Peritraumatic Somatoform and Psychological Dissociation in Relation to Recall of Childhood Sexual Abuse

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ABSTRACT. *Objective*: Overwhelming experience can evoke psychological dissociation during or immediately after the event, including dissociative amnesia. Whereas some data suggest that such peritraumatic dissociation can also find expression in somatoform symptoms, only a limited range of such symptoms has been systematically studied. The present study hypothesized that peritraumatic psychological and somatoform dissociation are associated with each other, with delayed recall of childhood sexual abuse (CSA), and with CSA severity. Because current somatoform dissociation is most strongly associated with recalled childhood physical abuse (CPA), we also hypothesized that peritraumatic somatoform dissociation is associated with reported CPA over and above CSA.

Method: Thirty-four Dutch women who reported CSA were interviewed using a modified version of the Traumatic Memory Inventory (TMI) which assesses the characteristics of traumatic memories. The participants also completed the Traumatic Experiences Checklist, the Peritraumatic Dissociation Experiences Questionnaire, and the Peritraumatic Somatoform Dissociation Questionnaire.

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Results: Peritraumatic psychological and somatoform dissociation were associated with each other, with delayed recall of trauma, and with severity of reported CSA. Reported CPA predicted peritraumatic somatoform dissociation over and above the severity of CSA in terms of the acts involved. Approximately 44% of the women reported independent corroboration of the abuse. Similar proportions of delayed, partial, and continuous CSA memories were corroborated.

Conclusions: This retrospective study suggested that delayed recall of CSA is associated with peritraumatic dissociation and CSA severity. It also suggested that trauma–especially that which involves serious threat to the integrity of the body–may evoke somatoform dissociation. Based on patient report, delayed recall of some CSA memories was as accurate as continuous recall of CSA. *[Article copies available for a fee from The Haworth Document Delivery Service: 1-800-342-9678. E-mail address: <getinfo@haworthpressinc.com> Website: <http://www.HaworthPress.com> © 2001 by The Haworth Press, Inc. All rights reserved.]*

INTRODUCTION

Beginning with the works of Briquet (1859) and Janet (1889, 1909), there have been consistent clinical observations that overwhelming events can evoke dissociative phenomena which manifest in both psychological and somatoform variables (e.g., Brown, 1919; Cardeña & Spiegel, 1993; Kretschmer, 1960; Myers, 1916, 1940). Dissociation during or immediately following exposure to terrifying events has recently been labeled *peritraumatic dissociation* (for a review, see Marmar, Weiss, & Metzler, 1998). Marmar and his colleagues have recognized that peritraumatic dissociation is exhibited in psychological phenomena, i.e., dissociative amnesia, depersonalization, derealization, and identity fragmentation, but have not assessed somatoform manifestation of peritraumatic dissociation, with the exception of one item. Analogous to our distinction between current psychological and somatoform dissociation (Nijenhuis, 1999; Nijenhuis, Spinhoven, van Dyck, van der Hart, & Vanderlinden, 1996), we propose to refer to these phenomena as *peritraumatic psychological dissociation* and *peritraumatic somatoform dissociation*.

Some research data suggest that overwhelming events can evoke somatoform symptoms, some of which may be dissociative. For example, in their study of acute reactions to an earthquake, Cardeña and Spiegel (1993) included some items related to dissociative somatoform disturbances, such as trouble swallowing and general bodily numbness. In another study, Cardeña, Holen, McFarlane, Solomon, Wilkinson, and Spiegel (1998) assessed symptoms of bodily anesthesia among individuals involved in a disaster at sea. However, a systematic study of a wide range of peritraumatic somatoform dissociative phenomena has not yet been performed.

Thus, the current retrospective study aimed to investigate the extent to which traumatized individuals report both peritraumatic psychological and somatoform dissociation, and to test whether an hypothesized strong association between these phenomena exists. Furthermore, since there are indications that the severity of both current and peritraumatic psychological dissociative symptoms is correlated with severity of trauma (e.g., Marmar et al., 1998), we hypothesized that a similar association (between severity of trauma and severity of symptoms) would also apply to peritraumatic somatoform dissociation.

