variables, 2) quality of early care, and 3) childhood trauma. Control variables included participants' gender and early demographic risk scores. Quality of early care was indexed by the following six measures: 1) the four factors of the HOMIRS (positive affective involvement, hostile-intrusiveness, routine care, and flatness of affect) reflecting quality of mother-infant interaction at home at 12 months, 2) extent of infant disorganized attachment behavior as measured by the Strange Situation at 18 months, and 3) extent of maternal disrupted affective communication in the lab as measured by the AMBIANCE at 18 months. Childhood trauma was indexed by the following three measures: 1) presence of early protective services involvement, 2) total self-reported abuse on the CTS-2, and 3) extent of physical, sexual and verbal abuse and witnessed violence assessed by the CTES-R.

Results

Descriptive Data

Descriptive statistics for the continuous study variables are presented in Table 1. Categorically, 7.14% of the sample scored 30 or higher on the DES. Only one participant was identified as a DES-T (Waller et al., 1996) taxon member in this sample (employing a 90% taxon membership probability standard), but given mixed research results regarding the utility and validity of the DES-T as a measure of pathological dissociation, standard dimensional DES scores were employed for all analyses. Forty-six percent of participants were classified as having disorganized attachment in infancy using the established cut-off score on the Disorganization Scale. Eighteen percent of participants were assessed by state protective services as having been abused by their families between 12 months and 7 years of age. On the CTES-R, 8% of participants were rated as experiencing childhood sexual abuse consistent with state protective service guidelines defining such abuse; 21% experienced physical abuse consistent these guidelines; 31% experienced high levels of verbal abuse (i.e. scale score of 4 or 5), and 19% witnessed serious family violence (i.e. scale score of 4 or 5). There was no overlap among those who experienced sexual and physical abuse, such that a total of 29% of the sample reported having experienced sexual or physical abuse meeting state protective service definitions of such abuse. Table 2 presents correlations among study variables.

Longitudinal Predictors of Dissociation in Young Adulthood

The first hierarchical multiple regression analysis assessed the relative effects of quality of early care and childhood trauma in accounting for dissociation in young adulthood. The control variables, gender and demographic risk, were entered first in the regression analysis, followed by the quality of early care cluster at Step 2, and the childhood trauma cluster at Step 3. Only quality of early care accounted for a significant proportion of variance in dissociative symptoms, as shown in Table 3. Notably, this cluster accounted for half of the variance in dissociation after controlling for gender and demographic risk ($\Delta R^2 = 50\%$, $p < .001$). As also shown in Table 3, *within* the quality of early care cluster, level of disrupted communication in the lab ($p < .01$), mother's (lack of) positive affective involvement at home ($p < .05$), and mother's flatness of affect at home ($p < .05$) were all significant predictors of dissociative symptoms. Thus, early care significantly predicted later dissociation, confirming the first hypothesis. Contrary to the second hypothesis, however, after controlling for early care the childhood trauma cluster accounted for only 9% of the variance, which was not significant.

In a second hierarchical multiple regression, we tested whether trauma would account for significant variance without first controlling for quality of early care, as well as whether the quality of early care cluster would continue to account for significant variance in dissociation after controlling for severity of childhood trauma. Results confirmed that quality of early care continued to account for significant variance in dissociation after controlling for gender, demographic risk, and the childhood trauma cluster (($\Delta R^2 = .50$, (ΔF (6. 44) = 11.58, $p < .001$). Level of disrupted communication in the lab ($\beta = .55$, $p < .01$), mother's (lack of) positive affective involvement at home ($\beta = -.34$, $p < .01$), and mother's flatness of affect at home ($\beta = .44$. $p < .01$) all continued to predict dissociation in young adulthood, even after controlling for trauma. Contrary to our hypothesis, however, the trauma cluster did not account for statistically significant variance in dissociation, even when entered first into the equation before quality of early care ($\Delta R^2 = .07$, ΔF (3, 50) = 1.49, n.s.). This was also true for each trauma variable independently, including protective services involvement ($\beta = -.06$. n.s.), the CTS-2 ($\beta = -.15$, n.s.). and the CTES-R ($\beta = .17$. n.s.).

