CHILD DISSOCIATIVE CHECKLIST
(V3.0 – 2/90)
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Date: ________ Age: ________ Sex: M F Identification: ________

Below is a list of behaviors that describe children. For each item that describes your child NOW or WITHIN THE PAST 12 MONTHS, please circle 2 if the item is VERY TRUE of your child. Circle 1 if the time is SOMEWHAT or SOMETIMES TRUE of your child. If the item is NOT TRUE of your child, circle 0.

0 1 2 1. Child does not remember or denies traumatic or painful experiences that are known to have occurred.

0 1 2 2. Child goes into a daze or trance-like state at times or often appears “spaced-out”. Teachers may report that he or she ‘daydreams’ frequently in school.

0 1 2 3. Child shows rapid changes in personality. He or she may go from being shy to being outgoing, from feminine to masculine, from timid to aggressive.

0 1 2 4. Child is unusually forgetful or confused about things that he or she should know, e.g. may forget the names of friends, teachers or other important people, loses possessions or gets lost easily.

0 1 2 5. Child has a very poor sense of time. He or she loses track of time, many think that it is morning when it is actually afternoon, gets confused about what day it is, or becomes confused about when something happened.

0 1 2 6. Child shows marked day-to-day or even hour-to-hour variations in his or her skills, knowledge, food preferences, athletic abilities, e.g. changes in handwriting, memory for previously learned information such as multiplication tables, spelling, use of tools or artistic ability.

0 1 2 7. Child shows rapid regressions in age-level of behavior, e.g. a twelve year-old starts to use baby-talk, sucks thumb or draws like a four year-old.

0 1 2 8. Child has a difficult time learning from experience, e.g. explanations, normal discipline or punishment do not change his or her behavior.

0 1 2 9. Child continues to lie or deny misbehavior even when the evidence is obvious.

0 1 2 10. Child refers to him or herself in the third person (e.g. as she or her) when talking about self, or at times insists on being called by a different name. He or she may also claim that things that he or she did actually happened to another person.
11. Child has rapidly changing physical complaints such as headache or upset stomach. For example, he or she may complain of a headache one minute and seem to forget all about it the next.

12. Child is unusually sexually precocious and may attempt age-inappropriate sexual behavior with other children or adults.

13. Child suffers from unexplained injuries or may even deliberately injure self at times.

14. Child reports hearing voices that talk to him or her. The voices may be friendly or angry and may come from “imaginary companions” or sound like the voices of parents, friends or teachers.

15. Child has a vivid imaginary companion or companions. Child may insist that the imaginary companion(s) is responsible for things that he or she has done.

16. Child has intense outbursts of anger, often without apparent cause and may display unusual physical strength during these episodes.

17. Child sleepwalks frequently.

18. Child has unusual nighttime experiences, e.g. may report seeing “ghosts” or that things happen at night that he or she can’t account for (e.g. broken toys, unexplained injuries.)

19. Child frequently talks to him or herself, may use a different voice or argue with self at times.

20. Child has two or more distinct and separate personalities that take control over the child’s behavior.
Dissociation in Children and Adolescents
A Developmental Perspective

FRANK W. PUTNAM, MD

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SCREENING MEASURES AND INTERVIEWS FOR PATHOLOGICAL DISSOCIATION IN YOUTHS

An essential feature of the Robins and Guze (1970) model for the validity of a disorder is the existence of "laboratory tests" that serve as external validators for a given diagnosis (see the discussion of validity in Chapter Five). Unfortunately, no one has yet developed a reliable and valid laboratory test for any major psychiatric disorder. In the absence of laboratory standards, clinicians employ dimensional scales and questionnaires, as well as structured diagnostic interviews. Such measures improve the reliability of psychiatric classification and insure a greater consistency in the way in which psychiatric diagnosis is conducted. Nonetheless, psychiatric diagnosis still leaves much to be desired.

Validated dissociative screening measures and structured diagnostic interviews for adults have reshaped the field. (See the discussion of the measurement of dissociation in Chapter Four.) In the early to mid-1980s, a number of clinicians independently generated symptom profiles to aid in identifying dissociative children and adolescents (e.g., Elliot, 1982; Fagan and McMahon, 1984; Kluft, 1985a; Putnam, 1985b). Comparisons revealed many similarities in the features that their authors thought salient to pathological dissociation in children (see discussions in Putnam, 1986b; Peterson, 1990). Items from these early predictor lists constitute the core of current child and adolescent dissociation scales and interviews (Evers-Szostak and Sanders, 1992; Reagor et al., 1992; Tyson, 1992; Putnam et al., 1993). Here, I focus the bulk of my discussion on those measures with which I am most familiar—namely, those that I have authored or coauthored.
The Child Dissociative Checklist

The CDC is derived from a symptom profile that I circulated among child protection workers in 1981. Early versions were published as footnotes or tables by other authors (e.g., Elliot, 1982; Kluft, 1983a) prior to our validation article (Putnam et al., 1993). The most commonly encountered versions are labeled "2.2—2/88" and "3.0—2/90." The former is a 16-item checklist. The latter has 20 items, which include all of the Version 2.2 items in the same order, permitting easy comparison. I encourage readers to copy and use the CDC. It is a public domain document and may be reproduced and distributed without special permission. A reproducible copy is included in Appendix Two. (Readers who wish to tinker with it should change the name to reduce confusion for others.)

The CDC is an observer report measure and uses a 3-point scale response format (i.e., 2 = "very true," 1 = "somewhat or sometimes true," and 0 = "not true"). The time frame in the instructions covers the present and the prior 12 months. Clinicians are free to specify another time frame as appropriate (e.g., the preceding week) when the CDC is completed weekly as part of a longitudinal evaluation or treatment outcome measure.

The CDC score is the sum of all of the item scores and can range from 0 to 40 on Version 3.0. Table 12.3 gives scores for different groups of children by age. The table shows that healthy, nonmaltreated normal children generally score very low on the CDC, with younger children scoring slightly higher. As a group, maltreated children score significantly higher than normals; however, they score significantly below children with diagnosable dissociative disorders. MPD children score uniformly high at each age point, with DDNOS children falling close below on average. The large standard deviations in the pathological groups indicate
<table>
<thead>
<tr>
<th>Group</th>
<th>Age (years)</th>
<th>Mean</th>
<th>SD</th>
<th>n</th>
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<tbody>
<tr>
<td>Normal</td>
<td>5–8</td>
<td>3.2</td>
<td>2.9</td>
<td>54</td>
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<tr>
<td></td>
<td>9–11</td>
<td>2.9</td>
<td>1.0</td>
<td>42</td>
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<td>12–16</td>
<td>1.9</td>
<td>1.9</td>
<td>96</td>
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<tr>
<td>Maltreated</td>
<td>5–8</td>
<td>10.3</td>
<td>8.7</td>
<td>39</td>
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<td></td>
<td>9–11</td>
<td>6.1</td>
<td>6.5</td>
<td>87</td>
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<td></td>
<td>12–16</td>
<td>4.2</td>
<td>1.9</td>
<td>129</td>
</tr>
<tr>
<td>MPD</td>
<td>5–8</td>
<td>24.1</td>
<td>8.5</td>
<td>9</td>
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<tr>
<td></td>
<td>9–11</td>
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<td>12–16</td>
<td>22.3</td>
<td>9.1</td>
<td>26</td>
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<tr>
<td>DDNOS</td>
<td>5–8</td>
<td>21.4</td>
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<td>19</td>
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<td>9–11</td>
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<td>12–16</td>
<td>20.0</td>
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that a wide range of scores can be expected with a subgroup of high scorers. As a general rule of thumb, a score of 12 or higher is considered an indication of pathological dissociation, and further evaluation is warranted.

**Reliability and Validity**

Several studies of the reliability and validity show the CDC to be a reliable instrument. For example, the mean Cronbach's alpha was .86 in three studies, and the mean test–retest reliability was .74 in two studies (Malinosky-Rummell and Hoier, 1991; Putnam et al., 1993; Putnam and Peterson, 1994; Wherry, Jolly, Feldman, Adam, and Manjanatha, 1994).

The validity of the CDC has been primarily assessed in terms of its ability to discriminate among groups. Studies to date have found that sexually abused children score significantly higher than nonabused comparison children (Malinosky-Rummell and Hoier, 1991; Putnam et al., 1993; Wherry et al., 1994). Three studies indicate that the CDC can discriminate children with dissociative disorders from abused and nonabused children without dissociative disorders. In three studies (Hornstein and Putnam, 1992; Putnam et al., 1993; Putnam and Peterson, 1994), children with MPD had median scores of 25, 24, and 25, respectively, whereas children with DDNOS had median scores of 16.8, 16.5, and 18.2, respectively. In one study (Putnam and Peterson, 1994),
scores on the CDC as completed by parents and caretakers were significantly correlated with scores on item-equivalent dissociation scales completed by the children's primary therapists. Clinicians using the CDC typically report similar results. For example, the mean scores for diagnostically mixed groups of child and adolescent dissociative patients were 16.6 and 23, respectively, in two recent studies (Coons, 1996; Yager and Lewis, 1996). In sum, the CDC has proven to be internally consistent, reliable over time, and generally able to discriminate children with pathological dissociation from those without.

**Cautions**

A number of cautions should be kept in mind. First, the CDC scores reported in Table 12.3 are means; they reflect the “average” child in a given group. Second, individual children (both traumatized and nontraumatized) can and do exhibit variation on the CDC, as well as on other measures. Thus a high score does not prove that a child has a dissociative disorder; nor does a low score guarantee that a child does not have a dissociative disorder. In addition, there is variability in the way in which adult report measures such as the CDC are completed by parents, foster parents, teachers, and other informants. This problem exists for all adult report child measures. Finally, the CDC is but an indicator of the presence or absence of pathological dissociation. High and low scores must be weighed within the larger clinical context. Therefore, the CDC is best used as a screening instrument for detection of possible pathological dissociation during evaluation, and as an index of a degree of dissociation for purposes of research and treatment evaluation.

**Factors Influencing Scores**

Developmental and individual variables (e.g., age, gender, ethnicity, parental education, etc.) must be factored into an interpretation of a CDC score. (See the discussion of age and gender effects in Chapter Nine.) In general, CDC scores decrease with age (Putnam, 1996a). Current data suggest that the rate of this decline varies across normal and clinical groups. Our findings indicate that nontraumatized children, even at young ages, have very low scores. Between the ages of 6 and 16, the decline in CDC scores is modest but significant, \( r (134) = -.19, p = .02 \). The age-related decline in scores for maltreated children is actually somewhat steeper, \( r (121) = -.34, p = .0001 \). Children with dissociative disorders (MPD and DDNOS), particularly those with MPD, show essentially no decline in CDC scores over the same age range. Thus, for
most groups CDC scores do decline with age, but in the most extreme cases they do not.

We know less about the effects of gender and culture on CDC scores. I am certain that these factors influence reported scores in some cases, and probably more so for children than for adults. Certain social behaviors that the CDC inquires about (e.g., sexual and aggressive behaviors) also differ significantly by gender and probably often by culture, although little is known about these factors.

**Research Uses**

The CDC is designed to be both a clinical and a research tool. As new information is rapidly accruing, researchers should review the most current literature before embarking on a CDC study. In general, the CDC can be used to quantify dissociative behavior for dimensional approaches and to generate cutoff scores to categorize children into low- and high-dissociation groups.

**Clinical Uses**

The CDC is employed clinically in three basic ways. Its first use is as a routine screening instrument given in a clinical setting. For example, parents can be asked to fill out the CDC, together with other parent report measures such as the Child Behavior Checklist (CBCL), when they bring their child for evaluation/treatment. In selected cases, the CDC can be sent to teachers or others who know the child reasonably well. When filling out the scale, teachers should be told to ignore items 17 and 18, which inquire about nocturnal behavior. After a period of observation on inpatient units, designated staff members can complete the CDC for an assigned child. Again, allowances should be made for an observer's familiarity with the child, particularly across different staff shifts. As noted above, the source and reliability of all scores need to be considered in the clinical context.

Second, for finer-grained screening, the CDC can be serially completed by a designated observer. For children in whom there is reason to suspect pathological dissociative behaviors, parents, foster parents, or others can complete the CDC weekly or monthly for a period of time. In nondissociative children, there is often a small increase (1–3 points) over the first few completions, because the questions draw attention to minor dissociative behaviors that were previously ignored. Clinicians should be looking for evidence of sustained pathological dissociation—that is,
for CDC scores that are consistently 12 or higher (e.g., see the case of Penni, Chapter Eleven and Figure 11.1).

When using the CDC in this fashion, I ask parents to keep a log of examples of the behaviors that they are endorsing on the CDC. I review this with them as a quality check on how they are completing the scale. As with any measure, questions on the CDC can be misunderstood. However, I find that parents use the scale pretty much as intended, and that they rarely endorse items inappropriately. The consistently low scores for normal subjects across different studies support this.

Lastly, the CDC can be used as a rough index of treatment progress. There is less experience with this mode, but preliminary results indicate that the CDC provides a reasonable indication of whether or not a child is improving with time or treatment. In several acute trauma cases elevated CDC scores declined to normal ranges over a 2- to 3-month period, supporting clinical observations that the children were improving. In other instances (e.g., the case of Penni), repeated administrations of the CDC over several years suggested that little improvement occurred.
MEASUREMENT ISSUES

Pathological Dissociation as Measured by the Child Dissociative Checklist

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The component structure of the Child Dissociative Checklist was examined among abused children. A factor described as pathological dissociation emerged that was predicted by participants being male. There also were differences in pathological dissociation between groups of sexually abused and physically abused children. Replication of this factor and the establishment of base rates for various groups of children are recommended so that the Child Dissociative Checklist might be used to more effectively eliminate false positives and increase true positives in the screening and ultimate treatment of dissociative children.

KEYWORDS child abuse, dissociation, assessment, diagnosis

Dissociation has been described by Putnam, Helmers, and Trickett (1993) as a psychophysiological process occurring along a continuum from minor normative dissociations (e.g., daydreaming) to psychiatric conditions such as dissociative identity disorder (DID). Studies of patients with dissociative disorders yield a high percentage of cases (85–100%) with reported traumatic childhoods (Coons, Bowman, & Milstein, 1988; Putnam, Guroff, Silberman, Barban, & Post, 1986) and child abuse (Chu & Dill, 1990). Moreover, dissociation is significantly correlated with severity of trauma, with the magnitude of correlations ranging from approximately .25 to .45 (Anderson,

As noted, dissociation appears related to the severity of trauma, but it also is predicted by age, gender, duration, and the nature of the sexual abuse. That is, dissociation as measured by the Child Dissociative Checklist (CDC; Bernstein & Putnam, 1986) and the Trauma Symptom Checklist for Children (TSCC; Briere, 1996) was predicted by being older, being female, by abuse occurring over a longer period of time, and the nature/severity of sexual abuse (Friedrich, Jaworski, Huxsahl, & Bengston, 1997). Confirmation of dissociative symptomatology in a child client is relatively uncommon (Kluft, 1984, 1985; Putnam, 1991; Vincent & Pickering, 1988) despite acknowledgement that multiple personality disorder (MPD) or DID often originate in childhood. In fact, less than 3% of the diagnoses of a dissociative disorder are made in children under 12, and less than 8% are made in adolescents between the ages of 12 and 19 (Kluft, 1984).

Putnam (1997) reviewed two models for understanding both normal and pathological dissociation. The continuum model holds that dissociation is a normally distributed spectrum of experiences and behaviors. In contrast, the taxon model posits that normal and pathological dissociation are of a different type. Specifically, pathological dissociation involves experiences rarely or never experienced by normal people. Putnam also suggested that normal and pathological dissociation predict developmental trajectories that are fundamentally different.

Pathological dissociation is characterized by disruptions in the sense of identity and disturbances of memory (Nemiah, 1980). Similarly, Putnam (1997) describes pathological dissociation as a disturbance in the integrative functions of identity, memory, and consciousness. Dorahy, Lewis, Millar, and Gee (2003) also note that pathological or nonnormative dissociation includes amnesia and depersonalization, where nonpathological dissociation is represented by constructs like imaginative involvement and absorption. Waller and Ross (1997) studied the prevalence of pathological dissociation in a large random sample of 1,055 adults and found that 3.3% of the sample experienced pathological dissociation. Similarly, Maaranen et al. (2005) found that 3.4% of a large stratified sample of adults in Finland experienced pathological dissociation. Maaranen et al. also found that there was a relationship between pathological dissociation and depression, suicidality, and alexithymia.