A related phenomenon that warrants extended study is dissociative amnesia. Since amnesia for trauma is included as one of the peritraumatic dissociative phenomena (e.g., Eriksson & Lundin, 1996), delayed or partial recall of overwhelming events could be related to peritraumatic dissociation, at least in some cases. Each of these topics–current and peritraumatic psychological and somatoform dissociation, threat to bodily integrity, and recall of trauma–requires additional discussion below.

Current and Peritraumatic Psychological Dissociation and Trauma

Contemporary studies have found associations among current psychological dissociative symptoms, documented trauma and reported trauma, mainly related to sexual abuse, though not exclusively so. These associations apply to patients with dissociative disorders (e.g., Draijer & Boon, 1993; Hornstein & Putnam, 1992; Nijenhuis, Spinhoven, van Dyck, van der Hart, & Vanderlinden, 1998b; Ross et al., 1991), posttraumatic stress disorder (PTSD; e.g., Bremner, Steinberg, Southwick, Johnson, & Charney, 1993), eating disorders (Vanderlinden, Vandereycken, van Dyck, & Vertommen, 1993; Waller et al., 2000), and borderline personality disorder (e.g., Herman, Perry, & van der Kolk, 1989). There are correlations between psychological dissociation and reported trauma among patients who present for care in medical settings (e.g., Nijenhuis, van Dyck, Ter Kuile et al., 1999; Walker, Katon, Neraas, Jemelka, & Massoth, 1992), and among nonclinical samples (for reviews, see Marmar et al., 1998; Putnam & Carlson, 1998). Models that propose that trauma can evoke dissociative reactions have been strongly supported by retrospective and prospective studies of peritraumatic psychological dissociation (Koopman, Classen, & Spiegel, 1994; Marmar et al., 1994; Marmar, Weiss, Metzler, Ronfeldt, & Foreman, 1996; Marmar, Weiss, Metzler, & Delucchi, 1996; Shalev, Peri,

Canetti, & Schreiber, 1996; Titchenor, Marmar, Weiss, Metzler, & Ronfeldt, 1996; Weiss, Marmar, Metzler, & Ronfeldt, 1995).

Janet (1909) postulated that the fragmenting effects of trauma are produced in proportion to the severity of the trauma, i.e., its intensity, duration, and repetition. More recently, it has been additionally hypothesized that young children are particularly prone to dissociation and other trauma-related psychopathology (e.g., Putnam, 1997). Several studies have provided supportive evidence for these hypotheses (Draijer & Boon, 1993; Nijenhuis et al., 1998b).

Current and Peritraumatic Somatoform Dissociation, and Threat to Bodily Integrity

Attention has been directed toward current somatoform dissociation only recently. Current somatoform dissociation has been correlated with reported trauma among patients with dissociative disorders from various countries and cultures, gynecology patients with chronic pelvic pain (for a review, see Nijenhuis, 2000), and nonclinical subjects (Waller et al., 2000).

Several authors have postulated an evolutionary parallel between human and animal defensive reactions to major threat, but only a few included dissociative reactions in their considerations. Some stressed the survival value of rapid, reflex-like reactions (Kraepelin, 1913; Kretschmer, 1960; Ludwig, 1983; Pavlov, 1927; Rivers, 1920); others conceptualized some reactions as surrender responses (e.g., Krystal, 1998); while Seligman (1975) drew a parallel between defensive reactions, depression and "giving up."