Because we had expected that childhood trauma would account for unique variance in dissociative symptoms based on previous literature, a final hierarchical multiple regression analysis was conducted entering the component CTES-R subscales separately into the equation, to evaluate whether a particular type of abuse, rather than overall severity of abuse, might account for dissociative symptoms. The control variable cluster was entered first into the equation, followed by quality of early care, and, lastly, the CTES-R subscale cluster. As seen in Table 4, only the CTES-R verbal abuse subscale ($p < .05$) was a significant independent predictor of DES scores.

Discussion

Results of these prospective longitudinal analyses support earlier evidence from the Ogawa et al. (1997) longitudinal study that the quality of the early caregiving relationship is an important contributor to the development of dissociation. Objectively assessed quality of early care in the first 18 months of life accounted for approximately half of the variability in young adult dissociative symptoms assessed 20 years later, a surprisingly large portion of the variance over such a long time-span. Ogawa et al. (1997) also found that quality of the parent-infant relationship accounted for one-quarter of the variance in young adult dissociative symptoms. The combined sample size of the two studies represents over 180 young adults, lending considerable support to these findings.

In addition, the specific type of impairment in the early parent-infant relationship related to later dissociation was congruent across studies despite differences in methodology. In the current study, mother's lack of positive affective involvement and flatness of affect at home, as well as her disrupted affective communication in the lab, were the important precursors to later dissociative symptoms. Hostile-intrusive forms of interaction at home were also evaluated as predictors of dissociation, but did not account for significant variance, despite their association with early maltreatment and later externalizing behavior problems in the same sample (Lyons-Ruth, Easterbrooks & Cibelli. 1997). In the Ogawa et al. (1997) study, a broad clinical composite judgment of the mother's psychological unavailability to the infant (Egeland & Sroufe. 1981) was the single most important predictor of age 19 dissociative symptoms. Therefore, there was considerable specificity to the aspects of parental interaction associated with the development of dissociation. These results suggest that the DES is indexing unintegrated mental states that develop not only in response to trauma, but also as a response to the effects of parental emotional unavailability beginning in the first years of life.

Based on previous research, we expected childhood abuse to add to the prediction of dissociation. To strengthen the assessment of abuse as much as possible, three separate

assessments were used involving multiple methodologies. Similar to the Ogawa et al. (1997) findings, however, abuse did not predict DES scores regardless of the assessment method used. We considered several potential explanations for these findings.

First, it is possible that our sample may have underreported their childhood abuse experiences since two of the three measures employed to assess childhood trauma were based on self-report or interview measures. While this possibility cannot be ruled out, 18% of participants had maltreatment charges substantiated by the state, such that self-report was not relied on for those cases. Such early state-documented maltreatment did not predict later dissociation, however.

Second, the lack of relation between childhood trauma and dissociation may be due to the low levels of pathological dissociation endorsed by our sample. One participant was categorized as a DES-T taxon member and only 7% of the sample scored 30 or higher on the DES, an empirically identified cut-off score for assessing pathological dissociation with the DES (Leavitt, 1999). Furthermore, the sample's mean DES score was 16.29, which is only slightly higher than the average (14.4) reported by van IJzendoorn and Schuengel's (1996) for adolescents and students. As the majority of our participants did not endorse pathological levels of dissociation on the DES, it is possible that a stronger association between dissociation and trauma exists in samples endorsing a higher severity and/or frequency of dissociative experiences. However, 11% (n = 18) of Ogawa et al.'s (1997) sample was identified as DES-T taxon members, and their findings also demonstrated that psychological unavailability of caregiver and disorganized infant attachment significantly predicted DES-T taxon membership, while childhood trauma did not.

A third explanation for the lack of association between childhood trauma and dissociation in these studies is that only certain forms of extremely severe and/or chronic abuse are associated with dissociation, and that these are more likely to occur in patient samples. Relevant to this point is that trauma has been implicated as an etiological factor in a variety of other psychiatric disorders. Therefore, we need an account of why some people develop dissociation in the context of trauma, while others develop other disorders or no disorder at all. This may be related to the type of the trauma experienced and/or to the particular characteristics of the ongoing family relationships within which the trauma occurs. The specific contexts and characteristics of abuse associated with dissociation as opposed to other psychopathological outcomes deserve further study.