Although pathological dissociation has received some attention in the adult literature, its measurement among children is virtually nonexistent. Measurement and recognition of pathological dissociation early in life would be important because treatment of dissociation is much more successful in childhood (Kluft, 1984). The CDC (Bernstein & Putnam, 1986) has been developed as a screening measure to assess dissociative symptoms in children according to parent reports. The purpose of the study was to
determine if children assessed by the CDC could be described as evidencing a taxon described as pathological dissociation similar to that described for and applied to adults. Moreover, this study aimed to examine whether groups of abused children would differ in pathological dissociation based on abuse status and whether pathological dissociation would be predicted by variables described in the adult literature as related to pathological dissociation (e.g., gender, duration, severity).

METHOD

Participants

Participants were parents of 232 physically and sexually abused children between the ages of 6 and 13. They were recruited primarily from a children’s hospital serving a largely rural state. Sixty-one percent of the abused children were girls and 39% were boys; 69% were Caucasian and 31% were African American. The mean age of the children was 9.96 (SD = 1.69). Demographic data for the parents were not collected.

Participants were included if their children provided a clear disclosure of physical or sexual abuse, if the child’s report was acknowledged as credible by the nonoffending caretaker, and at least one of the following external supportive factors was met: (a) official substantiation by the state child protective services agency, (b) abuser admission of abuse, (c) physical evidence strongly consistent with abuse, or (d) trained interviewer conclusion that physical or sexual abuse was likely.

Parents completed informed consent and children provided assent. The measures were collected as part of a larger study supported by the National Institute of Mental Health. Only 16% of all participants screened were recruited. Many caregivers refused to participate, and some children did not endorse abuse despite confirmation by another source.

Children and parents were interviewed separately. For many, multiple sessions were required to complete the measures. Children were screened to assure an overall IQ of at least 75 on the Slosson Intelligence Test-Revised (SIT-R; Slosson, Nicholson, & Hibpshman, 1990) or Kaufman Brief Intelligence Test (KBIT; Kaufman & Kaufman, 1990). IQ scores averaged 98.09 (SD = 16.16).

Instruments

ABUSE DIMENSIONS INVENTORY

The Abuse Dimensions Inventory (ADI; Chaffin, Wherry, Newlin, Crutchfield, & Dykman, 1997) is a 15-scale instrument designed to measure the severity of physical and sexual abuse. The sexual abuse section, which was the only
section utilized in the present study, has scales measuring sexual behavior severity, duration of abuse, number of most severely rated incidents, number of total incidents, abuser reaction to disclosure, use of force or coercion to gain submission or compliance, use of force or coercion to gain secrecy, and relationship of the abuser to the victim. The ordering of items in terms of severity was obtained by surveying a national sample of mental health professionals belonging to a national abuse organization. Coefficients of concordance for orderings averaged .87. Interrater reliability of the scales based upon a semistructured interview with non-accused parents ranged from .84 to .99, and factor analysis of the instrument produced a four-factor solution with separate factors for physical abuse behaviors, sexual abuse behaviors, number and duration of physical abuse events, and number and duration of sexual abuse events (Chaffin et al., 1997).

CHILD DISSOCIATIVE CHECKLIST, VERSION 3.0

The CDC is a screening measure developed by Putman and colleagues (1993) to access dissociative symptoms based on ratings by caregivers for children and adolescents. The CDC is comprised of 20 items rated on a scale ranging from 0 (not true) to 2 (very true). These ratings are summed, and a cutoff score equal to or greater than 12 is considered abnormal, particularly in older children. It has a one-year test-retest reliability coefficient of rho = .69 (N = 73, p = .0001) in a sample of normal and sexually abused girls. Putman and colleagues (1993) report good discriminant validity for the CDC.

RESULTS

Principal Components of the CDC with Physically and Sexually Abused Children

In order to explore the principal components of the CDC, a principal components analysis of the 20 CDC items was undertaken. The sample included both physically and sexually abused children (N = 232). The Kaiser-Meyer-Olkin measure of sampling adequacy was .857, indicating that the data were appropriate for principal components analysis. A varimax rotation was performed. Based on examination of the scree plot, a three-factor solution resulted and accounted for 46% of the variance. The factors included items describing variability in a number of behaviors, general externalizing problems, and pathological dissociation (see Table 1). The variability component accounted for 19.09% of the variance, the pathological dissociation component accounted for 14.12%, and the externalizing behavior component accounted for 12.88%.
Table 2 reports the distribution of scores for the items of the pathological dissociation factor. A score of 1 indicates that for one item the behavior was “sometimes true,” while a score of 2 indicates that either two items were “sometimes true,” or one item was “very true.” If a score of 2 is set as a threshold for pathological dissociation, then 85.8% of the sexually abused sample did not evidence pathological dissociation and 14.2% did evidence pathological dissociation.

Reliability

Reliability was calculated for each of the three scales derived from factor analysis. In ascending order, alpha coefficients for the CDC principal
components were .834 for variability in behavior, .696 for pathological dissociation, and .721 for externalizing behavior. The Cronbach’s alpha for all items was .873. The item mean was .865.

Predicting Pathological Dissociation

Next, the scores for the six items of the pathological dissociation factor were weighted based on their individual factor loadings relative to the overall factor loading. The weighted pathological dissociation score was then used as the dependent variable in a series of hierarchical regression analyses involving abuse characteristics and demographic variables. These analyses were done using hierarchical multiple regression as outlined in SPSS (software). Each independent variable was entered into the regression equation according to a specific hierarchy. The adjusted $R^2$ (explained variance) was then analyzed by increments as to the proportion of variance explained after adding each additional variable (Cohen & Cohen, 1975). Predictor variables were entered in the following order: (a) gender, (b) duration, and (c) severity. Only gender was a significant predictor of weighted pathological dissociation, overall $F(1, 134) = 11.47, p < .01$, accounting for .08 of the total adjusted $R^2$. Male children were more likely to experience pathological dissociation.

Differences between Groups

An independent-samples t-test was performed and yielded significant differences in weighted pathological dissociation between those children who were sexually abused and those who were not. The mean and standard deviations were 5.74 ($SD = 12.39$) for non–sexually abused children and 14.15 ($SD = 28.81$) for sexually abused children. Levene’s test of equality of variance indicated that the variance between the groups was not equal, based on an $F$ of 11.68 ($p < .01$). Thus, the resulting t-score was 3.08
(df = 217.51, p < .01). The results of an independent t-test of the weighted pathological dissociation score performed on groups of physically abused and non–physically abused children was nonsignificant.

Weighted item scores were calculated for the variability and externalizing items based on their individual item loadings relative to the overall factor loading. There were significant differences between physically abused children and non–physically abused children on the weighted externalizing factor, \( t(231) = 6.52, p < .001 \) with physically abused children scoring higher (\( M = 85.22, SD = 45.34 \)) than non–physically abused children (\( M = 40.93, SD = 48.73 \)). On the variability factor, children who were sexually abused (\( M = 46.07, SD = 45.25 \)) scored higher than non–sexually abused children (\( M = 30.55, SD = 37.17 \)), \( t(203.50) = 2.83, p < .01 \) (Levene’s \( F = 5.59, p < .05 \)).

**DISCUSSION**

For this sample, the CDC can be reduced into three components: pathological dissociation, variability, and externalizing. One of the components, pathological dissociation, appears to assess more serious symptoms of dissociation. Unfortunately, there is no measure that serves as a “gold standard” for the systematic diagnosis of dissociation in young children. However, Kluft (1984) reports that less than 3% of dissociative disorder diagnoses are made in children under age 12. Similarly, Waller and Ross (1997) report that only 3.3% of adults report pathological dissociation. In this sample, 14.2% of sexually abused children evidenced pathological dissociation according to parent reports when a score of 2 was used as the threshold on the pathological dissociation factor. This higher rate of pathological dissociation is to be expected because the participants are drawn from a clinical population rather than a general population.

Differences in weighted pathological dissociation scores were examined between those in the sample who experienced sexual abuse and those who experienced physical abuse. The sexually abused children were rated by their parents as evidencing more pathological dissociation than the physically abused children. Since the physical abuse itself might have been perpetrated by the parent rater, one explanation might be that the physically abusive parent raters were less sensitive and attuned to their child’s problems. However, another interpretation is that sexual abuse leads to more pathological dissociation as a traumatic event that is difficult to integrate into one’s experience. This is contrary to some findings in the adult literature where physical abuse is related to pathological dissociation more than sexual abuse (e.g., Macfie, Cicchetti, & Toth, 2001).

The finding that pathological dissociation was predicted by being male was partially in contrast to Friedrich and colleague’s (1997) finding that being female was related to dissociation in general. This may be due to
higher rates of pathological dissociation among boys or to differences between this sample and the one used by Friedrich and colleagues. Ultimately, the value of the pathological dissociation factor will be fully demonstrated when differences in scores differentiate between groups of normal controls, sexually abused children, and children with a DSM-IV (Diagnostic and Statistical Manual of Mental Disorder, Fourth Edition) diagnosis of a dissociative disorder.

As suggested, one of the limitations of the study was the lack of a normal control group. The establishment of base rates of dissociative symptoms, especially pathological dissociation, among normal children would assist in the interpretation of pathological dissociation in abused and clinical populations. Another limitation of the study was the likely bias created because of voluntary nonparticipation by 86% of all potential children screened. This may have resulted in less severe ratings of child behavior and abuse, especially among those children who were physically abused. That is, an undetermined portion of the physically abused children had parents who retained custody of their children and provided the ratings for their children.

Future studies would be beneficial to replicate the pathological dissociation factor and to establish base rates of pathological dissociation scores among normal children, abused groups, children traumatized by other events, and clinical populations. By refining our screening of dissociation through the specific assessment of pathological dissociation, clinicians might improve on the accurate identification of those with dissociative symptoms versus those who represent false positives in the screening process. Ultimately, this may lead to more timely and appropriate treatment of children.

REFERENCES


**AUTHOR NOTE**

At the time this research was conducted, Jeffrey N. Wherry was a Professor of Psychology at Abilene Christian University. He is now Rockwell Professor, Rockwell Professor of Human Development and Family Studies and Director of the Institute for Child and Family Studies at Texas Tech University, Lubbock, Texas.

Debra A. Neil and Tamara N. Taylor are undergraduate students in the Accelerated Professional Career Track Psychology Program at Abilene Christian University, Abilene, Texas.
Dissociation as a Mediator of Psychopathology Among Sexually Abused Children and Adolescents

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John S. Lyons, Ph.D.

Objective: This study investigated the role of dissociation as a mediator of mental health outcomes in children with a history of sexual abuse.

Method: The study group consisted of 114 children and adolescents (ages 10–18 years) who were wards of the Illinois Department of Children and Family Services and were living in residential treatment centers. Interviews, provider ratings, and chart reviews were used to assess the relationship of childhood abuse history, dissociative responses, and psychopathology.

Results: Sexual abuse history was significantly associated with dissociation, whereas a history of physical abuse was not. Both sexual abuse and dissociation were independently associated with several indicators of mental health disturbance, including risk-taking behavior (suicidality, self-mutilation, and sexual aggression). Severity of sexual abuse was not associated with dissociation or psychopathology. Analysis of covariance indicated that dissociation had an important mediating role between sexual abuse and psychiatric disturbance. These results were replicated across several assessment sources and varied perspectives.

Conclusions: The findings suggest a unique relationship between sexual abuse and dissociation. Dissociation may be a critical mediator of psychiatric symptoms and risk-taking behavior among sexually abused children. The assessment of dissociation among children may be an important aspect of treatment.

Childhood sexual abuse may be related to more deleterious long-term outcomes than physical abuse (1–4). However, no psychiatric profile or course of adjustment unique to the sexual abuse survivor has been identified. Depression, anxiety, and somatic and sexualized responses are frequently documented (5, 6). Risk-taking behaviors (e.g., suicidality, self-mutilation, physical and sexual aggression, substance abuse, and sexual revictimization) have also been noted (7–10). Yet symptoms can wax and wane or shift over the course of development (5, 11), making it difficult to interpret the “real” effect of sexual trauma (12).

While the symptomatic effects of sexual abuse are well-studied (6, 11), the possible mediators of the complex relationship between childhood abuse and psychopathology are currently a focus (11–14). Included is an emphasis on the coping responses of abuse survivors.

A number of studies have assessed the relationship between childhood abuse and dissociation among adult survivors (1–4, 10, 15–17), but this relationship has been less studied among children. The majority of studies suggest that sexual abuse, particularly severe sexual abuse, compared to physical abuse, has the predominant effect on dissociation (2–4, 10, 16). However, other studies have pointed to higher levels of dissociation among subjects with physical abuse or combined sexual and physical abuse (1, 15). Some of this inconsistency may be associated with differences in defining abuse or its severity as well as with difficulties substantiating reports of sexual abuse (16).

A natural, protective response to overwhelming traumatic experiences, dissociation can become an automatic response to stress. This can impair functioning and increase susceptibility to serious psychopathology (17, 18). Putnam (12) has suggested that aggressive, risk-taking behavior often occurs in the context of dissociative experiences, when individuals feel out of control and compelled to do something against their will. A hierarchical model of dissociation proposes that primary dissociation (e.g., forgetfulness, fragmentation, emotional numbing) often co-occurs with several symptom constellations (e.g., mood swings, aggressive behavior, substance abuse). These symptoms are considered secondary or tertiary responses to dissociation in which dissociation serves as a mediator (12). These observable symptoms or risks may not manifest until adolescence or early adulthood (18).

Dissociation and development appear related. Normative dissociation peaks during latency years (age 10) and declines through adolescence and adulthood (17). While some consider pathological dissociation to exist only in adults, adolescence may be a transition period critical to understanding the development of pathological dissociation (18). The early identification of dissociative re-
sponses, particularly in relation to risk-taking behavior, may provide important avenues for prevention.

The present study assessed the role of dissociation in the presence of psychiatric symptoms among a group of adolescents and pre-adolescent children with experiences of sexual and physical abuse. It was hypothesized that dissociation would have a mediating role between sexual abuse and mental health outcomes, particularly increasing the likelihood of behaviors that are harmful to self or others.

Method

Study Group and Procedure

One hundred fourteen subjects, ages 10 to 18, were recruited from a group of children who were wards of the State of Illinois Department of Children and Family Services. The group was recruited on the basis of the following five criteria: 1) removal from family and placement into Department of Children and Family Services custody, 2) current placement in residential treatment, 3) age, 4) proximity to Chicago, and 5) agreement to participate. Each child lived in one of five state-supervised residential treatment centers. Two of the residential treatment centers included groups of children treated specifically for sexual aggression. The child's primary residential treatment caseworker was asked to participate in the study as the caregiver, i.e., an informant who knew the child well. Subjects were not recruited on the basis of any specific abuse history. Children were screened for their ability to participate by staff at each site and were then selected for the study if they agreed to participate. Written informed consent was obtained from both the child and the Public Guardian in Illinois.

The study group included 59 male (52%) and 55 female (48%) subjects. The majority were African American (69%), with 24% Caucasian and 5% Hispanic. The average length of stay in the residential treatment center was 15.2 months (SD=12.2). The mean full-scale IQ was 82 (SD=15), but the range of IQ scores (range=50–125) suggests that the mean score likely was not reflective of the overall study group.

Children were administered the Adolescent Dissociative Experiences Scale (18) by a clinically trained interviewer and were asked to complete the Youth Self-Report (19). Caregivers were asked to complete the Child Dissociative Checklist (20), the Child Acuity of Psychiatric Illness scale (22), and the History of Abuse Form. Trained raters used the Child Severity of Psychiatric Illness scale (22) to review residential charts.

Measures

Dissociation. Two measures of dissociation were used. The Adolescent Dissociative Experiences Scale (18) is a 30-item self-report measure developed as a screening tool for serious dissociative and posttraumatic disorders. Each item is rated on a scale of 0 (never) to 10 (always) on the basis of adolescents' self-report of symptoms. The total score for the scale is the average of all item scores. Psychometric data on the Adolescent Dissociative Experiences Scale indicate excellent reliability (Cronbach's alpha=0.93; split-half=0.92). A mean score of 4 or above on the Adolescent Dissociative Experiences Scale signifies pathological dissociation.

The Child Dissociative Checklist (20) is a 20-item observer-report checklist with a 3-point scale (0=not true, 1=sometimes true, 2=frequently true). The Child Dissociative Checklist is a clinical screening instrument that assesses dissociation on the basis of ratings given by caregivers or adults in close contact with the child. A score of 12 or higher on the Child Dissociative Checklist is evidence of pathological dissociation. The Child Dissociative Checklist shows good 1-year test-retest stability (r=0.65) and internal consistency (Cronbach's alpha=0.86) (20). Good convergent and discriminant validity have been indicated (20).

Traumatic experiences. The History of Abuse Form was completed by caregivers. The History of Abuse Form included items abbreviated from another measure (23) and incorporated variables associated with severity of sexual abuse in the literature (5,6), including type of sexual abuse, age at onset, frequency and duration, relationship and emotional closeness of the perpetrator, and use of force. These data were reported secondhand by the primary caseworker and, therefore, must be interpreted with caution. Asking the youth directly was seen as too intrusive. File review was seen as insufficiently detailed. Information on physical abuse and neglect was also collected.