We have developed a model that postulates a similarity between somatoform dissociative reactions—such as motor inhibitions and analgesia—and animal defensive reactions to life threat (Nijenhuis, Spinhoven, Vanderlinden, van Dyck, & van der Hart, 1998; Nijenhuis, Vanderlinden, & Spinhoven, 1998). For instance, in our model, Seligman's concept of "giving up" would relate to total submission to the predator and total anesthesia after other defensive maneuvers failed, or were inappropriate. In support of this model, all correlational studies to date that have assessed trauma and somatoform dissociation [using the Somatoform Dissociation Questionnaire (SDQ-20; Nijenhuis, 1999; Nijenhuis et al., 1996; Nijenhuis, van Dyck, Spinhoven et al. 1999)] found that somatoform dissociation was most strongly associated with reported physical abuse (Nijenhuis et al., 1998b; van Duyl, p.c.; Waller et al., 2000). More specifically, Nijenhuis, Spinhoven, Vanderlinden et al. (1998) found that dissociative disorder patients and patients with other mental disorders were correctly classified by symptom clusters evaluating current anesthesia, analgesia, motor inhibitions, and pain in 94% of the initial sample and in 96% of a cross-validation sample. According to this model, threat to the integrity of the body will produce animal defense-like somatoform dissociative re-

actions (Nijenhuis, Vanderlinden, & Spinhoven, 1998; Nijenhuis, Vanderlinden, Spinhoven et al., 1998), in proportion to trauma severity, the younger age of the victim, and degree of prior traumatization. It more specifically proposes that since freezing and anesthesia are the major defensive reactions of prey animals, particular reactions among the wide range of somatoform dissociative reactions will be more prominent: the inability to move and speak; anesthesia of various perceptual modalities, such as lack of pain perception (analgesia); tunnel vision; and bodily numbing (tactile and kinesthetic anesthesia). Thus, dissociative states or personalities would not be random imaginative creations to escape reality, but would primarily represent nonintegrated defensive states (Nijenhuis & van der Hart, 1999).

Consistent with this model, several studies have found associations between recent trauma and somatization, i.e., somatic complaints that cannot be fully explained by any known general medical condition or the direct effects of a substance (American Psychiatric Association, 1994). For example, Darves-Bornoz (1997) reported that six months following a recent rape victims displayed PTSD (71%), dissociative disorders (69%), and somatoform disorders (66%). Many PTSD patients in this sample also had dissociative disorder (85%) and somatoform disorder (75%). Threat to life, whether due to natural or human-made causes, may induce analgesia and numbness (Cardeña, Holen, McFarlane, Solomon, Wilkinson, & Spiegel, 1998; Cardeña & Spiegel, 1993; Pitman, van der Kolk, Orr, & Greenberg, 1990; van der Kolk, Greenberg, Orr, & Pitman, 1989). Such indications of consistent peritraumatic somatoform dissociation revealed the need to systematically assess these symptoms extensively.

Peritraumatic Dissociation and Recall of Trauma

Several researchers have distinguished three patterns of recall related to traumatic experiences (Brewin & Andrews, 1998; Harvey & Herman, 1994; Herman & Harvey, 1997). Some individuals can access the memories of their traumatic experiences on a continuous basis: continuous recall (CR). However, as supported by data from a large number of retrospective studies and some prospective, longitudinal studies (Brown, Scheflin, & Whitfield, 1999), others have only partial memories of their trauma(s) for a shorter or longer period of time: partial recall (PR). Still others fail to access trauma memories either temporarily or persistently (van der Hart & Brom, 2000)–leading to delayed recall (DR). In the aftermath of trauma, some individuals find themselves even unable to access some or all of their life prior to the trauma (Markowitsch et al., 1997; for a review, van der Hart, Nijenhuis, & Brown, submitted). With respect to childhood sexual abuse (CSA), data-based studies have indicated that such traumatic events (or parts of them) can be subject to partial or delayed recall. Brown et al. (1999) reviewed 68 retrospective and

prospective studies, including studies pertaining to clinical, forensic, non-clinical and random samples. Since then, the 69th study has been published (Chu, Frey, Ganzel, & Matthews, 1999). Brown et al. (1999) concluded that "the current rapidly accumulating body of data-based studies has adequately settled the question that an important minority of individuals substantially forget and later recover memories of childhood abuse and traumas" (p. 126).