The final possibility is that dissociation may develop as the result of family relational factors other than physical or sexual abuse, as supported by both the present results and the results of the Ogawa et al. (1997) study. Notably, the only type of childhood trauma that did add to the prediction of dissociative symptoms in the current study was severity of verbal abuse, which was not a variable assessed in the Ogawa et al. (1997) study. Verbal abuse has shown a robust relation to DES scores in other work as well. Teicher et al. (2006), for example, found the relationship between verbal abuse and DES scores to be comparable and/or stronger than that of other types of abuse, including sexual and physical abuse, as well as domestic violence. Their findings also demonstrated that, after controlling for the effects of physical and sexual abuse, the *combined* effect of verbal abuse and witnessing domestic violence (which they defined as "emotional abuse") was significantly larger than the effects for physical and sexual abuse. They suggest that verbal abuse may cause a child to have a "negative model for interpersonal communication," which s/he in turn employs in future relationships, and that this model might be preceded by poor early attachment experiences and result in negative internalized representations of the self, particularly in relation to others.

These findings indicate that young adults who have experienced lack of parental affective involvement in infancy, as well as further verbal or emotional abuse in childhood, may be at

particularly elevated risk for dissociation. It is notable that both of these experiences may index moment-to-moment, and possibly chronic, impairments in the process of parent-child communication, rather than more discrete traumatic events. In particular, the early lack of a caregiver to whom one can communicate one's distress and discomfort and elicit a soothing response appears to heighten the risk for dissociation later in life.

Why might quality of early care show such a strong relation to lack of mental integration 19 years later? While there may be a number of intervening processes carrying this correlation over time, here we highlight two potential mechanisms of continuity suggested by these data and consistent with other studies in the infancy literature.

We propose that dissociation is not a purely intrapsychic phenomenon but instead is a way of organizing thought and attentional processes in response to implicit social injunctions from primary attachment figures "not to know." While we know from patient report that such social injunctions at times take the form of explicit threats of harm or abandonment, more often such injunctions about what can be included in a dialogue with others, especially very early in development, are communicated implicitly rather than explicitly, through the caregiver's differential responsiveness to different kinds of child communications. That is, the kinds of feelings and experiences the child can bring into interactions with the parent are shaped implicitly from the beginning of life in the parent's responses or non-responses to the infant's uncomfortable, distressed, or frightened reactions, as well as to the infant's positive bids for pleasurable interactions. Therefore, such shaping of what can be included in the dialogue takes place in the intense affective field of the early attachment relationship. From this perspective, defensive processes such as dissociation can be viewed as socially constructed ways of relating, rather than as primarily intrapsychically-generated responses to traumatic events. This is not an affectively bland social constructive process, however, but a way of mentally accommodating to intense social pressures not to acknowledge pain and distress within a set of caregiving relationships that are vital for survival. The attachment relational context imbues both the caregiving transactions and their internalized mental representations with the intense emotional valences characteristic of defensive responses. This valence does not come simply from an intrapsychic need not to know, but also from a relational communication not to speak. Such implicit injunctions are powerfully conveyed in the videotaped database of the study.

This emphasis on the importance of the two-person interaction in generating dissociative tendencies shifts the emphasis somewhat from Liotti's hypothesis that the child's early disorganization of attachment strategies sets up an early intrapsychic vulnerability to dissociation. Instead, the accumulated longitudinal findings now point to the early (and potentially continued) non-responsiveness of the interaction between parent and child as the more powerful predictive factor over time, with infant attachment disorganization as a possible, but not necessary, concomitant of the disturbed parent-child relationship. Therefore, the hypothesis that emerges is that a parent-child affective dialogue that repeatedly signals the parent's reluctance or refusal to respond to infant fear or distress shapes the child's corresponding mental organization. The result of this may be that a part of the child's mind corresponding to the parental stance cannot be responsive to or aware of another part of the child's mind that contains the distressed and frightened experience. Because dissociation is a rare outcome, however, we would expect that the caregiving deviations associated with this disorder would need to be both extreme and sustained over time.