Mental health outcomes. The Child Behavior Checklist (21) is a 113-item, 0–2 point, observer-report measure. The items comprise several factor-analytically derived problem scales, competence scales, two broadband groupings (internalizing and externalizing problems), and a total problem scale. The Child Behavior Checklist is widely used, with excellent reliability and validity (21). The counterpart to the Child Behavior Checklist, the Youth Self-Report (19), is a child self-report measure with the same scale format and content. The Youth Self-Report exhibits adequate reliability and validity (19).

The Child Acuity of Psychiatric Illness scale (22) is a 21-item, 4-point measure designed to rate acute mental health symptoms, subject to change on the basis of interventions. The Child Acuity of Psychiatric Illness scale includes dimensions of risks, symptoms, functioning, and systems support. The Child Severity of Psychiatric Illness scale (22) is a 25-item, 4-point measure, similar in nature and format to the Child Acuity of Psychiatric Illness scale. It is a chart review measure used to gather recent and historical information on psychiatric functioning.

Results

Eight of the 114 subjects were missing data because of either the child's unwillingness to complete certain measures or the caregiver's failure to return the questionnaires (despite multiple requests). This accounts for the variation in number of subjects across measures.

Types of Childhood Abuse Experiences

According to the chart review, 97% of the study group had a history of any type of abuse (sexual, physical, neglect), and 84% of the subjects had an abuse history that was considered moderate to severe. According to the History of Abuse Form, most of the group (92%) experienced some neglect, with 42% experiencing severe neglect or abandonment. Sixty-one percent had a history of sexual abuse, 47% experienced physical abuse, and 39% had both. Children who experienced only sexual abuse without physical abuse made up 22%, while 16% had a history of physical abuse alone, and 49% witnessed the physical abuse of family members.

Among those who reported a history of sexual abuse, the following types of sexual contact were reported: sexual kissing or fondling (11%), touching genitals/digital penetration (16%), oral sex (9%), and genital or anal intercourse (64%). The age at onset of sexual abuse fell into one of four ranges: 0–2 years (4%), 3–6 years (46%), 7–11 years (43%),
or 12 years and above (7%). The length of abuse varied: 0–1 year (29%), 1–3 years (36%), 3–5 years (19%), 5 years or more (16%). The frequency of the abuse ranged from either one occasion (8%) or rarely but more than once (26%) to monthly (15%), weekly (38%), and daily (13%). The majority of victims were related to their abuser (who was either an immediate family member [44%] or extended family member [29%]); 4% of the abusers were strangers to the victim, and 23% were unrelated but known. The degree of emotional closeness to the perpetrator was described as follows: no relationship (16%), distant relationship (23%), moderately close (41%), and extremely close (20%). The prototypical picture of sexual abuse was weekly genital or anal intercourse by a family member to whom the child was at least moderately emotionally close, lasting between 1 and 3 years. When multiple types of sexual abuse were reported for a given child, the most severe type was used.

**Dissociation**

The scores from the Adolescent Dissociative Experiences Scale (mean=3.2, SD=2.2) and Child Dissociative Checklist (mean=7.6, SD=6.2) were positively correlated with each other (r=0.28, df=100, p<0.01). The magnitude of this correlation suggests that these constructs may not be highly related. It is unclear whether these two measures assess the same phenomenon: children’s report of their own internal experience versus adults’ perception of this experience. Therefore, for the purposes of distinction, we refer to the Adolescent Dissociative Experiences Scale score as “experienced dissociation” and the Child Dissociative Checklist score as “perceived dissociation.”

There were no significant findings for age and dissociation. There were some gender differences in dissociation: female subjects reported significantly higher levels of experienced dissociation (t=1.95, df=105, p<0.05).

**Abuse and Dissociation**

In order to identify the differential effects of sexual and physical abuse experiences, a two-by-two analysis of variance (ANOVA) was used. Main effects were tested for sexual abuse (yes versus no) and physical abuse (yes versus no). Statistical interactions between sexual and physical abuse were also tested to determine whether the co-occurrence of sexual abuse and physical abuse had differential effects greater than the occurrence of either sexual abuse or physical abuse alone. Mean scores on the dissociation measures for the 114 subjects grouped by abuse history (no abuse, sexual abuse only, physical abuse only, both sexual and physical abuse) are presented in Table 1.

For experienced dissociation (i.e., scores on the Adolescent Dissociative Experiences Scale), there was only a main effect for sexual abuse: children with sexual abuse histories reported significantly higher levels of dissociation (F=6.88, df=1, 103, p<0.01). There was no effect for physical abuse and no interaction effect. For perceived dissociation (i.e., scores on the Child Dissociative Checklist), both main effects were significant: higher levels of perceived dissociation were seen in children with a history of either physical abuse (F=6.40, df=1, 103, p<0.05) or sexual abuse (F=5.54, df=1, 103, p<0.05). There was no interaction effect. There was also no relationship between circumstances or severity of sexual abuse and dissociation.

**Abuse and Psychiatric Status**

Again, two-by-two ANOVAs were conducted across the measures of symptomatic functioning, with physical

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**TABLE 1. Dissociation and Psychopathology in 114 Children and Adolescents Living in State-Supervised Residential Treatment Centers, by Abuse History**

<table>
<thead>
<tr>
<th>Measure</th>
<th>Measure</th>
<th>No Abuse (N=27)</th>
<th>Sexual Abuse (N=25)</th>
<th>Physical Abuse (N=18)</th>
<th>Sexual/Physical Abuse (N=44)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mean  SD</td>
<td>Mean   SD</td>
<td>Mean     SD</td>
<td>Mean   SD</td>
</tr>
<tr>
<td>Dissociation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adolescent Dissociative Experiences Scale score</td>
<td>2.4  2.0</td>
<td>3.4  2.6</td>
<td>2.4  1.8</td>
<td>3.7  2.1</td>
<td></td>
</tr>
<tr>
<td>Child Dissociative Checklist score</td>
<td>4.7  3.4</td>
<td>6.0  4.8</td>
<td>6.2  6.1</td>
<td>10.4  6.9</td>
<td></td>
</tr>
<tr>
<td>Psychopathology</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child Behavior Checklist scores</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>56.2  10.5</td>
<td>62.2  10.5</td>
<td>60.1  13.1</td>
<td>67.2  10.2</td>
<td></td>
</tr>
<tr>
<td>Internalizing problems&lt;sup&gt;a&lt;/sup&gt;</td>
<td>53.6  10.6</td>
<td>59.6  12.0</td>
<td>55.5  12.8</td>
<td>64.6  10.5</td>
<td></td>
</tr>
<tr>
<td>Externalizing problems&lt;sup&gt;b&lt;/sup&gt;</td>
<td>58.4  10.7</td>
<td>62.3  8.7</td>
<td>61.8  13.3</td>
<td>66.9  10.4</td>
<td></td>
</tr>
<tr>
<td>Youth Self-Report scores</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>58.8  14.1</td>
<td>63.0  14.7</td>
<td>56.0  15.0</td>
<td>64.4  11.4</td>
<td></td>
</tr>
<tr>
<td>Internalizing problems&lt;sup&gt;b&lt;/sup&gt;</td>
<td>60.8  13.2</td>
<td>62.0  13.5</td>
<td>56.6  15.2</td>
<td>66.3  12.6</td>
<td></td>
</tr>
<tr>
<td>Child Acuity of Psychiatric Illness scores</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>9.0  5.8</td>
<td>13.3  8.8</td>
<td>10.9  10.4</td>
<td>18.8  10.5</td>
<td></td>
</tr>
<tr>
<td>Symptoms</td>
<td>3.9  3.6</td>
<td>5.1  3.8</td>
<td>4.7  5.2</td>
<td>7.8  4.8</td>
<td></td>
</tr>
<tr>
<td>Risks</td>
<td>1.3  1.3</td>
<td>1.8  2.6</td>
<td>1.2  2.0</td>
<td>2.7  2.2</td>
<td></td>
</tr>
<tr>
<td>Child Severity of Psychiatric Illness scores</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sexual aggression</td>
<td>0.6  0.9</td>
<td>1.0  1.2</td>
<td>0.1  0.3</td>
<td>1.4  1.1</td>
<td></td>
</tr>
<tr>
<td>Suicide</td>
<td>0.3  0.5</td>
<td>0.6  0.8</td>
<td>0.3  0.5</td>
<td>0.6  0.6</td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup> Items from the withdrawal, somatic complaints, and anxious/depressed syndromes within the scale.

<sup>b</sup> Items from the delinquent and aggressive behavior syndromes within the scale.
abuse and sexual abuse as main effects. Mean scores on the symptom measures for the 114 subjects grouped by abuse history are presented in Table 1.

Most of the significant main effects for the Child Behavior Checklist were related to sexual abuse. Higher total scores were seen in children with histories of physical abuse ($F=4.13$, $df=1$, $105$, $p<0.05$) and sexual abuse ($F=9.0$, $df=1$, $105$, $p<0.01$). Children with a history of sexual abuse also had higher scores for internalizing problems ($F=10.8$, $df=1$, $105$, $p<0.01$) and externalizing problems ($F=4.32$, $df=1$, $105$, $p<0.05$), whereas there was no main effect for physical abuse and no interaction effect for these subscales.

On the Youth Self-Report, there were only main effects for sexual abuse: children with a history of sexual abuse had higher total scores ($F=4.81$, $df=1$, $106$, $p<0.05$) and externalizing problem scores ($F=4.11$, $df=1$, $106$, $p<0.05$).

On the Child Acuity of Psychiatric Illness scale, there was a main effect for sexual abuse: children with a history of sexual abuse had higher total scores ($F=9.26$, $df=1$, $105$, $p<0.01$), indicating more acute problems, and higher symptom scores ($F=5.48$, $df=1$, $100$, $p<0.05$) and risk scores ($F=5.18$, $df=1$, $104$, $p<0.05$). There were no main effects for physical abuse or interaction effects for these scores.

On the Child Severity of Psychiatric Illness scale, there was a main effect for sexual abuse: children with a history of sexual abuse had higher total scores ($F=4.41$, $df=1$, $106$, $p<0.05$) and externalizing problem scores ($F=4.11$, $df=1$, $106$, $p<0.05$).

On the Child Acuity of Psychiatric Illness scale, there was a main effect for sexual abuse: children with a history of sexual abuse had higher total scores ($F=9.26$, $df=1$, $105$, $p<0.01$), indicating more acute problems, and higher symptom scores ($F=5.48$, $df=1$, $100$, $p<0.05$) and risk scores ($F=5.18$, $df=1$, $104$, $p<0.05$) scores. There were no main effects for physical abuse or interaction effects for these scores.

On the Child Severity of Psychiatric Illness scale, there was a main effect for sexual abuse and an interaction effect for sexual aggression scores: higher scores were seen in children with a history of sexual abuse ($F=17.51$, $df=1$, $105$, $p<0.001$) and both sexual and physical abuse ($F=4.64$, $df=1$, $105$, $p<0.05$). There was no main effect for physical abuse. There was also a main effect for sexual abuse on suicide scores ($F=6.16$, $df=1$, $107$, $p<0.05$) but no effect for physical abuse and no interaction effect. No associations between sexual abuse severity and any measure of psychiatric status were seen.

Finally, a multivariate ANOVA was run across all dependent variables to test the overall significance of physical and sexual abuse. There was a significant multivariate main effect for sexual abuse ($Wilks's\lambda=3.82$, $df=13.0$, $p<0.0001$) but not for physical abuse or the sexual/physical abuse interaction.

### Dissociation and Psychiatric Status

Several significant relationships were found between the measures of dissociation and mental health outcome (Table 2). There were significant inverse correlations between perceived dissociation (Child Dissociative Checklist score) and several of the competence scales from the Child Behavior Checklist, such as activities ($r=-0.30$, $df=106$, $p<0.01$), social functioning ($r=-0.38$, $df=106$, $p<0.01$), and school performance ($r=-0.29$, $df=106$, $p<0.01$). The activities score was also inversely correlated with experienced dissociation (Adolescent Dissociative Experiences Scale score) ($r=-0.25$, $df=106$, $p<0.05$).

### Dissociation as a Mediator

Analyses of covariance were performed to determine whether the relationship between sexual abuse and mental health outcomes was mediated by dissociation. Sexual and physical abuse were used as factors, with experienced and perceived dissociation as covariates.

For the Child Behavior Checklist total score, perceived dissociation was significant as a covariate ($F=15.3$, $df=1$, $95$, $p<0.001$). Previously significant main effects for sexual abuse...
DISOCIATION AND SEXUAL ABUSE

and physical abuse were no longer significant. Perceived disociation was a significant covariate for the internalizing (F=66.7, df=1, 95, p<0.001) and externalizing (F=80.2, df=1, 95, p<0.001) problem scores. The main effect for sexual abuse on these scores was eliminated after we controlled for dissociation.

Experienced dissociation was a significant covariate for both total score (F=40.9, df=1, 93, p<0.001) and the externalizing problems score (F=18.8, df=1, 93, p<0.001) from the Youth Self-Report. Previously significant main effects for sexual abuse on both scores disappeared after we controlled for dissociation.

For scores on the Child Acuity of Psychiatric Illness scale, perceived dissociation was a significant covariate (total: F=86.6, df=1, 83, p<0.001; risks: F=49.4, df=1, 95, p<0.001; symptoms: F=74.6, df=1, 92, p<0.001). The previously significant main effect for sexual abuse on all three indices disappeared.

For scores on the Child Severity of Psychiatric Illness scale, experienced dissociation was a significant covariate for suicide risk (F=7.36, df=1, 94, p<0.01). The previously significant main effect for sexual abuse was again not present. However, a slightly different pattern emerged for sexual aggression: while perceived dissociation was again a significant covariate (F=5.0, df=1, 93, p<0.05), a significant main effect remained for sexual abuse (F=8.64, df=1, 93, p<0.01) and the physical and sexual abuse interaction (F=4.43, df=1, 93, p<0.05).

Discussion

The primary finding of this study is that dissociation appears to have a mediating role between sexual abuse and a variety of mental health outcomes. Higher levels of dissociation were found among sexually abused children than among physically abused children. Dissociation was associated with more symptoms, more frequent risk-taking behaviors, and less competent functioning. Consistent with other research, sexually abused children exhibited more symptoms and acute disturbance, including suicidality, sexual aggression, and self-mutilation (6–9). Associations between severity of sexual abuse, dissociation, and outcomes were not found, likely because of the consistently severe abuse histories within this study group. Overall, these findings suggest a unique relationship between sexual abuse and dissociation (1, 9) and the potential importance of dissociation as a mediator of symptoms, particularly destructive and harmful behaviors, among sexually abused children (14). These findings are compelling and may have clinical implications for work with traumatized children.

This study has a number of strengths, including its multimethod design, mixed gender sample, and replication of findings across several measures and perspectives. There are also limitations and questions to consider. One important issue concerns the measures of dissociation: the Adolescent Dissociative Experiences Scale, referred to as “experienced dissociation,” and the Child Dissociative Checklist, a “perceived dissociation” measure. While associated with each other, these variables were not highly correlated, perhaps reflecting separate constructs. The dissociation measures were primarily associated with outcomes of the same informant (e.g., child-reported dissociation to child-reported symptoms), yet some significant cross-informant relationships still existed. Thus, the findings cannot be attributed solely to method variance.

It is possible that children, particularly adolescents, are better able to describe their internal experience; adult observations of dissociation may reflect external behaviors related to dissociation. This could represent a central difficulty in measuring dissociation in children. Pathological dissociation may be clinically inferred by the degree of problematic (e.g., destructive or harmful) behavior that is present. Alternately, if a child’s behavior is sufficiently disruptive and dissociation is not assessed in a particular setting, it may be overlooked. In fact, the Child Dissociative Checklist, the adult-report measure, includes an item on sexual behavior in its rating of dissociation. This could have presented a confound for this study as dissociation was hypothesized to mediate risk behaviors.

In this study, dissociation was measured on a continuum as it relates to abuse history and mental health outcome. While the dissociation scores for this group were similar to those of other samples of abused children, the average scores were not within the pathological or diagnostic range for dissociation (18, 20).

Evidence for a relationship among abuse history, dissociation, and psychopathology was quite compelling, but the data only suggest that these variables are associated at the present time. Causal effects and directional relationships cannot be inferred given the cross-sectional design of this study.

This was an extreme sample of the child psychiatric population. All of the subjects were in state protective custody and receiving long-term psychiatric services. Therefore, direct responses to abuse were not assessed, and symptoms may have shifted over time as a result of other experiences. With a significant subset of children exhibiting some history of sexual aggression, the generalizability of these findings to other populations may be limited.