Several studies suggest a positive correlation between the severity and/or frequency of CSA and partial or delayed recall (Briere & Conte, 1993; Chu & Dill, 1990; Chu et al., 1999; Ensink, 1992; Herman & Schatzow, 1987; Hunter & Andrews, 1999; Williams, 1994). To some extent the failure to access memories of trauma may be due to several factors of encoding, storage and retrieval, all of which have been studied experimentally (Spinhoven, Nijenhuis, & van Dyck, 1999). However, phenomena such as diminished rehearsal, intentional forgetting, encoding specificity, and implicit memory " . . . do not seem to provide an adequate explanation of the changeable memory phenomena that patients with, for example, PTSD and dissociative disorders display" (Spinhoven et al., 1999, p. 264). Therefore, although there is still much to learn about the ways in which dissociation relates to the disruption of the integrative functions of consciousness and memory (American Psychiatric Association, 1994), it can be hypothesized that partial or delayed recall of trauma is associated with peritraumatic dissociation.

In summary, the current retrospective study aimed to test the hypotheses that peritraumatic psychological and somatoform dissociation are associated with each other, with delayed recall of CSA, and with CSA severity. It was additionally hypothesized that peritraumatic somatoform dissociation would be specifically correlated with childhood physical abuse. In an attempt to document whether the reported CSA pertained to veridical events, it was explored to what extent continuous, partial and delayed CSA memories were reported to be corroborated by independent sources.

METHOD

Participants

The female members of a Dutch national organization against CSA who reported a history of CSA were invited to take part in the study with the assistance of this organization. Thirty-four women (mean age = 42.68 years, SD = 8.58, range 27 to 67 years) were included. Nineteen participants (55.9%) were married or lived with a partner, five participants (14.7%) were divorced and ten participants (29.4%) were single. Twenty-one participants (61.8%) had children. Eight participants (23.5%) reported an elementary level of education, nine participants (26.5%) reported an intermediate level of education and sev-

enteen participants (50%) reported an advanced level of education. At the time of the interview six participants (17.6%) had no employment, 20 participants (58.8%) had a paid employment, and eight participants (23.5%) had a voluntary employment. All participants had been in therapy because of reported CSA. Various types of therapies were involved: psychotherapy (64.7%), psychosocial counseling (23.5%), group psychotherapy (44.1%), self-help group (52.9%), and alternative therapy (47.1%).

Instruments

Traumatic Experiences Checklist (TEC; Nijenhuis,1999; Nijenhuis et al., 1998b). The TEC is a self-report questionnaire inquiring about 29 types of trauma. All items address the impact of the trauma with a subjective rating. Items evaluating emotional neglect, emotional abuse, physical abuse, sexual harassment and sexual abuse address the setting in which such trauma occurred. The questions contain short descriptions that intend to define the events of concern. An example of sexual harassment is: "Disturbing sexual overtures (that *do not* result in physical contact) by your parents, brothers, or sisters." The internal consistency, test-reliability, convergent validity and construct validity of the TEC are good (Nijenhuis et al., submitted).

The severity of emotional, physical, and sexual trauma can be estimated by calculating trauma composite scores. Composite scores are assessed for each area of trauma–emotional abuse, emotional neglect, physical abuse, sexual harassment, and sexual abuse–and during three developmental periods (0-6 years; 7-12 years; 13-18 years). The composite scores involve four variables: (a) presence of the traumatic event; (b) relationship to the perpetrator, indicating whether the event occurred within the constraints of the family of origin, within the extended family, or in another setting; (c) duration of the trauma, indicating whether the trauma occurred during a time period of shorter or longer than one year; and (d) subjective response, indicating whether the respondent did not feel traumatized, felt only slightly traumatized, or whether she or he felt moderately, severely, or extremely traumatized by the event(s).