Second, based on attachment theory and research, the long-term impact of parental affective unresponsiveness can also be viewed from a psychobiological viewpoint. In infancy the child is unusually dependent upon the parent's responsive involvement for regulation of stressful arousal from a variety of sources. Experimental animal models have repeatedly confirmed the role of the quality of early care in setting enduring parameters of the stress response system in

the HPA axis (e.g. Coplan et al., 1996; Francis et al., 1999). In human studies as well, infant cortisol responses after brief stressors have also been shown to relate to the security of attachment to the caregiver accompanying the infant at the time of the stressor (Hertsgaard et al., 1995; Spangler & Grossmann, 1993). Therefore, parental affective unresponsiveness can be conceptualized from a psychobiological viewpoint as a form of 'hidden trauma' specific to infancy - trauma that has the potential to hyperactivate the infant's responses to stressors over time. Such heightened vulnerability to stressors, in combination with an implicit injunction from very early in life not to bring one's fear and distress to the caregiver for comfort and soothing, may then shape the 'choice' of dissociation as one of the few available means for achieving a modicum of relief from fearful arousal.

With both biological stress regulation and integrative dialogue with a responsive developmental partner fundamentally impaired from early in life, we would expect a cascade of further developmental consequences to accrue over time that have implications for reactions to threat, coping mechanisms when under stress, and the continuing integration of thought.

Limitations

The first limitation of the present study is its modest sample size, leading us to limit our statistical models to variables with a strong grounding in previous literature. Secondly, assessing the presence of abuse from participant report has well-known limitations regarding potential reluctance to disclose, particularly among non-patient samples. While this is mitigated here by prospective data collection on state protective services involvement, we cannot rule out that the relative lack of prediction from abuse experiences may reflect the presence of undetected or unreported abuse.

Third, participants did not demonstrate the clinically significant levels of dissociation consistent with dissociative disorders or DES-T taxon membership. Abuse experiences may be more strongly associated with dissociation in samples with more pathological levels of dissociation. Therefore, these data do not rule out the possibility that childhood experiences of abuse are particularly influential in the development of more severe forms of dissociation. These findings do indicate, however, that caregiver emotional availability may play a more significant role in the genesis of dissociation than previously thought and should be further evaluated in clinical cohorts as an additional factor supporting the emergence of dissociation.

Conclusion

These findings add to the growing evidence that developmental trajectories toward psychopathology may begin in the first years of life (Cicchetti & Cannon, 1999; Wakschlag et al., 2006) and that parent-child relationship processes may make important contributions to some of those trajectories (Belden & Luby, 2006; Guttmann-Steinmetz & Crowell, 2006). We now have reliable and validated assessments for both child and parent behavior that allow evaluation of the family processes associated with the early phases of these developmental trajectories. These advances open the way for much earlier assessment and intervention for children at risk for later dissociation.

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Table 1

Descriptive Statistics for Continuous Study Variables

Outcome and Control Variables	Mean (SD)	Range
Dissociative Experiences Scale	16.29 (11.71)	1 – 62
Demographic Risk	2.05 (.94)	0 – 5
Quality of Early Care Variables		
HOMIRS: Positive affective involvement	.06 (.94)	−2.18 – 1.75
HOMIRS: Hostile-intrusiveness	.01 (1.01)	−1.35 – 2.79
HOMIRS: Routine care	.08 (.99)	−1.73 – 3.82
HOMIRS: Flatness of affect	−.11 (.82)	−1.28 – 2.70
AMBIANCE: Disrupted Communication	4.24 (1.73)	1 – 7
Infant Disorganization Scale	3.50 (1.25)	1 – 5[a]
Childhood Trauma Variables		
CTS-2	9.27 (10.38)	0 – 50
CTES-R Total abuse	8.77 (3.38)	4 – 20
CTES-R Physical abuse	2.33 (1.19)	1 – 5
CTES-R Sexual abuse	1.40 (1.11)	1 – 5
CTES-R Witnessed violence	2.15 (1.29)	1 – 5
CTES-R Verbal abuse	2.19 (1.34)	1 – 5

Note. HOMIRS = Home Observation of Maternal Interaction Rating Scales: AMBIANCE = Atypical Maternal Behavior Instrument for Assessment and Classification; CTS-2 = Conflict Tactics Scale - 2nd Edition; CTES-R = Childhood Traumatic Experiences Scale - Revised.