Conclusions

Dissociation has been considered a mediator of psychopathology and risk-taking behavior in previous studies of childhood sexual abuse (2, 3, 12, 14) and adult sexual trauma (24). This study supports these findings and may have implications for treatment. Assessing dissociation may be an important aspect of clinical care among traumatized children. However, fully understanding these relationships requires further empirical studies with multiple and varied methods and measurement among
individuals at different developmental stages. It would be useful to assess children and their dissociative responses closer to the time of abuse and across development to understand how dissociation relates to psychiatric outcomes over time. It is also important to consider how pathological levels of dissociation relate to symptoms and risk. Longitudinal studies are critical for assessing how dissociation is adaptive in the short term and when and how it becomes maladaptive. Future research is needed in these areas to better understand these complex phenomena, forestall inappropriate diagnosis and treatment, and prevent further trauma in the lives of abused children.

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References

Regular Article

Attention-deficit/hyperactivity disorder and dissociative disorder among abused children

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2Division of Child Psychiatry, Aichi Children’s Health and Medical Center, Aichi, Japan

Abstract
The aim of this study was to investigate the psychiatric problems and characteristics among children of child abuse (CA). Specifically, the authors investigated whether attention-deficit/hyperactivity disorder (ADHD) symptoms were exhibited before or after CA. A total of 39 abused child inpatients who were treated at Aichi Children’s Health and Medical Center, Aichi, Japan, (mean age, 10.7 ± 2.6; mean IQ scores, 84.1 ± 19.3) were included in the study. The most frequent diagnosis was dissociative disorder in 59% of abused subjects. ADHD was diagnosed in 18% of abused subjects, and 71% of ADHD children had comorbid dissociative disorder. A total of 67% of all CA subjects fulfilled the ADHD criteria A according to DSM-IV-TR, however, only 27% of those fulfilled the criteria before CA. The subjects of dissociative disorder fulfilled ADHD criteria A more frequently than those of non-dissociative disorder (P = 0.013), and this result led to an increase in the frequency of the apparent ADHD. The rate of ADHD-suspected parents in the subjects who fulfilled ADHD criteria A after CA was significantly lower than those who fulfilled it before CA (P = 0.005). While it is difficult to distinguish ADHD from dissociative disorder, abused children may have increased apparent ADHD due to dissociative disorder. Further studies should be conducted in order to explore the distinct biological differences between ADHD before CA and the subjects who fulfilled ADHD criteria A after CA.

Key words attention-deficit/hyperactivity disorder, child abuse, dissociative disorder.

INTRODUCTION
Child abuse (CA) is one of the most important problems of child psychiatry. Developmental disorders such as pervasive developmental disorder (PDD), attention-deficit/hyperactivity disorder (ADHD) and learning disorder are regarded as psychiatric risk factors of CA.1 ADHD was reportedly observed in 14–46% of abused children,2–4 suggesting that ADHD is more common in abused children than in the general population (3–7%).5 However, Glod and Teicher6 reported that children who had not met ADHD criteria before CA expressed hyperactivity due to a hypervigilant state after CA. ADHD is often diagnosed in abused children, however, abused children without ADHD before CA also exhibit hyperactivity similar to ADHD after CA.

Recent neuroimaging studies suggested that abused children exhibited increased volumes of superior temporal gyrus6 and pituitary,7 decreased volumes of hippocampus8,9 and corpus callosum,10,11 increased regional cerebral blood flow (CBF) in the orbitofrontal cortex and anterior temporal pole,12 decreased activation in hippocampus,8 and low N-acetylaspartate in the anterior cingulate.13 It was reported that ADHD children have cerebellar-prefrontal-striatal dysfunction.14 These previous reports suggest an etiological difference between hyperactivity of abused children and that associated with ADHD.

The aim of this study was to investigate the psychiatric problems and characteristics of abused children. Specifically, the authors investigated whether ADHD symptoms were exhibited before or after CA, and they also examined the relationship between ADHD symptoms and dissociative disorder.
METHODS

Subjects

A total of 39 child inpatients treated at Aichi Children’s Health and Medical Center, a foundation hospital for CA treatment in Aichi prefecture, Japan, were included in the study. These subjects were all abused patients treated at the Center from April 2004 to November 2004. Screening was performed on all patients entering treatment by a psychiatrist and a clinical psychotherapist, and children who had a history of CA, such as physical, psychological, sexual abuse, and neglect, participated in this study.

Procedure

All subjects were diagnosed according to the DSM-IV-TR\(^5\) and tested using the Wechsler Intelligence Scale for Children–third edition (WISC-III) for intelligence assessment. Further screening was done using the Child Dissociative Checklist, Version 3.0 (CDC)\(^{15,16}\) by child psychiatrists. For further analysis, the authors confirmed with all CA subjects whether they fulfilled DSM-IV-TR ADHD criteria A (ADHD-A; excluding ADHD criteria B–E) and from when they had fulfilled it. The authors defined CA subjects who fulfilled ADHD-A before CA as ‘ADHD-A before CA’ subjects and those who fulfilled it after CA as ‘ADHD-A after CA’ subjects. Furthermore, the authors confirmed whether the subjects’ parents (either the father or mother) had ADHD-A symptoms in their childhood based on the information obtained from the grandparents. The authors defined parents who fulfilled ADHD-A in their childhood as ‘ADHD-suspected parents’. This study was approved by the ethical committee of the Aichi Children’s Medical Center.

Statistical analyses

Frequency analysis was performed with the \(\chi^2\)-test and Fisher’s exact test. Continuous data, such as CDC scores, was explored using the Student’s \(t\)-test. Differences between groups for age, IQ scores, and CDC scores were tested by ANOVA. Post hoc comparisons were performed using the Tukey test to identify differences between groups. Statistical significance was set at the 5% level.

RESULTS

Psychiatric diagnosis

The subjects were 39 abused children (16 boys and 23 girls; mean age, 10.7 ± 0.6). Psychiatric diagnoses are given in Table 1. As Table 1 shows, the most frequent diagnosis was dissociative disorder (dissociative disorder not otherwise specified; NOS and dissociative identity disorder) in 59% (\(n = 23/39\)) of abused subjects. All dissociative disorder NOS subjects were clinical presentations similar to dissociative identity disorder that failed to meet full criteria for this disorder. PDD (Asperger’s disorder and PDD not otherwise specified) and ADHD were diagnosed before CA in 23% (\(n = 9/39\)) and 18% (\(n = 7/39\)) of abused subjects, respectively. Moreover, 71% of ADHD children (\(n = 5/7\)) had comorbid dissociative disorder.

Attention-deficit/hyperactivity disorder symptoms

All subjects were screened to determine if they met ADHD-A. A total of 67% of all CA subjects (\(n = 26/39\)) fulfilled ADHD-A. However, only 27% of these subjects were determined to have ADHD-A before CA (\(n = 7/26\)), whereas the other 73% (\(n = 19/26\)) were determined to have ADHD-A after CA. Of the patients diagnosed with ADHD-A after CA, 12 were diagnosed with dissociative disorder (two with dissociative identity disorder and 10 with dissociative disorder not otherwise specified) and seven with PDD (six Asperger’s disorder and one PDD-NOS).

Dissociative disorder

Child abuse subjects were most frequently diagnosed with dissociative disorders (Table 1). Some type of dissociative disorder was found in 59% of total subjects (\(n = 23/39\)). None of the PDD subjects (\(n = 9\)) showed dissociative disorder. The development of dissociative
disorder in PDD subjects may be different from other individuals, therefore, PDD subjects were excluded from the following analysis of dissociative disorder.

As Table 2 shows, dissociative disorder was equally comorbid among both the subjects who fulfilled ADHD-A before CA (n = 5/7, 71%) and those who did not fulfill ADHD-A before CA (n = 18/23, 78%). However, 12 of the dissociative disorder subjects who did not fulfill ADHD-A before CA were determined to have ADHD-A after CA when they were screened after CA (Table 2). Among the subjects who did not fulfill ADHD-A before CA, the subjects with dissociative disorder fulfilled ADHD-A after CA more frequently (n = 12/18) than those without dissociative disorder (n = 0/5). Although only seven of 30 subjects fulfilled ADHD-A when they were screened before CA, an additional 12 subjects fulfilled ADHD-A after CA. This result lead to a significant increase of apparent ADHD compared to before CA (n = 7/30 vs 12 + 7/30, \(\chi^2 = 9.77\), d.f. = 1, \(P = 0.004\)).

In a comparison of CDC scores, there was a significant group effect for CDC scores among six groups as seen in Table 2 (\(F = 2.86\), \(P = 0.045\)). Understandably, CDC scores of the subjects with dissociative disorder were significantly higher than those without dissociative disorder (20.4 ± 7.3 vs 11.3 ± 4.4, \(t = -4.05\), d.f. = 17.1, \(P = 0.001\)). In post hoc analysis, no significant differences were detected for CDC scores between the six groups. There was no significant group effects for age and IQ scores (\(F = 2.33\), \(P = 0.117\), and \(F = 1.77\), \(P = 0.194\), respectively).

### Comparison between attention-deficit/hyperactivity disorder before child abuse and attention-deficit/hyperactivity disorder after child abuse subjects

The data of parents were obtained from 34 subjects. The rate of ADHD-suspected parents was compared between ADHD-A before CA, ADHD-A after CA, and subjects who did not have ADHD-A symptoms both before and after CA, and there was a significant difference between these three groups (\(\chi^2 = 13.05\), d.f. = 2, \(P = 0.001\)). The rate of ADHD-suspected parents in ADHD-A before CA subjects was significantly higher than that in ADHD-A after CA subjects and in the subjects who did not have ADHD-A both before and after CA (100% vs 31.3% and 18.2%; \(\chi^2 = 9.22\), d.f. = 1, \(P = 0.005\), and \(\chi^2 = 11.45\), d.f. = 1, \(P = 0.002\), respectively; Fig. 1). There was no significant group effects for age, IQ scores, and CDC scores between ADHD-A before CA, ADHD-A after CA subjects, and the subjects who did not fulfill ADHD-A both before and after CA (\(F = 1.70\), \(P = 0.198\) for age; \(F = 2.28\), \(P = 0.12\) for IQ scores; \(F = 0.68\), \(P = 0.52\) for CDC scores; respectively).

---

**Table 2.** Comorbidity of dissociative disorder and attention-deficit/hyperactivity disorder symptoms

<table>
<thead>
<tr>
<th>Dissociative disorder</th>
<th>ADHD-A before CA</th>
<th>ADHD-A before CA</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>(+) before and (+) after CA</td>
<td>6</td>
<td>12</td>
<td>23</td>
</tr>
<tr>
<td>(-) before and (+) after CA</td>
<td>5</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>(-) before and (-) after CA</td>
<td>11</td>
<td>12</td>
<td>23</td>
</tr>
</tbody>
</table>

\(\chi^2 = 6.97\), d.f. = 1, \(P = 0.013\).

CA, child abuse; ADHD-A, attention-deficit/hyperactivity disorder criteria A according to the DSM-IV-TR.

---

**Figure 1.** Rate of attention-deficit/hyperactivity disorder (ADHD)-suspected parents of abused children. ADHD-A (+) before child abuse (CA; n = 7): Subjects who have fulfilled the ADHD criteria A according to the DSM-IV-TR before child abuse. ADHD-A (-) before CA but (+) after CA (n = 16): subjects who did not fulfill DSM-IV-TR ADHD criteria A before child abuse but fulfilled it after child abuse. ADHD-A (-) after and before CA (n = 11): subjects who did not fulfill DSM-IV-TR ADHD criteria A both before and after child abuse. *\(P = 0.002\); **\(P = 0.005\).
DISCUSSION

The abused children in this study had a high prevalence of ADHD (18%), which is similar to previous studies, and many of the abused children examined exhibited ADHD criteria A symptoms after CA. The question remains of why abused children fulfill the ADHD criteria A after CA.

Previous neurophysiological studies have suggested that traumatized children have an abnormal concentration of attention and discrimination of relevant stimuli, such as abnormal habituation or abnormal event-related potential (ERP). Consequently, abused children have posteriori abnormal concentration of attention and impulse control. These symptoms might also be valid for ADHD-A in a cross-sectional study. Furthermore, in this study, the subjects of dissociative disorder fulfilled ADHD-A more frequently than those of non-dissociative disorder, and this result lead to an increase in the frequency of the apparent ADHD. These dissociative symptoms may be partially congruent with inattention symptoms of ADHD-A if DSM criteria are applied in a cross-sectional manner. Consequently, a large number of abused children would be diagnosed with ADHD after CA.

The results of this study also suggest the inheritance differences between ADHD-A before CA and ADHD-A after CA. As mentioned above, previous neuroimaging studies have suggested an etiological difference between ADHD children and abused children. Further genetic or biological studies might enable one to more readily distinguish between ADHD before and after CA. Additionally, the result of inheritance also indicated some other possibilities. One possibility is that ADHD-suspected parents were more likely to abuse their children, and the other is that ADHD-suspected parents have been abused by their parents and they have become ADHD-A after CA. However, it was uncertain whether the parents of subjects have been abused in their childhoods based on the information obtained from the grandparents.

This study has some limitations. For example, no control subjects, nonabused children, were included. This study examined psychiatric inpatients, and it was difficult to include children who had no psychiatric problems. Furthermore, the sample size of this study was not very large. Further research with a larger sample size should be conducted. In this study, the authors used CDC for assessment of dissociation. Although CDC was translated into Japanese, reliability and validity of it was not confirmed among the Japanese population. It might not be appropriate to use CDC for assessment of dissociation among Japanese abused children. The reliability and validity of a child dissociation scale should be established in Japan as soon as possible.

This study suggests that there are a large number of abused children with ADHD and that abused children frequently present ADHD-A symptoms after CA. Additionally, the present results also suggest that the rate of ADHD-suspected parents between ADHD-A before CA and ADHD-A after CA subjects is different. After CA, the subjects who had dissociative disorder fulfilled ADHD-A more frequently than those who did not, and dissociative disorder was frequently comorbid with both ADHD-A before CA and ADHD-A after CA. While it is difficult to distinguish ADHD from dissociative disorder, abused children may have increased apparent ADHD due to dissociative disorder. Clinicians need to treat abused children taking both ADHD and dissociative disorder into consideration, and it might be necessary to revise the diagnostic criteria in the future. Further studies should explore distinct biological differences between ADHD before CA and ADHD after CA and how to treat ADHD comorbid dissociative disorder.

REFERENCES


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Brief communication

Trauma-related predictors of deontic reasoning: A pilot study in a community sample of children

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Reasoning
Wason Selection Task

A B S T R A C T

Objective: Deontic reasoning (i.e., reasoning about duties and obligations) is essential to navigating interpersonal relationships. Though previous research demonstrates links between deontic reasoning abilities and trauma-related factors (i.e., dissociation, exposure to multiple victimizations) in adults, studies have yet to examine deontic reasoning abilities in children exposed to trauma. Given that social and safety rules (exemplars of deontic reasoning rules) may appear arbitrary for children in the face of trauma exposure, particularly interpersonal violence perpetrated by adults (i.e., caregivers, close relatives), we predicted that the ability to detect violations of these rules would vary as a function of trauma exposure type (no, non-interpersonal, and interpersonal). Additionally, given previous research linking dissociation and deontic reasoning in adults, we predicted that higher levels of dissociation would be associated with more errors in deontic problems.

Methods: Children exposed to interpersonal violence (e.g., sexual abuse by an adult family member, witnessing domestic violence, or physical abuse in the home) were compared to children exposed to non-interpersonal trauma (e.g., motor vehicle accident, natural disaster) or no trauma on their ability to detect violations of deontic and descriptive rules in a Wason Selection Task and assessed for their level of dissociative symptoms.

Results: Dissociation (but not trauma exposure type) predicted errors in deontic (but not descriptive) reasoning problems after controlling for estimated IQ, socio-economic status, and children’s ages.

Conclusions: The current study provides preliminary evidence that deontic reasoning is associated with dissociation in children. This pilot study points to the need for future research on trauma-related predictors of deontic reasoning.

Practice implications: Deontic rules are essential to navigating interpersonal relationships; errors detecting violations of deontic rules have been associated with multiple victimizations in adulthood. Future research on violence exposure, dissociation, and deontic reasoning in children may have important implications for intervention and prevention around interpersonal functioning and later interpersonal risk.

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Introduction

Deontic reasoning involves reasoning about “what one may, ought, or may not do in a given set of circumstances” (Cummins, 1996a, p. 161), whereas descriptive reasoning involves reasoning about descriptions of some aspect of the world (Ermer, Guerin, Cosmides, Tooby, & Miller, 2006). For example, a deontic rule states, “If it is cold outside, then you must wear...
a coat.” A descriptive rule, on the other hand, states “If you play soccer, then you take the red water bottle.” Typically developing children and adults are more likely to detect violations of deontic rules compared to descriptive rules (e.g., Cosmides, 1989; Cosmides & Tooby, 1992, 1997; Ermer et al., 2006; Klaczynski, 1993; Light, Blaye, Gilly, & Girotto, 1989), even as young as 3–4 years of age (Cummins, 1996b; Núñez & Harris, 1998).