Peritraumatic Dissociation Experiences Questionnaire (PDEQ; for a review, see Marmar, Weiss, & Metzler, 1998; Dutch translation: van der Hart & Kleber, 1998, unpublished document). The PDEQ is a 10-item self-reporting questionnaire that inquires about psychological dissociative experiences, such as derealization, depersonalization and amnesia, during or immediately after an overwhelming event. Respondents are instructed to recall a particular traumatic event and to rate the intensity of each peritraumatic dissociative reaction on a 5-point Likert scale (1= not at all true, 5= extremely true). The PDEQ total score ranges from 10 to 50. The internal consistency of the PDEQ is satisfactory (Cronbach's *alpha* =. 80), and its discriminative, convergent, construct,

and predictive validity have been demonstrated in several studies (Marmar et al., 1994; Marmar, Weiss, Metzler, & Delucchi, 1996; Marmar, Weiss, Metzler, Ronfeldt et al., 1996; Shalev et al., 1996; Titchenor et al., 1996).

Somatoform Peritraumatic Dissociation Questionnaire (SDQ-P; Nijenhuis & van der Hart, unpublished document). The SDQ-P is a newly constructed self-report questionnaire that evaluates somatoform manifestations of dissociation during or immediately following an overwhelming event. The items were derived from clinical observations, clinical reports in the literature, and the SDQ-20 (Nijenhuis et al., 1996; Nijenhuis, van Dyck, Spinhoven et al., 1999), which assesses the severity of current somatoform dissociation. The original SDQ-P item pool (n = 40) was reduced by selecting items that correlated with the total scale score at a level of $r > .60$, which yielded a scale of 11 items. Examples of SDQ-P items include: "During (a part of) the event and/or immediately afterward: It was as if my body, or a part of it, had disappeared; I was paralyzed or stiff for a while; My body moved in coordinated ways which I could not control (for example, it was as if my body walked by itself in a particular direction)."

Traumatic Memory Inventory (TMI; van der Kolk, 1990; Dutch translation and adaptation Bolt & van der Hart, 1994). The TMI is a 60-item structured interview which assesses the circumstances and characteristics of memory retrieval of a target traumatic event and a target memory of an emotional, but non-traumatic, event. The TMI evaluates (1) the nature of the trauma; (2) the duration of the trauma; (3) whether the respondent has always been aware that the trauma occurred, and if not, when s/he became conscious of it; (4) the sensory modalities in which the trauma was (and is) experienced; (5) the nature of nightmares and flashbacks, if applicable; (6) ways in which recollections are avoided; and (7) availability of corroboration of the trauma. These data were collected for three time periods: immediately after the trauma, over the course of time, and currently. For the present study, the TMI was slightly modified. Questions about the target memory of an emotional, but non-traumatic, event were removed and a question about the reported severity of CSA, in terms of the acts involved, was added. In this article we describe the corroboration data of the TMI.

Procedure

Candidate participants were informed about the procedure, its estimated duration and the purpose of the study. It was stated that their participation would contribute to increasing the understanding of the consequences of CSA and the efficacy of CSA treatment programs. The participants were also informed that they would be interviewed at a location of their choice and it was stressed that they could pause or withdraw from the project at any time. When written informed consent was obtained, the participants were randomly assigned to one of four female trained interviewers. In the course of the study, to promote standardization, the interviewers consulted regularly with each other and with the senior investigators (Nijenhuis and van der Hart) about the administration of the TMI. At the start of the interview, the participants were asked permission to record the interview on audiotape. Prior to the interview, half of the participants completed a demographic inventory in this order: TEC, PDEQ, and SDQ-P. In order to control for possible order effects, the other half completed the SDQ-P prior to the PDEQ. Next, the participants were asked whether they had first remembered the CSA in the form of CR, PR, or DR. Finally, the TMI was administered. When a participant reported more than one type of traumatic recall, the PDEQ and SDQ-P were completed, and the TMI was administered for each type of recall.