[a]The earliest version of the Infant Disorganization Scale was a five-point scale, with four additional half-points, yielding nine scale points as used here. Scores of 4, 4.5, and 5 corresponded to a classification of disorganized.

Table 2

Correlations Among Study Variables

	1	2	3	4	5	6	7	8	9	10	11	12
1. DES	---											
Control variables												
2. Gender	29*	---										
3. Demographic risk	−.17	.05	---									
Quality of early care variables												
4. Infant D-Scalc	.25	.26	−.10	---								
5. AMBIANC	.38*	.03	−.08	.61**	---							
6. HOMIRS: Positive affective involvement	−.34*	−.16	.01	.09	.07	---						
7. HOMIRS: Hostile-intrusiveness	−.08	−.04	.13	.10	.31	−.08	---					
8. HOMIRS: Routine Care	.31	.14	.02	.18	.05	−.05	.02	---				
9. HOMIRS: Flatness of Affect	.40*	−.22	.08	.23	−.16	.07	−.09	.29	---			
Childhood Trauma Varibles												
10. Protective Services	−.08	−.17	.17	−.04	−.04	.17	.14	−.19	−.10	---		
11. CTS-2	−.17	−.22	.45**	−.03	.07	−.06	.29	−.20	.01	.41*	---	
12. CTES-R: Total abuse	.16	.23	.29*	.09	.11	−.03	.46**	.11	−.01	.12	.41**	---

p<.05

** *p*<.01

Note. DBS = Dissociative Experiences Scale: D-Scale = Disorganization Scale; AMBIANCE = Atypical Maternal Behavior Instrument for Assessment and Classification: HOMIRS = Home Observation of Maternal Interaction Rating Scales; CTS-2 = Conflict Tactics Scale - 2nd Edition; CTES-R = Childhood Traumatic Experiences Scale - Revised.

Table 3

Hierarchical Regression Analysis Results: Quality of Early Care and Childhood Trauma as Predictors of Dissociation

Variable	ΔR^2	ΔF	df	β
Step 1: Control variables	.09	2.50	2.53	
Gender				0.26
Demographic risk				−0.12
Step 2: Quality of early care	.50	9.76**	6,47	
Infant Disorganization Scale				−0.20
AMBIANCE: Disrupted communication				0.49**
HOMIRS: Positive affective involvement				−0.34*
HOMIRS: Hostile-intrusiveness				−0.0 1
HOMIRS: Routine care				0.18
HOMIRS: Flatness of affect				0.39*
Step 3: Childhood trauma	.08	3.71	3.44	
Protective services involvement				−0.26
CTES-R Total abuse				0.08
CTS-2				0.02

* p<.05

** *P*<.01

Note. AMBIANCE = Atypical Maternal Behavior Instrument for Assessment and Classification: HOMIRS = Home Observation of Maternal Interaction Rating Scales: CTES-R = Childhood Traumatic Experiences Scale - Revised: CTS-2 = Conflict Tactics Scale - 2nd Edition.

Table 4

Hierarchical Regression Analysis Results: Quality of Early Care and Childhood Trauma as Predictors of Dissociation

Variable	ΔR^2	ΔF	df	β
Step 1: Control variables	.09	2.50	2.53	
Gender				0.26
Demographic risk				−0.12
Step 2: Quality of early care	.50	9.76**	6,47	
Infant Disorganization Scale				−0.20
AMBIANCE: Disrupted communication				0.49**
HOMIRS: Positive affective involvement				−0.34*
HOMIRS: Hostile-intrusiveness				−0.01
HOMIRS: Routine care				0.18
HOMIRS: Flatness of affect				0.39*
Step 3: CTES-R: Abuse scales	.09	3. 14[1]	4,43	
Physical abuse				−0.31
Sexual abuse				−0.02
Witnessed violence				−0.11
Verbal abuse				0.51*

[1] $p<.10$

* $p<.05$

** $p<.01$

AMBIANCE = Atypical Maternal Behavior Instrument for Assessment and Classification: HOMIRS = Home Observation of Maternal Interaction Rating Scales: CTES-R = Childhood Traumatic Experiences Scale - Revised.