Deontic reasoning is critical to navigating social relationships and institutions (Cummins, 1996b). Impoverished deontic reasoning abilities are likely to place individuals at high risk for being taken advantage of in relationships or failing to protect against harm (Stone, Cosmides, Tooby, Kroll, & Knight, 2002). Thus, deontic reasoning performance may be particularly relevant to the deleterious interpersonal consequences associated with child victimization, such as peer victimization in childhood (e.g., Shields & Cicchetti, 2001; Schwartz, Dodge, Pettit, & Bates, 1997; Schwartz, Dodge, Pettit, & Bates, 2000) and physical and/or sexual revictimization in adolescence and young adulthood (for review, see Arata, 2002).

To date, we are aware of only one study that has examined deontic reasoning and trauma-related factors. DePrince (2005) reported that young adults who reported histories of victimizations both before and after age 18 made significantly more errors detecting violations of deontic rules (both social contract – rules involving a social exchange; and precautionary – rules involving safety) than their peers; the groups did not differ in descriptive reasoning. Importantly, pathological dissociation explained unique variance in deontic reasoning performance after controlling for other trauma-related factors (DePrince, 2005). Dissociation is associated with a host of information processing difficulties (e.g., memory problems; see Putnam, 1997), including disruptions in working memory and processing speed (DePrince & Weinzierl, 2006). Working memory and processing speed have, in turn, been implicated in deontic reasoning (Klaczynski, Schuneman, & Daniel, 2004). In the current study, we evaluated whether dissociation was linked with deontic (and not descriptive) reasoning errors in school-aged children. Specifically, we predicted that higher levels of dissociation would be associated with more errors in deontic (but not descriptive) reasoning problems.

In addition to dissociation, we also examined trauma exposure history in relation to deontic reasoning. While DePrince (2005) argued that poorer deontic reasoning may increase risk of multiple victimizations in young adulthood, certain types of trauma exposure in childhood may be associated with deficits in deontic reasoning. To the extent that traumatic events generally challenge fundamental assumptions regarding predictability, safety, and trust (e.g., Janoff-Bulman, 1992), deontic rules may seem arbitrary and unreliable to children who grow up in environments that include exposure to potentially traumatizing events. Therefore, trauma-exposed children may generally show problems detecting violations of safety and social relationship rules. Thus, we predicted that any trauma exposure (non-interpersonal or interpersonal) would be associated with worse deontic performance than no exposure.

To further qualify this prediction, we also hypothesized that interpersonal trauma exposure would be associated with worse deontic performance than non-interpersonal trauma exposure. In the face of interpersonal violence, deontic rules about safety and social exchange may seem particularly arbitrary and, therefore, be associated with worse performance. Indeed, Freyd (1996) has argued that the close nature of victim–perpetrator relationships (e.g., in familial violence) may decrease children’s motivation to develop accurate reasoning about social relationships because the abusive caregiving relationship violates a fundamental social contract. In addition, violent family environments, in particular, may fail to provide the structure or social learning environment required to develop these reasoning abilities. Thus, we predicted that interpersonal trauma exposure would be associated with poorer deontic (but not descriptive) than non-interpersonal trauma exposure, which would be associated with worse performance than no trauma exposure.

Current study

The current study provides the first examination of trauma-related predictors of children’s deontic reasoning performance. Drawing on theory (e.g., Janoff-Bulman, 1992; Freyd, 1996) and previous research (DePrince, 2005), we tested the contributions of trauma exposure type and dissociation to deontic reasoning performance in school-aged children. A priori contrast weights for trauma exposure groups that corresponded to the predicted pattern of means were assigned (weights: interpersonal trauma = 1, non-interpersonal trauma = 0, no trauma = −1). The use of planned contrast weights is justified given a priori predictions (Loftus, 1996; Furr, 2004) and minimizes Type II errors that would be associated with post hoc comparisons between multiple groups in a small pilot sample.

Method

Participants

Prior to data collection, all procedures were approved by the University of Denver Institutional Review Board. Participants were recruited in the Denver, Colorado, metro area through flyers in social service and mental health agencies, community centers, and local businesses as part of a larger study on parenting and stress that involved additional lab tasks not reported here. Female guardians and their school-aged children were paid for their participation; children received several small prizes throughout the testing session. All participants completed an extensive informed consent process. Of the 72 children who participated in the larger study, we report here on the 63 children for whom we had complete reasoning data. Of these 63 children (Age M = 8.89; S.D. = 1.36), 43 were female. Five female guardians did
Table 1
Descriptive statistics for variables used in hierarchical regression analyses

<table>
<thead>
<tr>
<th>Predictors</th>
<th>No trauma(^a) (n = 22)</th>
<th>Non-interpersonal trauma(^b) (n = 14)</th>
<th>Interpersonal trauma(^a) (n = 27)</th>
<th>Differences between groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
<td>Predictors</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IQ estimate</td>
<td>106.09</td>
<td>17.78</td>
<td>99.36</td>
<td>14.27</td>
</tr>
<tr>
<td>Child age</td>
<td>8.82</td>
<td>1.22</td>
<td>8.79</td>
<td>1.37</td>
</tr>
<tr>
<td>SES composite</td>
<td>0.07</td>
<td>0.89</td>
<td>0.16</td>
<td>0.71</td>
</tr>
<tr>
<td>Dissociation</td>
<td>0.18</td>
<td>0.17</td>
<td>0.21</td>
<td>0.14</td>
</tr>
<tr>
<td>Outcomes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Descriptive errors</td>
<td>range 0–12</td>
<td>5.14</td>
<td>1.78</td>
<td>6.21</td>
</tr>
<tr>
<td>Deontic errors</td>
<td>range 0–24</td>
<td>4.55</td>
<td>3.88</td>
<td>6.14</td>
</tr>
</tbody>
</table>

Note: Letters indicate differences between groups revealed by Tukey’s Honest Significant Difference (HSD) test (\(p < .05\)).

not provide racial/ethnic information about their children; the remaining children were reported to be of the following racial and ethnic backgrounds: 40% Euro-American, 19% African-American, 19% Hispanic/Latino, 3% Native Hawaiian/Pacific Islander, and 11% other race or bi/multiracial. Mothers reported the following income levels: 33.3% below $10,000; 14.3% $10,000–20,000; 14.3% $20,001–30,000; 7.9% $30,001–40,000; 7.9% $40,001–50,000; and 22.2% above $50,000. An SES composite score was created by transforming the following variables to \(z\)-scores and calculating the average: income (ranging from 1 = $10,000 or below to 6 = $50,000 or above), maternal occupational status (Hollingshead, 1975), and maternal years of education (see Table 1). The SES composite did not differ across the trauma exposure groups (\(F(2, 60) = .82, p = .44\)).

Materials

Replicating methods from previous studies of deontic reasoning (e.g., Cosmides & Tooby, 1992, 1997; Stone et al., 2002; Núñez & Harris, 1998), participants were presented with a series of conditional (if \(p\), then \(q\)) rules using the Wason Selection Task (WST). Consistent with WST methods previously used with children (Núñez & Harris, 1998), response sets developed for this study included four cards with pictorial representations of \(p\), not-\(p\), \(q\), and not-\(q\) options. Children were instructed to pick which cards must be turned over to check if anyone was breaking the 'if \(p\)-then \(q\)' rule (see Section “Procedure” for additional task administration details). For each rule, a child could make up to four errors (two commission and two omission). Deontic rules included three social contract and three precautionary rules. As detailed by Ermer et al. (2006), social contract rules took the form “If you [take the benefit \(P\)], then you must [satisfy the requirement \(Q\)]. For example, “If you go outside to play, then you must have a clean room.” Precautionary rules took the form “If you [engage in the hazardous activity \(P\)], then you must [take the precaution \(Q\)]. For example, “If it is cold outside, then you must wear a coat.” Descriptive rules took the form “If you are [in category \(P\)], then you [have the preference, habit or trait \(Q\)]. For example, “If you are reading a book, then you sit in a green chair.” Total errors for the six deontic (possible range: 0–24) and three descriptive (possible range: 0–12) rules were tallied.

In order to help rule out the possibility that any differences in WST performance were due to overall intelligence, children also completed the Block Design and Vocabulary scales of the Wechsler Intelligence Scales for Children (WISC; either 3rd or 4th edition; Wechsler, 1991a, 2003a). Full Scale IQ was estimated from scaled scores (Wechsler, 1991b, 2003b) and used as a covariate in regression models.

Guardians reported on children’s trauma history using behaviourally defined questions from the UCLA PTSD Index (Pynoos, Rodriguez, Steinberg, Stuber, & Frederick, 1998). The measure has been shown to have good test–retest reliability and internal consistency (e.g., Roussos et al., 2005) as well as validity (e.g., correspondence with well-established PTSD interviews; Rodriguez, Steinberg, Saltzman, & Pynoos, 2001). While this measure also assesses PTSD symptoms, we only used the reports of the child’s trauma exposure here. Dissociation was assessed using the Child Dissociative Checklist (CDC; Putnam, 1997), a 20-item guardian-report measure that assesses multiple types of observable, dissociative behaviors. The CDC has been shown to have good test–retest reliability and internal consistency, as well as discriminant validity in distinguishing children with and without pathological levels of dissociation (for review see Putnam, 1997). Internal consistency was excellent in this sample (Cronbach’s alpha = 0.89).

Procedure

After the consent process, mothers were seated in a private room and asked to complete questionnaires. Children were tested by a graduate research assistant in a separate, private room. WISC scales were administered first, followed by the WST. WST rules were read out loud to children, who were asked to make responses using pictures; this procedure has been used successfully by other researchers with young children (e.g., Núñez & Harris, 1998). Children were asked to play a detective game in which they had to decide when rules might be broken. The experimenter told chil-
dren that they would hear a rule and see four cards with information on only one side. Using these cards, children were asked to decide when the rule might be broken and an investigation should be started. Children were instructed to pick (by pointing at pictures) only those cards to investigate that were the most important. Children did not receive accuracy feedback, as such feedback could have guided performance on the test rules (e.g., children would know that there were always two correct responses). After three sample rules to familiarize children with the task, test rules were presented in random order for each participant. Upon completion of the study tasks, child and adult participants were debriefed.

Results

Table 1 provides descriptive statistics for study variables by trauma-exposure group, as well as differences between the groups. Notably, neither predictor nor outcome variables differed as a function of gender; therefore gender is not included in the reported analyses.

WST psychometrics

Cronbach’s alphas were calculated for errors on the six deontic rules; internal consistency was excellent (alpha = .82). Task validity was assessed by comparing deontic and descriptive performance. Convergent with previous findings using the WST, children made significantly more errors (as a proportion of errors possible) on descriptive than deontic rules [t(62) = 9.41, p < .001]; the effect size was large (Cohen’s d = 1.35).

Predictors of WST performance

Using hierarchical multiple regression analyses, we tested models predicting both descriptive and deontic errors. Correlations among predictor variables for the hierarchical regressions are reported in Table 2. Child age, IQ estimate, and SES composite were entered on the first step; trauma exposure status and dissociation scores were entered on the second step. The model predicting descriptive errors failed to reach significance at either the first (F(3, 59) = 2.13, p = .11) or second (F(5, 57) = 1.63, p = .17) step.

The model predicting deontic errors was significant at Step 1 (F(3, 59) = 2.97, p < .05; R² = .13). The change in R² was significant (F-change(2, 57) = 3.95, p < .05) at Step 2, with the full model reaching significance (F(5, 57) = 3.54, p < .01; R² = .24). As seen in Table 3, only dissociation scores explained unique variance in deontic errors, though estimated IQ approached conventional significance levels.

Discussion

This pilot study is the first to examine trauma-related predictors of deontic reasoning in children. Dissociation explained unique variance in deontic errors (beta = .35), even after controlling for estimated IQ, socio-economic status, and child age. This finding contributes to the larger literature on dissociation and disruptions in information processing, replicating a recent finding with young adults. Specifically, DePrince (2005) reported that dissociation predicted unique variance in deontic (e.g., beta = .30), but not descriptive reasoning errors. Thus, in both children and young adults, dissociation is associated with a specific type of reasoning error, but not global reasoning deficits (as illustrated by the lack of relationship to descriptive reasoning errors). As working memory and processing speed are implicated in both dissociation (e.g., DePrince & Weinzierl, 2006) and deontic reasoning (e.g., Klaczynski et al., 2004), future research should evaluate whether links between dissociation and deontic reasoning are mediated by deficits in working memory and/or processing speed.

Because of the importance of deontic reasoning to social relationships, the dissociation–deontic reasoning findings reported here may have implications for understanding some of the interpersonal correlates of dissociation, including revictimization. Several researchers have reported associations between dissociation and revictimization (see Classen, Palesh, & Aggarwal, 2005); however, the mechanisms by which dissociation might mediate later victimization have been unclear. In the current study, dissociation is associated with more errors in deontic reasoning fairly early in child development. By
Table 3
Regression coefficients for hierarchical regression model predicting deontic errors

<table>
<thead>
<tr>
<th>Step</th>
<th>Beta</th>
<th>S.E. (B)</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimated IQ</td>
<td>-0.28</td>
<td>0.04</td>
<td>-2.09*</td>
</tr>
<tr>
<td>SES composite</td>
<td>-0.14</td>
<td>0.73</td>
<td>-1.07</td>
</tr>
<tr>
<td>Child age</td>
<td>-0.06</td>
<td>0.40</td>
<td>-0.50</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimated IQ</td>
<td>-0.24</td>
<td>0.04</td>
<td>-1.74</td>
</tr>
<tr>
<td>SES composite</td>
<td>-0.20</td>
<td>0.71</td>
<td>-1.19</td>
</tr>
<tr>
<td>Child age</td>
<td>-0.14</td>
<td>0.40</td>
<td>-0.80</td>
</tr>
<tr>
<td>Trauma exposure group</td>
<td>-0.05</td>
<td>0.66</td>
<td>-0.35</td>
</tr>
<tr>
<td>Dissociation</td>
<td>0.35</td>
<td>1.95</td>
<td>2.75**</td>
</tr>
</tbody>
</table>

*p < .10.
*p < .05.
**p < .01.

In young adulthood, participants reporting experiences of revictimization both make more errors in deontic reasoning problems; and report higher levels of dissociation (DePrince, 2005). Therefore, future longitudinal research should test whether disruptions in deontic reasoning early in development might mediate links between dissociation and later victimization risk.

In contrast to our prediction, trauma-exposure was not associated with deontic reasoning errors. It may indeed be the case that these variables are simply unrelated; however, several methodological issues should be taken into account in future research. First, given that we used a screener (rather than interview) for trauma exposure, we had relatively limited information about the details of the trauma exposure. Nineteen of the 27 children in the interpersonal trauma group were reported to have been exposed to violence in the family environment (e.g., sexual abuse by an adult family member, witnessing domestic violence, or physical abuse in the home); the remaining 8 were exposed to interpersonal violence in their communities or sexual abuse by an adult whose relationship to the child was not specified. Among those exposed to violence in the family, the degree of closeness with the perpetrator may have varied greatly. It may be that trauma exposure is associated with deontic reasoning disruptions in cases of close-other abuse; and not in more general cases of interpersonal violence (e.g., see Freyd, 1996). We were unable to examine this closely in the current data.

Second, we relied on parent-report of trauma exposure. Parents may have failed to report fully on interpersonal violence exposure because of social desirability, fears of consequences of reporting, or lack of knowledge about such events. Thus, some children may have been mis-categorized in terms of the trauma exposure group. As noted by one anonymous reviewer of this manuscript, in the case of under-reporting of familial violence, dissociation may actually be a better indicator of level of trauma than the form of trauma reported by parents. Thus, extending this research to samples with confirmed abuse or where children also report on trauma-exposure will be important.

Interpretation of these findings must be cautious for many reasons. Small sample size, low power, and potential self-selection biases inherent in community-based recruiting create challenges in generalizing these findings to other groups, therefore requiring replication in other samples. Further, participants in this sample reported low income levels, suggesting further research is needed to evaluate how findings generalize to other socio-economic groups. As noted previously, the current study depended on guardian-reported trauma history and child symptoms. Given various pressures (e.g., social desirability), some guardians may have failed to accurately report on their children’s trauma histories or symptoms, thus adding error variance. Finally, the questionnaire used to assess trauma exposure did not allow us to examine contextual factors, such as age of onset or frequency of exposure to potentially traumatic events that may be important contributors to deontic reasoning abilities.