Data Analysis

In instances when a participant reported more than one type of traumatic recall, only the data that pertained to a less complete level of recall were considered. For example, when a participant reported both CR and DR, only the data relating to DR were entered into the analyses. This decision was made because (1) too few participants reported more than one type of recall to allow for worthwhile comparisons of various types of recall within participants, and (2) we wanted to compare participants with less complete levels of recall to participants with more complete levels of recall.

The relationship between peritraumatic psychological and somatoform dissociation was calculated using Pearson's product moment correlation coefficient. The relationship between peritraumatic psychological and somatoform dissociation and the different types of recall were evaluated with Kruskall-Wallis tests and Mann-Whitney tests. To test the hypothesis that peritraumatic psychological and somatoform dissociation are associated with reported CSA severity (in terms of the acts involved) and that peritraumatic somatoform dissociation would be specifically correlated with reported CPA, Pearson's product moment correlation was used. In addition, a multiple regression analysis was performed to estimate the capacity of reported CSA severity and reported CPA to predict peritraumatic somatoform dissociation.

RESULTS

The SDQ-P

The internal consistency of the SDQ-P was high (Cronbach's *alpha* = .90). As hypothesized, peritraumatic psychological dissociation and peritraumatic somatoform dissociation were strongly intercorrelated, with Pearson prod-

uct-moment $r = .62$, $p < .0001$. The items of the original item pool were also correlated with the PDEQ ($r = .54$, $p < .001$).

Prevalence of Types of CSA Recall and the Relationship of Recall with Peritraumatic Dissociation

Fourteen participants (41.2%) reported CR, 12 participants (35.3%) PR, and 21 participants (61.8%) DR. Ten participants (29.4%) reported more than one type of recall of the CSA. One subject reported CR and PR; three participants reported PR and DR, three participants reported CR and DR, and three participants reported CR, PR, and DR. Application of the indicated selection criterion (i.e., when a participant reported more than one type of traumatic recall, only the data that pertained to a less complete level of recall were considered) yielded seven participants with CR, six participants with PR, and 21 participants with DR. There was no statistically significant difference among participants with CR, DR, and DR as to the age of CSA onset (CR = 9.7 years, PR = 7.5 years, DR = 6.0 years; Kruskall-Wallis test, $C^2 = 3.939$, $df\,2$, n.s.).
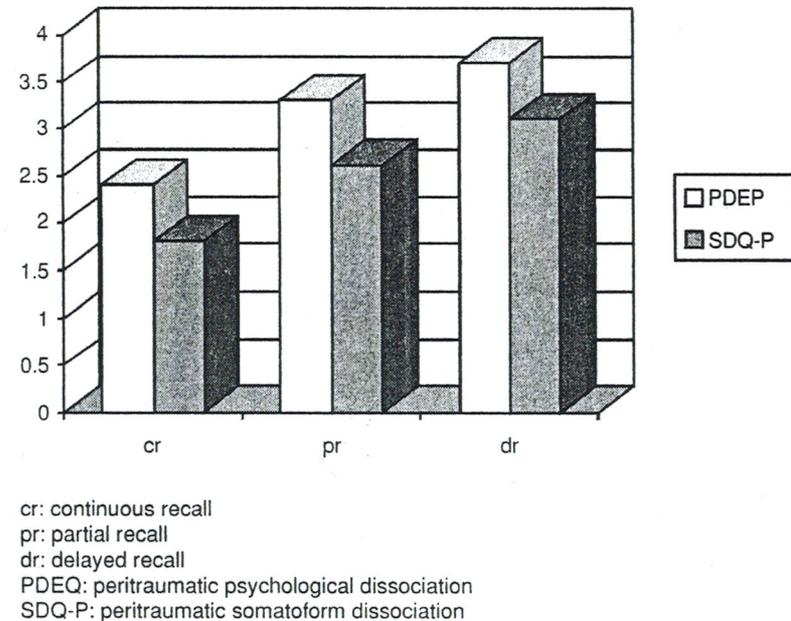
The types of CSA recall were associated with the severity of peritraumatic psychological dissociation (Kruskall-Wallis test, $C^2 = 6,113$, $df\,2$, $p < .05$) and peritraumatic somatoform dissociation (Kruskall-Wallis test, $C^2 = 6,031$, $df\,2$, $p < .05$) (see Figure 1). A Mann-Whitney test was performed post hoc, and showed more severe peritraumatic dissociation among participants with DR than among participants with CR (PDEQ: $z = 27.5$, $p < .05$; SDQ-P: $z = 28.0$, $p < .05$).