In summary, these findings contribute to the growing literature on information processing alterations associated with maltreatment (e.g., Pollak, Cicchetti, Hornung, & Reed, 2000) and dissociation (e.g., Cromer, Stevens, DePrince, & Pears, 2006; DePrince & Weinzierl, 2006).
Given the importance of deontic reasoning to navigating the social world and the serious interpersonal consequences associated with child maltreatment, future research of reasoning abilities in relation to trauma exposure and trauma-related symptoms is warranted.

Acknowledgements

We wish to acknowledge Drs. Megan Saylor and Jackie Rea for project assistance; community agencies for assistance with recruitment; Drs. Daniel McIntosh, Kathy Becker-Blease, Jennifer J. Freyd, and anonymous reviewers for helpful comments on earlier versions of this manuscript.
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Abstract

Melody D. Combs, MA
Kristin M. Wenzlera, MS
Anne P. Defrance, PhD

Sample of Children

and Trauma Exposure in a Community

Stoop Performance: Dissociation.

This project was funded by the University of Denver, PROW V. 9(2) 2008

The authors would like to thank Ann Cuen, Reemna Rashid, Jackie, Tonya, and Dr. Will Kline-Smith. Finally, Alia, a psychologist, and Mandy J. (mellie. adesimples.com), were mentioned.
The development of dissociation is a function of emotional demands in the brain. The development of dissociation and the development of emotional development are closely related. Dissociative symptoms are a consequence of maladaptive dissociation-induced brain function a significant degree of dissociation during stress. The broader measures across development into adulthood of the risk of trauma, including the development of emotional demands in the brain, are a consequence of maladaptive dissociation-induced brain function. Dissociative symptoms are a consequence of maladaptive dissociation-induced brain function, which are in turn associated with deficient structural processing (e.g., a lack of structural processing due to dissociation-induced brain function). Dissociative symptoms are associated with deficient structural processing, which is in turn associated with deficient structural processing (e.g., a lack of structural processing due to dissociation-induced brain function). Dissociative symptoms are associated with deficient structural processing, which is in turn associated with deficient structural processing (e.g., a lack of structural processing due to dissociation-induced brain function).

Executive function performance (in this case, interference control) as a post-

**KEYWORDS**
Dissociation, Attention, Executive function, Jellybean, Difficulties
Materials

The Stroop task consisted of two separate blocks: selective attention and divided attention. The procedures associated with these blocks are described in further detail below. The selective attention block consisted of 20 incongruent trials (10 per block) in a word format, and the divided attention block consisted of 20 congruent trials (10 per block) in the following words: coffee, heat, certain, farmer, and bell. The word color was red, green, or blue, and the word color was yellow, red, or green.

METHOD

Participants

A total of 114 children aged 9 to 12 and their guardians were recruited for a two-session study through flyers advertising the “Children’s Attention Research Project.” Flyers were distributed at school, parks, community centers, and local businesses in a large western city in the United States. The children were randomly assigned to two conditions: stress (n = 57) or control (n = 57). Stressful events were measured using the Children’s Attention Rating Scale (CARS). The CARS measures the frequency and severity of stressful events in children’s lives.

RESULTS

The results showed that the stress group had significantly lower scores on the CARS compared to the control group. This indicates that the children in the stress group experienced less stress than those in the control group. The children in the stress group also had significantly higher scores on the selective attention block than the children in the control group. This suggests that the stress group had better selective attention skills than the control group.

DISCUSSION

The findings of this study suggest that stressful events in children’s lives can affect their attentional abilities. Children who experience more stressful events may have difficulty focusing on specific tasks. The results also suggest that stress can improve selective attention skills in children. Further research is needed to understand the mechanisms behind these effects and to develop interventions to help children who are experiencing stress.
RESULTS

Survey Measures

The average responses to each question are presented in the following table. Children were asked to rate their agreement on a 7-point scale, with 1 being strongly disagree and 7 being strongly agree. The average response was 4.6, indicating a moderate level of agreement.

<table>
<thead>
<tr>
<th>Question</th>
<th>Mean Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I like to play outside.</td>
<td>4.6</td>
</tr>
<tr>
<td>2. I enjoy playing with my friends.</td>
<td>4.3</td>
</tr>
<tr>
<td>3. I feel safe at school.</td>
<td>4.5</td>
</tr>
</tbody>
</table>

Procedure

Participants were randomly assigned to either the intervention or control group. The intervention group received weekly sessions of mindfulness training for 8 weeks, while the control group engaged in standard therapy. The effectiveness of the intervention was evaluated using pre- and post-test measures.

Children's Mindfulness Scale

The Children's Mindfulness Scale (CMS) is a 10-item self-report measure that assesses children's ability to focus on the present moment and let go of distractions. A score of 35 or higher indicates a high level of mindfulness.

Mindful Attention to Emotions (MAE) Scale

The MAE Scale measures children's ability to regulate their emotions. Scores range from 0 to 10, with higher scores indicating better emotion regulation.

Follow-up interviews were conducted 3 months after the intervention to assess long-term changes in mindfulness and emotion regulation.
TABLE 2. Correlations (N = 97) between parent- and child-reported dissociation and interference scores.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Dissociation</th>
<th>Interference</th>
<th>Total Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child's Report</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
</tr>
<tr>
<td>Parent's Report</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
</tr>
<tr>
<td>Total Score</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
</tr>
</tbody>
</table>

TABLE 3. Mean (SD) reaction time by condition and trauma exposure.

<table>
<thead>
<tr>
<th>Group</th>
<th>No Trauma</th>
<th>Comorbid Trauma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Divided-Attention</td>
<td>79.2 (16.9)</td>
<td>79.2 (17.1)</td>
</tr>
<tr>
<td>Divided-Nontrauma</td>
<td>80.3 (17.1)</td>
<td>80.3 (17.2)</td>
</tr>
<tr>
<td>Selective-Attention</td>
<td>78.5 (14.2)</td>
<td>78.5 (14.3)</td>
</tr>
<tr>
<td>Selective-Nontrauma</td>
<td>77.4 (14.4)</td>
<td>77.4 (14.5)</td>
</tr>
</tbody>
</table>

Recovery time (ms) for the second key press (b) reaction time for each child was calculated from the mean reaction time for words by divided and selective attention conditions. The eight divided and selective attention conditions were divided into two groups based on the number of words in the divided and selective attention conditions.

**Dissociation and Interference**
Discussion

Several results have aided the discriminative ability of several models. In a recent study, the discriminative power of several models was compared with traditional discriminative models, and it was found that the discriminative power of the new models was significantly higher. This suggests that the new models are more effective in distinguishing between different classes.

In conclusion, the discriminative ability of several models has been shown to be significantly improved by the addition of new features and techniques. Further research is needed to explore the potential of these models in a variety of applications.
Factor for underperformance in computer performance are seen opportunities to test whether differences in computer performance are risk due to factors that might influence the ability to perform tasks. However, some factors such as the number of tasks performed simultaneously by the computer or the time it takes to perform a task, may influence computer performance. In addition, computer performance is also influenced by the computer's ability to handle large amounts of data. Consequently, improving computer performance requires a multidisciplinary approach that considers both hardware and software aspects. One factor that can significantly affect computer performance is the software used. Different software versions may have different performance characteristics, and it is essential to choose the most appropriate software for the task at hand. Furthermore, the computer's hardware configuration can also impact performance. For instance, a computer with a faster processor or more powerful graphics card may perform tasks more efficiently. Therefore, it is crucial to optimize both hardware and software aspects to achieve optimal computer performance. 

Clinical Implications and Future Directions

Preparation, Wyne, and Camps

Journal of Trauma & Dissociation

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Chicago Style: Author, Last Name. "Title of Work." Journal Title, Volume: Page Numbers, Month Year. DOI or URL (if online).

NOTES

JOURNAL OF TRAUMA & DISCRIPITATION
ABSTRACT

Marjorie Taylor, PhD
Donna Thurnegre, MS
Stephanie M. Carson, PhD

Links Between Dissociation of Preschool Children and Role Play in a Nonclinical Sample
To understand the child's behavior, it is essential to recognize that the child's experiences and emotional responses are influenced by their environment. This is particularly true for children with dissociative disorders, who often present with symptoms that are difficult to interpret in a traditional clinical setting.

Dissociation, as defined by H. (1989), is a process where the mind separates from the body, allowing the individual to temporarily detach from their immediate surroundings. This can occur in response to traumatic events or as a coping mechanism to manage overwhelming emotions.

KEYWORDS: Role play, memory, dissociation.
METHOD

Participants

Despite the challenges of childhood, CDC would be completed with these measures of everyday childhood.

Participants 173 children were selected for their participation in this study. They were divided into four groups: a control group, a trauma group, a dissociation group, and a control group with dissociation. The control group was comprised of children who had not experienced trauma or dissociation. The trauma group was comprised of children who had experienced trauma but did not show signs of dissociation. The dissociation group was comprised of children who had experienced trauma and also showed signs of dissociation. The control group with dissociation was comprised of children who had not experienced trauma but showed signs of dissociation.

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The study was to assess the individual differences in perception and reception of music by preschool children. The children were exposed to a variety of musical stimuli, including songs, instrumental music, and rhythm. The results showed that the children's responses varied widely, with some children showing a strong preference for certain types of music and others showing less interest. The study also examined the effects of music therapy on children with autism spectrum disorder. The findings indicated that music therapy can improve communication skills and social interaction in these children. The implications of these findings suggest that music therapy should be considered as a valuable tool in the treatment of autism spectrum disorder.
Table 1. Average endorsement of pairs of items in the child dissociative

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item Content</th>
<th>Mean Score (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cognitive flexibility</td>
<td>12 (3.8)</td>
</tr>
<tr>
<td>2</td>
<td>Unexpected events</td>
<td>7.5 (2.5)</td>
</tr>
<tr>
<td>3</td>
<td>Difficulty understanding</td>
<td>6.7 (3.4)</td>
</tr>
<tr>
<td>4</td>
<td>Integration of experiences</td>
<td>6.0 (3.6)</td>
</tr>
<tr>
<td>5</td>
<td>Memory for events</td>
<td>5.0 (3.8)</td>
</tr>
<tr>
<td>6</td>
<td>Memory for personal events</td>
<td>4.5 (3.2)</td>
</tr>
<tr>
<td>7</td>
<td>Memory for personal experiences</td>
<td>4.0 (3.1)</td>
</tr>
<tr>
<td>8</td>
<td>Memory for personal experiences</td>
<td>3.5 (3.0)</td>
</tr>
<tr>
<td>9</td>
<td>Memory for personal experiences</td>
<td>3.0 (2.9)</td>
</tr>
<tr>
<td>10</td>
<td>Memory for personal experiences</td>
<td>2.5 (2.8)</td>
</tr>
</tbody>
</table>

The table above shows the average endorsement of pairs of items in the child dissociative, with the mean score and standard deviation provided.
The number of problems children were able to correctly answer was correlated with their performance on the cognitive flexibility task. Children who were able to solve more problems on the flexibility task also solved more problems on the Stroop task. The Stroop task measures attention and inhibitory control, suggesting that children who have difficulty with cognitive flexibility may also struggle with these other executive functions. These findings highlight the importance of assessing multiple aspects of executive function in children with learning disabilities.
Role Play

In my role as the facilitator of the class, I observed the children's interactions during the dream activity. The children were engaged, discussing and sharing their experiences.

Table 2. Examples of children's dreams.

<table>
<thead>
<tr>
<th>TABLE 2. EXAMPLES OF CHILDREN'S DREAMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>JOURNAL OF TRAUMA &amp; ASSOCIATION</td>
</tr>
<tr>
<td>----------------------------------------</td>
</tr>
<tr>
<td>160</td>
</tr>
</tbody>
</table>

(Continued on next page...)
DISCUSSION

The children with higher CD scores had more problems with behavior and social interaction. The children who scored higher on the CD scale also had more difficulty in social situations, which may indicate a lack of empathy and understanding of others. These findings suggest that children who score higher on the CD scale may have a more difficult time forming relationships and may struggle with emotional regulation.

TABLE 3. Mean child dissociative Checklist (CD) scores (Total) and scores minus imagery

<table>
<thead>
<tr>
<th>Group</th>
<th>CD</th>
<th>Mean Score</th>
<th>T-Value</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>70.5</td>
<td>90.4</td>
<td>-2.66</td>
<td>0.01</td>
</tr>
<tr>
<td>Ready</td>
<td>70.5</td>
<td>90.4</td>
<td>-2.66</td>
<td>0.01</td>
</tr>
<tr>
<td>Prepared</td>
<td>70.5</td>
<td>90.4</td>
<td>-2.66</td>
<td>0.01</td>
</tr>
<tr>
<td>Oriented</td>
<td>70.5</td>
<td>90.4</td>
<td>-2.66</td>
<td>0.01</td>
</tr>
<tr>
<td>Oriented and Ready</td>
<td>70.5</td>
<td>90.4</td>
<td>-2.66</td>
<td>0.01</td>
</tr>
</tbody>
</table>

The CD is effective in assessing a range of challenges that are associated with dissociation and depression, and can be used to measure progress over time.

Conclusion

In conclusion, the CD is a valuable tool for assessing the level of dissociation and depression in children. The CD can help identify children who may be at risk for developing these conditions, and can be used to monitor progress over time. The findings suggest that the CD is a reliable and effective tool for assessing the level of dissociation and depression in children.
The Development of Disassociation and Developmental Differences, and the Relation Between the Two

In the following sections, we discuss the relation between disassociation and developmental differences, and the relation between the two. We present evidence that the two are related, and that the disassociation is a result of the developmental differences. The evidence comes from a study of children with developmental differences, and children without such differences. We find that the children with developmental differences show higher scores on the disassociation scale than the children without such differences. This suggests that the disassociation is a result of the developmental differences, and that the two are related.

In our study, we compared children with and without developmental differences. We found that the children with developmental differences showed higher scores on the disassociation scale than the children without such differences. This suggests that the disassociation is a result of the developmental differences, and that the two are related.

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The Relation Between Disclosure, Exposure, and Trauma

Exposure to trauma can lead to a variety of psychological effects, including increased risk of dissociation. The relationship between these factors is complex and requires further investigation.

Disclosure, on the other hand, refers to the act of sharing information about traumatic experiences. The impact of disclosure on trauma symptoms has been a subject of much debate.

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REFERENCES


Children's expressed emotions when disclosing maltreatment

Liat Sayfan, Emilie B. Mitchell, Gail S. Goodman, Mitchell L. Eisen, Jianjian Qin

Objective: Our goal was to examine children's expressed emotions when they disclose maltreatment. Little scientific research exists on this topic, and yet children's emotional expressions at disclosure may inform psychological theory and play a crucial role in legal determinations.

Method: One hundred and twenty-four videotaped forensic interviews were coded for children's emotional displays. In addition, children's trauma-related symptoms (depression, dissociation, and PTSD) and global adaptive functioning were assessed, and abuse type and frequency were documented.

Results: Most children in the sample evinced neutral emotion during disclosure. However, stronger negative reactions were linked to indices of psychopathology. Number of abuse experiences was inversely related to negative emotional displays.

Conclusion: Fact finders may profit from knowing that maltreated children do not necessarily cry or display strong emotion when disclosing maltreatment experiences. Nevertheless, predictors of greater negative affect at disclosure can be identified: fewer abuse experiences; higher global adaptive functioning; and for sexually abused children, greater dissociative tendencies.

Practice implications: Although further research is needed, practitioners should consider that children who disclose abuse may display relatively neutral affect despite having experienced maltreatment.

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Introduction

“She was extremely timid, and I think there’s no way she’d put herself through this if she were lying. Became visibly upset when she began recalling molestation incidents; I think that she really didn’t want to be there, but was, to testify” (Myers, Goodman, Redlich, & Prizmich, 1999, p. 418). This quotation from a juror in a child sexual abuse trial attests to the importance of children’s affect when disclosing abuse. It suggests that individuals have certain expectations about how children “should” react if they were really abused.

The victim just referred to evinced negative emotions (anxiety, sadness, upset) expected of abuse victims (Regan & Baker, 1998). However, the one extant published study conducted in a forensic setting that concerned observed emotions in children as they disclosed abuse found that the majority of children were more likely to display relaxed or neutral behaviors than
shame, sadness, or anger (Wood, Orsak, Murphy, & Cross, 1996). Is it possible that although most individuals believe that children should be upset when disclosing abuse, children are in fact more likely to seem relaxed or neutral? Can we identify factors that predict children’s emotional expressions during disclosure of abuse?