Prevalence of Trauma, Composite Trauma Scores, and Types of Recall

The mean of the total TEC score was 11.5 (range: 4-21). Because the total TEC score represents the number of trauma types recalled by the participant, this result suggests that the current sample had been traumatized in many ways. In addition to reporting childhood sexual abuse, 91.2% of the participants reported emotional neglect, 94.1% emotional abuse, 64.7% physical abuse, and 85.3% sexual harassment. Table 1 presents the combined composite scores over five trauma areas (i.e., emotional neglect, emotional abuse, physical abuse, sexual harassment, sexual abuse) per developmental period, as well as the composite trauma scores over all three developmental periods.

CR, PR, and DR were not associated with statistically significant differences among the composite trauma scores per developmental period or composite trauma scores across all developmental periods (all Kruskall-Wallis tests n.s.).

FIGURE 1. Peritraumatic Dissociation and Types of Recall.

cr: continuous recall
pr: partial recall
dr: delayed recall
PDEQ: peritraumatic psychological dissociation
SDQ-P: peritraumatic somatoform dissociation

Composite Trauma Scores and Peritraumatic Dissociation

Among the three composite trauma scores for each developmental level, both the PDEQ ($rho = .39$, $p < .05$) and the SDQ-P ($rho = .34$, $p < .05$) were associated with the composite trauma scores of the developmental period from 7-12 years. When the composite trauma scores per developmental level per trauma area were examined, it was found that measures of peritraumatic dissociation were not associated with emotional neglect, emotional abuse, and sexual harassment. However, peritraumatic somatoform dissociation was correlated with the composite score related to physical abuse over the three developmental periods at the trend level ($rho = .34$, $p = .052$), and at a statistically significant level for the composite score for the developmental period of 7-12 years ($rho = .41$, $p < .05$). As to the presence of the various types of reported trauma in various settings, the only statistically significant correlation was between peritraumatic somatoform dissociation and reported physical abuse ($rho = .46$, $p < .01$). Peritraumatic psychological dissociation correlated with reported sexual abuse in the period of 7-12 years at a trend level ($rho = .33$, $p = .053$).

TABLE 1. Composite Trauma Scores (TEC) of Women Reporting CSA (n = 34).

All Scores (possible range 0-20)	M	SD	Range
0-6 years	10.79	5.74	0-19
7-12 years	13.88	4.84	3-20
13-18 years	13.08	5.06	0-20
Total (possible range 0-60)	37.76	12.38	8-54

Emotional Neglect (possible range 0-4)	M	SD	Range
0-6 years	2.67	1.82	0-4
7-12 years	3.00	1.65	0-4
13-18 years	3.41	1.31	0-4
Total (possible range 0-12)	9.03	3.98	0-12

Emotional Abuse (possible range 0-4)	M	SD	Range
0-6 years	3.03	1.71	0-4
7-12 years	3.44	1.31	0-4
13-18 years	3.32	1.42	0-4
Total (possible range 0-12)	9.79	3.80	0-12

Physical Abuse (possible range 0-4)	M	SD	Range
0-6 years	1.47	1.91	0-4
7-12 years	2.26	1.94	0-4
13-18 years	1.91	1.98	0-4
Total (possible range 0-12)	5.65	3.80	0-12

Sexual Harassment (possible range 0-4)	M	SD	Range
0-6 years	1.24	1.71	0-4
7-12 years	2.06	1.67	0-4
13-18 years	1.97	1.68	0-4
Total (possible range 0-12)	5.24	4.11	0-12