The current study concerned children’s emotional expressions during forensic interviews of suspected child maltreatment victims. Although emotional displays may or may not reflect actual emotional experience or feelings, emotional displays are of substantial interest in their own right (Ekman & Friesen, 1975), perhaps especially in the forensic context (Kaufman, Drevland, Wessel, Oversleid, & Magnussen, 2002; Kouvera, Gresham, Borgida, Gray, & Regan, 1997). In the following sections, to generate hypotheses for our study, we consider expression of emotions, particularly negative ones, in relation to child maltreatment, age, and gender. We also address trauma-related psychopathology and abuse characteristics (e.g., frequency of maltreatment) as they may relate to negative emotions children express at disclosure. We then describe our study and its results.

Expression of negative emotions in maltreated children

It has been suggested that maltreated children learn that expression of negative emotions, like anger or distress, is unacceptable in certain contexts and could cause harm to themselves or family members (Briere, 1992; Cole, Zahn-Waxler, & Smith, 1994). Such children may employ strategies for managing negative emotions, such as hiding their emotional states from others in situations potentially related to abuse. During forensic interviews, this suppression of negative emotional display may contribute to stunted or neutral affect when children are discussing their abuse incidents with interviewers. This possibility is congruent with studies showing that maltreated children are likely to be dissuaded from expressing their feelings openly within the family and that they often use coping strategies to reduce emotional awareness (Briere, 1992; Cole et al., 1994; Harter, 1998), both of which may result in a neutral emotional display.

Age and gender differences in emotion expression

The ability to use strategies to hide negative emotions is also a function of children’s age and gender. Preschoolers, compared to school-age children, are less able to use efficient strategies to hide their emotions (Harris, 1985; Harris, Olthof, & Meerum Terwogt, 1981; Saarni, 1989). Older children (ages 10–12 years) are more likely to report strategic suppression of their experienced emotions, especially sadness, than are younger children (ages 5–9 years; Fuchs & Thelen, 1988; Weiner & Handel, 1985).

However, older compared to younger children are more likely to understand the ramifications of child abuse allegations and legal investigations, and thus to express more distress. Older children show greater understanding of the legal system than do younger children (Block, Goodman, Oran, & Oran, 2005; Saywitz, 1989; Warren-Leubecker, Tate, Hinton, & Ozbek, 1989) and express more negative feelings about testifying (Goodman et al., 1992; Quas et al., 2005), which suggests that they may evoke greater negative emotion during forensic-interview disclosures as well. Moreover, older children are generally more aware of society norms concerning sexual taboos and proper parental care (e.g., Goldman & Goldman, 1982), awareness that may result in greater distress during a forensic interview. Thus, we expected an age increase in emotional display when children disclose abuse in a legal context.

Gender may also be related to children’s negative affect at disclosure. Boys and girls express emotions differently, with girls exhibiting less anger and more fear and sadness than boys (Belle, 1989; Belle, Burr, & Cooney, 1987; Fuchs & Thelen, 1988; Zeman & Garber, 1996), and boys being more successful at suppressing distress than girls (Alessandri & Lewis, 1996). Thus, we expected a significant gender difference in maltreated children’s expressed distress during disclosure.

Trauma-related symptoms, psychological adjustment, and emotion expression

Child maltreatment is associated with adverse emotional reactions, such as depression, dissociation, and post-traumatic stress disorder (PTSD: Egeland, Sroufe, & Erickson, 1983; Kendall-Tackett, Williams, & Finkelhor, 1993; Putnam, 1997; Toth, Manly, & Cicchetti, 1992; Trickett & McBride-Chang, 1995). Emotional expressivity at disclosure may be affected by such trauma-related symptoms (Bonnano, Noll, Putnam, O’Neill, & Trickett, 2003; Bonnano et al., 2007). Maltreated children often evince symptoms of depression (e.g., Beitchman et al., 1992; Polusny & Follette, 1995), a potentially important predictor of maltreated children’s expressed emotion during disclosure. Burnam et al. (1988) reported that 13% to 22% of abused children met criteria for depression compared to only 4% to 6% of non-abused children. Andrews (1995) demonstrated an association between depression symptoms and feelings of shame in adult female survivors of abuse. Shame is behaviorally manifested by downward head movements and gaze aversion (Bonnano et al., 2002), displays likely to be interpreted as indices of upset.

In addition, dissociation could lead some children to display neutral or stunted emotional affect when discussing abuse. Dissociation is a coping mechanism that enables an individual to deal with extreme stressors by psychologically escaping an otherwise inescapable situation. It is believed that dissociation can become habitual, resulting in psychopathology (Putnam, 2000). Highly dissociative children are at risk of developing chronic feelings of depersonalization and derealization, which may lead these children to appear emotionally stunted during a forensic interview (Bonnano et al., 2003). However, it is also possible that such children will become openly upset when required to articulate their highly stressful experiences.
Post-traumatic stress might also influence children’s expression of emotion. Sufferers of PTSD typically show three types of symptoms: (a) re-experiencing the stressful event through flashbacks, nightmares, and daydreams; (b) avoidance behaviors, such as numbness and avoidance of thoughts and reminders of the trauma; and (c) hyper-arousal including sleep problems, difficulties in concentration, heightened startle responses, and irritability (American Psychiatric Association, 1994). These symptoms may affect children’s emotional expressions during a forensic interview. For example, children who have repeated nightmares and flashbacks might be expected to become particularly distressed when discussing abuse. Putnam (1997) asserts that exposure to trauma-related stimuli (e.g., direct questions about the abuse) can increase the traumatized individual’s susceptibility to re-experiencing abuse-related emotions. Conversely, children who have become emotionally withdrawn and numb as a part of their trauma response might be expected to evince less emotional upset.

It is also important to consider children’s overall psychological adjustment. Recent research suggests that expression of positive emotion when discussing abuse is related to adjustment problems (Bonanno et al., 2007). To the extent that adjustment problems generally and trauma-related psychopathology specifically are correlated, the independent contribution of each should be determined. This was accomplished in the present study by inclusion of a measure of global adaptive functioning.

Child abuse characteristics and emotion expression

Child abuse characteristics, such as type and frequency of abuse, may play important roles in how children display emotion when disclosing abuse. For example, child physical abuse might be associated with greater anger (e.g., Hoffman-Plotkin & Twentyman, 1984), and child sexual abuse with greater shame (e.g., Bonanno et al., 2002). When adult females with histories of sexual abuse were asked to report how they felt emotionally during the sexual activities, victims’ reactions fell into three categories: Guilt/Fear, Anger/Disgust, and Positive. Individuals in the Guilt/Fear group reported feeling guilty, afraid, ashamed, anxious, detached, and numb, and those in the Anger/Disgust category reported being angry, disgusted, and curious. Individuals in the positive emotion category reported feeling, for example, interested, special, important, and enjoyment (e.g., of the physical sensations). Of particular note was the finding that individuals in the Guilt/Fear group were more likely to be involved in repeated abuse incidences. That is, the children who were abused repeatedly (e.g., by a family member) were especially likely to report feeling ashamed, detached, and numb (Long & Jackson, 1993; see also Bonanno et al., 2002). In regard to the current study, such research might indicate that in a forensic interview, children who have been repeatedly abused might display stunted affect when disclosing abuse.

Overview

The present study focused on predictors of maltreated children’s affect when they discussed incidents of abuse. Videotaped forensic interviews of abused children were coded, and indices of demographic information, abuse characteristics, and psychological functioning served as predictors.

Based on prior research (Wood et al., 1996), it was expected that the majority of maltreated children in our sample would evince neutral affect during disclosure. We considered neutral affect as an indifferent, flat, or calm expression, one that cannot be identified as expressing obvious negative affect (e.g., sadness, irritation, or anger) or positive affect (e.g., joy, happiness). Predictors of differences in children’s emotional expressivity were also hypothesized. Specifically, older compared to younger children were expected to express greater emotional upset when they disclosed abuse. Males were expected to display less emotion than females. Further, greater depression was expected to predict more negative affect expression. We also tested the opposing hypothesis that children with more symptoms of dissociation would display less emotional expressivity versus the hypothesis that children with more symptoms of dissociation would display more emotional expressivity. We examined similar contrasting hypotheses for symptoms of PTSD. Finally, we expected that children who were repeatedly abused (measured by number of prior reported allegations) would express less upset during disclosure.

Method

Participants

The 124 children, ranging from 3- to 16-years-old ($M = 8.54, SD = 3.47$), were those who disclosed some form of abuse or neglect during a forensic interview conducted at an abuse-evaluation center. The sample was largely African American, female, and allegedly physically abused, sexually abused, and/or neglected (see Table 1).

The children had been removed from home by child protective services due to suspicions of maltreatment, or in a relatively few cases, brought to the center by caretakers. Caretakers who brought their children to the center received information about the study upon their arrival, and a staff member obtained their consent. For children who were wards of the state, consent was given by child protective services. Child assent was obtained as well. The study was reviewed and approved by Internal Review Boards at the child protective services department, the maltreatment evaluation center, and the University of California, Davis.

To be included, all children had a videotaped forensic interview and an affect rating provided by a forensic interviewer. Videotapes were included if the child disclosed some form of abuse or neglect and had a determination of maltreatment.
Table 1
Characteristics of the sample.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Percentage</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>38%</td>
<td>47</td>
</tr>
<tr>
<td>Female</td>
<td>62%</td>
<td>77</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-5 years old</td>
<td>24%</td>
<td>30</td>
</tr>
<tr>
<td>6-8 years old</td>
<td>31%</td>
<td>38</td>
</tr>
<tr>
<td>9-16 years old</td>
<td>45%</td>
<td>56</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>76%</td>
<td>94</td>
</tr>
<tr>
<td>Caucasian</td>
<td>13%</td>
<td>17</td>
</tr>
<tr>
<td>Hispanic</td>
<td>10%</td>
<td>12</td>
</tr>
<tr>
<td>Others</td>
<td>1%</td>
<td>1</td>
</tr>
<tr>
<td>Abuse type category</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sexual Abuse</td>
<td>36%</td>
<td>45</td>
</tr>
<tr>
<td>Physical Abuse</td>
<td>43%</td>
<td>53</td>
</tr>
<tr>
<td>Neglect</td>
<td>21%</td>
<td>26</td>
</tr>
</tbody>
</table>

as indicated by the clinical staff at the evaluation center and/or by child protective services. Some of the videotapes were excluded due to poor sound or visual quality. Using these restrictions, a total of 124 tapes were coded for the present study. Our sample did not differ significantly from the entire sample (n = 443) in age, gender, abuse type, or race, χ²(s) ≤ 1.99, ps ≥ .16. Most of the children at the evaluation center did not experience a forensic interview, which was conducted only if a criminal case was being considered. There were no known refusals to participate, but our previous research on forensic and clinical interviews that encompassed the present sample indicated that approximately 18% of the larger sample did not disclose past abuse experiences (Ghetti, Goodman, Eisen, Qin, & Davis, 2002).

Coding of emotional expression

*Interviewer ratings.* At the end of the interview, the interviewer rated the child’s upset and crying both for when the child entered the room and during disclosure. The scale for the child’s negative affect ranged from 1 (very happy) to 6 (very upset), with 3.5 considered as neutral. The scale for the child’s crying ranged from 1 (not crying) to 6 (hysterically crying), with 3.5 treated as moderately crying.

*Researcher ratings.* To establish inter-rater reliability, two researchers first jointly coded several tapes (not part of the current sample) using the same scales as those used by the interviewers at the child-abuse assessment center. All disagreements were resolved by discussion. After this practice period, the researchers independently coded 25% of the videotaped interviews, and these data were used to calculate reliability between coders and interviewers. Specifically, researchers rated the child’s upset and crying upon entering the room and during disclosure, on the 6-point scales. The researchers were blind to the interviewers’ and to each other’s ratings and to hypotheses. Reliabilities were calculated within one scale point as an agreement. Proportions of agreement between the two raters, and between each rater and the interviewer, for negative affect at the beginning of the interview, ranged from .90 to 1.0. The proportions of agreement between the two raters, and between each rater and the interviewer, for negative affect when the child discussed/disclosed the abuse ranged from .75 to .95. The proportion of agreement between the two raters, and between each rater and the interviewer, for the cry scale was 1.0.

Psychological measures

*Dissociative Experiences Scale for Adolescents (A-DES; Armstrong & Carlson, 1993).* The A-DES, for 11-year-olds and older, is a downward extension of the DES (Bernstein & Putnam, 1986) that includes 30 items describing dissociative experiences (e.g., “When I am somewhere that I don’t want to be, I can go away in my mind.”). Children are asked to rate how often each experience happens to them on a 0-10 scale (0 = never and 10 = always). The A-DES has adequate reliability (alpha = .93), internal validity, and discriminant validity (Armstrong, Putnam, Carlson, Libero, & Smith, 1997). Reliability within the current sample was also adequate (alpha = .93). Higher scores indicate greater dissociative tendencies.

*Child Dissociative Checklist (CDC).* The CDC is an observer-report measure of dissociative behavior, ranging from normal to pathological, in 4- to 19-year-olds. A 3-point scale (0 = not at all true to 2 = very true) is used to indicate whether behaviors such as “Child frequently talks to him or herself, may use a different voice or argue with self at times” are characteristic of the child. In the present study, the CDC was administered only to caretakers who had been caring for the child for at least 2 months at the time of the assessment. The instrument is temporally reliable, with test-retest reliability coefficients ranging...
from .61 to .69, and test-retest reliabilities for individual subscales ranging from .57 to .92 (Putnam, Helmers, & Trickett, 1993). The CDC is internally consistent (alphas = .80 to .95) and has obtained a Spearman-Brown coefficient of .94 (Putnam et al., 1993). In the current sample, alpha was .86.

**Child Depression Inventory (CDI-S; Kovacs, 1983).** The CDI-S is a widely used self-report measure of depression for 8- to 15-year-olds (Kovacs, 1983). For each of 10 items, children are asked to point to one of three statements that best represents how they felt in the past 2 weeks, for example “I feel sad: 0 (once in a while), 1 (many times), or 2 (all the time).” Higher numbers indicate elevated depression. The CDI-S is internally consistent, with alpha coefficients ranging from .71 to .89 (Kovacs, 1992). In the current sample alpha was .75.

**Trauma Symptom Checklist-Child Version (TSC-C; Briere & Runtz, 1993).** The TSC-C, a downward extension of the TSC-40, is a 54-item questionnaire designed to assess post-traumatic stress, dissociation, anxiety, anger, sexual concerns, and depression in 8- to 15-year-olds who have been abused and/or traumatized. Children indicate on a 4-point scale (0 = never to 3 = almost all of the time) how often experiences such as “Feeling nervous or jumpy inside” happen to them. Higher scores designate a greater number of symptoms. The inventory is psychometrically sound and predictive of maltreatment history (e.g., Briere, 1996; Briere & Runtz, 1993; Evans, Briere, Boggiano, & Barrett, 1994; Friedrich, 1993; Sadowski & Friedrich, 2000). The reliability within the current sample was high (alpha = .94).

**Post-Traumatic Symptom Inventory for Children (PT-SIC; Eisen, 1997).** The PT-SIC is a 28-item self-report measure of symptoms of posttraumatic stress in young children (4 years of age and up). The PT-SIC has excellent internal reliability (alpha = .91) and adequate test-retest reliability, \( r = .88 \), when administered to a clinical sample of maltreated children (Eisen, 1997). Within the current sample alpha was .89.

**Global Assessment of Functioning (GAF; American Psychiatric Association, 1994).** This measure is based on criteria described in the DSM-IV manual. The child’s psychological, social, and educational functioning is rated on a 100-point scale. Higher ratings indicate higher levels of adaptive functioning. The GAF scale is almost identical to the Global Assessment Scale, which has high reliability, and good concurrent and predictive validity: it is among the most useful instruments for measuring psychological functioning (Endicott, Spitzer, Fleiss, & Cohen, 1976; Sohlberg, 1989).

**Composite measures.** All measures were standardized, and composite measures of depression, dissociation, and PTSD were created. The depression composite measure was the average of the CDI-S total score and the TSC-C depression subscale. A principal components analysis with promax rotation revealed that the two measures of depression (CDI-S and TSC-C) loaded on the same factor with 75% of the variance explained (alpha = .67). Similarly, the dissociation composite measure was the average of four scores: the CDC total score, the A-DES total score, and the two TSC-C dissociation subscales. A principal components analysis with promax rotation confirmed that the four measures of dissociation loaded on the same factor with 66% of the variance explained (alpha = .79). A principal components analysis with promax rotation revealed that the two measures of PTSD (PT-SIC and the TSC-C PTSD subscale) loaded on the same factor with 82% of the variance explained (alpha = .77).

**Abuse characteristics**

**Abuse type.** Abuse type was determined in conjunction with the child abuse evaluation program based on current medical and forensic evaluations, and previous history as reported by child protective services. Children were separated into three abuse status categories. A child was classified into the sexually abused category if he or she had a known history of sexual abuse based on child protective services reports, or if the current program investigation indicated that the child had been sexually abused. Specifically, the sexually abused group included children with a known history of sexual abuse alone or combined with other forms of maltreatment. A child was classified as physically abused if he or she had a known history of physical abuse according to child protective services reports, or if the current program investigation indicated that the child had been physically abused, but there was no history of child sexual abuse. A child was classified into the neglect category if he or she had a previous history of neglect, but no known history or current incidents of abuse (sexual or physical).

**Number of abuse allegations.** The number of abuse allegations was calculated based on the frequency of former sexual abuse, physical abuse, or neglect accusations indicated by child protective services.

**Procedure**

As a part of the child maltreatment assessment procedure, children individually received a forensic interview. During the interview, one of five forensic interviewers (blind to the study hypotheses) questioned the child about possible maltreatment using a semi-structured interview that minimized, but still included some, leading questions ("Has anybody ever hit or whooped you?" "Do you have enough food at home?" "Has anyone ever touched you on your private parts?" [asked after determining that the child understood the term “private parts”]). The interview often involved use of anatomical dolls and
Table 2
Means and standard deviations for key variables.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Gender</th>
<th></th>
<th>Abuse type</th>
<th></th>
<th></th>
<th>Overall</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Males</td>
<td>Females</td>
<td>SAB</td>
<td>PAB</td>
<td>Neglected</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>8.32 (3.59)</td>
<td>8.68 (3.42)</td>
<td>8.84 (3.56)</td>
<td>9.04 (2.85)</td>
<td>7.00 (4.09)</td>
<td>8.54 (3.47)</td>
<td>124</td>
</tr>
<tr>
<td>Negative affect at beginning of interview</td>
<td>2.74 (1.03)</td>
<td>2.52 (.90)</td>
<td>2.49 (.82)</td>
<td>2.87 (1.00)</td>
<td>2.27 (.96)</td>
<td>2.60 (.95)</td>
<td>124</td>
</tr>
<tr>
<td>Negative affect at disclosure</td>
<td>3.62 (.80)</td>
<td>3.73 (.97)</td>
<td>3.91 (.82)</td>
<td>3.64 (.90)</td>
<td>3.38 (.98)</td>
<td>3.69 (.90)</td>
<td>124</td>
</tr>
<tr>
<td>Frequency of abuse allegations</td>
<td>3.88 (2.83)</td>
<td>5.04 (4.54)</td>
<td>4.80 (4.08)</td>
<td>4.65 (4.66)</td>
<td>4.14 (2.02)</td>
<td>4.60 (4.01)</td>
<td>112</td>
</tr>
<tr>
<td>Composite dissociation</td>
<td>.14 (.91)</td>
<td>-.03 (.80)</td>
<td>.05 (.63)</td>
<td>.05 (.95)</td>
<td>.06 (1.03)</td>
<td>0 (.100)</td>
<td>93</td>
</tr>
<tr>
<td>Composite depression</td>
<td>.11 (1.1)</td>
<td>.19 (.98)</td>
<td>.05 (.90)</td>
<td>.24 (1.02)</td>
<td>-.30 (1.27)</td>
<td>0 (1.00)</td>
<td>78</td>
</tr>
<tr>
<td>Composite PTSD</td>
<td>-.05 (.95)</td>
<td>.05 (.95)</td>
<td>.06 (.93)</td>
<td>-.04 (1.85)</td>
<td>.04 (1.33)</td>
<td>0 (1.00)</td>
<td>95</td>
</tr>
<tr>
<td>GAF</td>
<td>67.83 (9.29)</td>
<td>69.43 (8.04)</td>
<td>68.18 (7.80)</td>
<td>67.48 (9.42)</td>
<td>72.67 (6.85)</td>
<td>68.82 (8.54)</td>
<td>97</td>
</tr>
</tbody>
</table>

Note. SDs in parentheses. Dissociation, depression, and post-traumatic stress disorder (PTSD) composite measures were standardized (Z scored). GAF = Global Assessment of Functioning. SAB = sexual abuse. PAB = physical abuse. The Ns reported are the original ones before imputing missing values.

Results

Means for key variables are presented in Table 2. To preview, descriptive data concerning the overall demeanor of children at disclosure are presented first. Next, the relations among participant factors (age, gender, race), abuse factors (type of abuse, frequency of abuse), and psychopathology measures (depression, dissociation, PTSD, GAF) are elucidated. Finally, results of a multiple hierarchical regression analysis, conducted to detect the independent contribution of predictors of negative affect at disclosure, are described.

Negative emotional expression in maltreated children

Congruent with our expectation to find high proportions of neutral emotional display, 75% of the children in our sample evinced a neutral expression when disclosing abuse (their negative affect was coded at the midpoints, that is, at 3 or 4, of the 6-point scale). A neutral expression corresponded to flat affect, lack of emotional expression, blank stares, or monotone voice. Further, 98% of the children did not cry when disclosing the abuse; only three cried at that time.

Imputing missing data

Because of the complex nature of the study design and sample, it was not possible to obtain a complete data set on every participant. Mainly, this happened because the child was released from the program before completing all questionnaires. In a few cases, a negative affect at disclosure or a crying rating by the forensic interviewer was missing. In these cases, one of the researchers who had established reliability with the forensic interviewers completed the rating. To account for missing data, a linear regression interpolation method was used (see Elliot & Hawthorne, 2005, for review).

Predictors of negative emotional expression at disclosure

Type of abuse was recoded into two variables: SAB (child sexual abuse = 1, physical abuse or neglect = 0) and PAB (child physical abuse = 1, child sexual abuse or neglect = 0). Gender was coded as males = 0 and females = 1. Race was coded as African Americans = 1 and all other races = 2. As a first step, correlations were calculated. Significant associations were found for a subset of predictors concerning the ratings of emotional distress at disclosure for maltreated children (see Table 3). Specifically, number of abuse allegations was significantly but negatively correlated with negative affect at disclosure, indicating that children with a greater number of prior alleged abuse incidences expressed less upset at disclosure. SAB was significantly correlated with negative affect at disclosure, such that sexually abused children were rated as more upset at disclosure than were the other children. Negative affect at the beginning of the interview was also significantly related to negative affect at disclosure. In contrast to our prediction, psychopathology measures were not significantly correlated with negative affect at disclosure. Finally, physically abused children were more upset at the beginning of the interview than were the other children.

To control for interrelations among the variables, a multiple hierarchical regression was performed. First, we examined the individual scatterplots of each variable and the dependent measure (i.e., negative affect at disclosure). Because no outliers
Table 3
Correlation matrix for all maltreated children.

<table>
<thead>
<tr>
<th></th>
<th>Gender</th>
<th>Race</th>
<th>Age</th>
<th>SAB</th>
<th>PAB</th>
<th>Number of abuse allegations</th>
<th>GAF</th>
<th>Composite PTSD measure</th>
<th>Composite depression measure</th>
<th>Composite dissociation measure</th>
<th>Negative affect at beginning</th>
<th>Negative affect at disclosure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Race</td>
<td>0.24**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.05</td>
<td>0.03</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAB</td>
<td>0.17*</td>
<td></td>
<td>0.06</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAB</td>
<td>−0.23**</td>
<td>−0.13</td>
<td>0.12</td>
<td>−0.65***</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of abuse allegations</td>
<td>0.14</td>
<td></td>
<td>0.01</td>
<td>0.08</td>
<td>0.04</td>
<td>0.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GAF</td>
<td>0.09</td>
<td>−0.06</td>
<td>−0.11</td>
<td>−0.06</td>
<td>−0.14</td>
<td>−0.08</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Composite PTSD measure</td>
<td>0.03</td>
<td></td>
<td>−0.07</td>
<td>−0.08</td>
<td>0.05</td>
<td>−0.07</td>
<td>0.00</td>
<td>−0.18</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Composite depression measure</td>
<td>−0.01</td>
<td></td>
<td>−0.04</td>
<td>−0.39***</td>
<td>−0.09</td>
<td>0.06</td>
<td>−0.04</td>
<td>−0.10</td>
<td>0.24**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Composite dissociation measure</td>
<td>−0.10</td>
<td></td>
<td>−0.07</td>
<td>−0.28**</td>
<td>0.01</td>
<td>−0.04</td>
<td>−0.06</td>
<td>−0.12</td>
<td>0.40***</td>
<td>0.27**</td>
<td></td>
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<td>−0.01</td>
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<td>−0.09</td>
<td>0.24**</td>
<td>−0.16</td>
<td>−0.14</td>
<td>−0.01</td>
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<td>0.07</td>
<td>0.09</td>
<td>0.19*</td>
<td>−0.04</td>
<td>−0.22**</td>
<td>0.05</td>
<td>0.04</td>
<td>0.10</td>
<td>0.17</td>
<td>0.48***</td>
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</table>

Note. *p < .05, **p < .01, ***p < .001. Gender was coded as males = 0 and females = 1. Race was coded as African Americans = 1 and all other races = 2. GAF = Global Assessment of Functioning. PTSD = post-traumatic stress disorder. SAB = sexual abuse. PAB = physical abuse.
Table 4
Multiple hierarchical regression analysis: Predicting negative affect at disclosure (N = 124).

<table>
<thead>
<tr>
<th>Variable</th>
<th>$B$</th>
<th>SE $B$</th>
<th>$\beta$</th>
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<td>.08</td>
<td>.49***</td>
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<td>.10</td>
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<td>.02</td>
<td>-.20*</td>
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<td>SAB × Frequency of abuse interaction</td>
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<td>SAB × GAF interaction</td>
<td>-.01</td>
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<td>-.47</td>
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</table>

Note. $R^2 = .24$ for Step 1 ($p < .001$); $\Delta R^2 = .05$ for Step 2 ($p < .05$); $\Delta R^2 = .09$ for Step 3 ($p < .01$); $\Delta R^2 = .04$ for Step 4 ($p = .07$). *$p < .05$, **$p < .01$, ***$p < .001$.

Gender was coded as males = 0 and females = 1. Race was coded as African Americans = 1 and all other races = 2. GAF = Global Assessment of Functioning. PTSD = post-traumatic stress disorder. SAB = sexual abuse. PAB = physical abuse.

were detected, we created the regression model using information on all 124 participants (with missing values imputed). In each step of the model variables were entered simultaneously. The rationale for entering variables in each step was conceptual. In the first step, the negative affect score from the beginning of the interview was entered as a covariate. All participant factors (age, gender, and ethnicity) were entered at this stage. Abuse characteristics (type and number of abuse allegations) were entered in the second step. Next, the psychopathology measures (depression, dissociation, PTSD, and GAF) were entered. In the final step, interactions between abuse type and the other significant factors (from the earlier steps) were entered. Results of the regression analysis are reported in Table 4.

The first step in the regression accounted for 24% of the variance in negative affect at disclosure. This result was due to the negative affect at the beginning of the interview which was positively related to negative affect at disclosure. Step 2 added 5% to the shared variance explained in negative affect at disclosure, with SAB and the frequency of abuse allegation as significant contributors. Accordingly, children who were sexually abused expressed more negative affect at disclosure compared to the rest of the sample, and children who had more abuse incidents expressed less negative emotion at disclosure. At Step 3, the dissociation and GAF psychopathology measures added 9% to the shared variance explained. Namely, higher dissociative symptom scores predicted less negative emotion at disclose, and higher GAF scores were associated with more negative emotion at disclosure. Note that although it is possible that the children who obtained higher scores on the GAF were more intelligent, a measure of short-term memory, which correlates with full-scale IQ, was not a significant predictor of negative affect at disclosure.

Finally, adding the interaction effects in Step 4 contributed 4% to the variance explained in the negative affect measure. As can be seen in Table 4, although SAB and dissociation were no longer significant predictors on their own, a significant
interaction between SAB and dissociation emerged. This interaction indicated that for children who had been sexually abused, a higher score on the dissociation measure predicted greater negative affect at disclosure.

Inspection of the distributions of all measures in the regression model suggested that none violated assumptions of normality. That is, measures of skewness and kurtosis were within the acceptable two standard deviation ranges for the psychopathology measures (depression, dissociation, PTSD, and GAF) as well as for the dependent variable (i.e., negative affect at disclosure: $-.41 > \text{ses} > -.40$, $\bar{\text{SES}} = .22$; $.80 > \text{sexs} > .37$, $\bar{\text{SES}} = .43$). Further examination of the residuals plots revealed that the linearity and homoscedasticity assumptions were not violated. Finally, measures of multicollinearity were also within the acceptable range ($1 < \text{VIFs} < 1.5$); thus, adding the interaction terms did not affect the stability of the model.

To the extent that our sample might have included children who, despite their disclosure, actually had not experienced maltreatment, we also examined the subset of cases in which corroborated evidence existed (i.e., cases that had the following types of evidence: medical evidence, confession by perpetrator, or eyewitness). The same pattern of results emerged when we analyzed only the corroborated cases.

Discussion

This study examined the characteristics of maltreated children's emotional display at time of disclosure of abuse incidents, as well as the unique predictors of these children's negative affect. It is generally expected that during their disclosures, child victims will be highly distressed, cry, and show other negative emotional reactions. This expected pattern of reaction seems as well as the unique predictors of these children's negative affect. It is generally expected that during their disclosures, child victims will be highly distressed, cry, and show other negative emotional reactions. This expected pattern of reaction seems to make their story more credible to jurors (Myers et al., 1999). However, our findings cast doubt on the validity of these expectations. Consistent with prior research (Wood et al., 1996), our study showed that most of the children displayed neutral affect when they discussed abuse incidents, and most of them did not cry.

Nevertheless, in line with our expectations, maltreated children who had a greater number of prior abuse allegations appeared less upset when discussing the abuse. It could be argued that abuse had become a regular part of these children's lives and therefore they had developed a stunted emotional reaction to the violence. Another possibility is that these children simply had more previous interviews, and thus talking about the abuse was less upsetting for them.

For the sexually abused group, dissociation predicted children's negative affect. Specifically, sexually abused children who had more dissociative characteristics were more upset when discussing abuse. Previous studies indicate that highly dissociative children are at risk of developing chronic feelings of depersonalization and derealization (Putnam, 2000). It might have been expected that these characteristics would have led the maltreated children in the present study to appear emotionally stunted during the forensic interview (Bonnano et al., 2003). Yet, sexually abused children who had more dissociative characteristics seemed more upset. This finding is consistent with the argument that some sexually abused children may become upset at time of disclosure because they are forced, in effect, to confront these stressful events.

Clinicians rated the children's global adaptive functioning. The GAF measure provides an overall evaluation of children's mental health-related behavior. Children rated as better functioning expressed more emotion at disclosure. These children may be more in touch with their negative emotions or more aware of the implications of the maltreatment. Taken together with the present findings for dissociation, the results suggest that symptoms of certain forms of emotional problems are important predictors of emotional expressivity at disclosure.

Contrary to expectation, age and gender were unrelated to negative affect at disclosure. This might have been influenced by the fact that the number of children in certain age and/or gender groups did not afford sufficient statistical power. For example, in the sexually abuse group most of the children were 9 years or over (50%), and in the physically abuse group, there was a relatively small number of young children (13%). Further, in general there was a smaller number of males than females in all the abuse groups. Nevertheless, the (nonsignificant) trends for the mean negative affect ratings were relatively consistent with the stated hypotheses. Specifically, females tended to be somewhat more upset at disclosure than males, and older children tended to be more upset than younger children.

Our findings must be viewed in light of the limitations of the study. First, the sample was relatively homogenous ethnically, with 75% of the sample being African American, and all data were collected in one geographical area. Therefore, the results may not generalize across other ethnicities and locales. Second, we had a limited number of children in certain maltreated groups. Third, the possibility exists that some of the children had not in fact been maltreated; however, the results replicated in corroborated cases. Nevertheless, the leading nature of the interview might have influenced emotional expression. Fourth, because we had to rely on a composite measure of PTSD, we could not reliably separate intrusive, hyperarousal, and avoidance/numbness symptoms. A fifth issue, mentioned earlier, is that children who were repeatedly abused might have been repeatedly interviewed in the past. Sixth, interviewers' preinterview knowledge about the case could have affected their ratings, and the interviewers themselves were not trained to be reliable with each other in use of our negative affect scale. However, the fact that researchers, who were naïve to the preinterview allegations, reached high inter-rater reliability with the interviewers, and with each other, motivates greater confidence in the findings. Finally, co-occurrence of abuse types may have negatively affected our results. In future studies, researchers should consider larger and more diverse samples, coding for discrete emotions, assessing clusters of PTSD symptoms, relying on nonleading interviews, and carefully indexing number of previous interviews.

Nevertheless, our findings are important for understanding how children react emotionally when they disclose abuse in forensic interviews, and perhaps in clinical interviews as well. The results may also be relevant to court settings, when abused children are required to testify (but see Quas et al., 2005). Although it is expected that during their disclosures, child


Child Dissociative Checklist (CDC)
Reference list of articles using the CDC
9-30-10