Sexual Abuse (possible range 0-4)	M	SD	Range
0-6 years	2.23	1.89	0-4
7-12 years	2.97	1.55	0-4
13-18 years	2.59	1.76	0-4
Total (possible range 0-12)	7.77	3.68	1-12

Peritraumatic Dissociation and Reported Severity of Childhood Sexual Abuse: Interview Data

The total severity score of reported CSA as assessed by the TMI was associated with peritraumatic somatoform dissociation ($rho = .37$, $p < .05$). Peritraumatic psychological dissociation was correlated with CSA severity at a trend level ($rho = .33$, $p = .054$). As to the separate CSA severity levels, the PDEQ was associated with intermediate severity (perpetrator[s] touched or stimulated the participant's bare breasts and genitalia; $rho = .48$, $p < .01$), whereas the SDQ-P tended to be associated with very severe abuse (perpetrator[s] penetrated the participants's vagina and anus with penis, digits or objects; $rho = .34$, $p = .052$).

Peritraumatic Somatoform Dissociation, Reported CSA, and Reported Physical Abuse

To estimate the ability of reported CSA severity and reported physical abuse to predict peritraumatic somatoform dissociation, a multiple regression analysis was performed. In a first step, the total CSA severity score, assessed in the interview, was forced into the regression equation, and reported physical abuse was then entered stepwise. Reported physical abuse delivered an independent contribution to the prediction of peritraumatic somatoform dissociation. In the final model, the reported severity of CSA contributed to that prediction less ($beta = .27$, $p = .092$) than reported physical abuse ($beta = .43$, $p = .009$; total adjusted $R^2 = .26$).

Corroboration of Reported Childhood Sexual Abuse

The reported corroborative evidence consisted of reported confessions by the perpetrator ($N = 6$), reports of witnesses ($N = 11$), entries in childhood diaries ($N = 3$), statements in medical and judicial files ($N = 5$), reports of another victim of the same perpetrator ($N = 5$), and other sources ($N = 3$). Three of the seven participants (42.6%) who reported CR looked for external corroboration of the reported sexual abuse. All three reported having found such data. Among three of the six women (50%) who reported PR and who looked for external corroboration, two of them (33.3%) found it. Finally, among the 14 of the 21 women (66.7%) who reported DR and who attempted to find corroborative data, 10 (47.6%) were successful. Finding corroboration was independent of the type of recall (Kruskall-Wallis, $C^2 = 1.203$, df 1, n.s.).

DISCUSSION

The SDQ-P–whose internal consistency was very satisfactory–was strongly associated with the PDEQ, a measure of peritraumatic psychological dissocia-

tion. This result supports the convergent validity of the SDQ-P. Like the SDQ-20 (Nijenhuis et al., 1996), that evaluates current somatoform dissociation, the items of the SDQ-P predominantly include symptoms of anesthesia, motor disturbances, analgesia, pain and loss of consciousness. These items describe reactions that are similar to defensive reactions of animals to major threat (Nijenhuis, Vanderlinden, & Spinhoven, 1998; Nijenhuis, Spinhoven, Vanderlinden et al., 1998; Rivers, 1920).

The present study also explored the relationships among peritraumatic dissociation and different types of recall of CSA. About 60% of the present sample reported DR and only about 20% of the total sample had never forgotten the abuse. Among women with DR, a substantial subgroup also reported CR or PR of other traumatic events. Corresponding to the findings of Hunter and Andrews (1999), we found that in comparison with CR, DR was associated with peritraumatic dissociation more strongly.

Obviously, prospective studies are needed to test whether these types of dissociation cause or promote DR. To the extent that DR is a dissociative phenomenon, the current findings are consistent with those from a longitudinal study of Marmar, Weiss, Metzler, Delucchi, Best, and Wentworth (1999), who found that peritraumatic dissociation accounted for significant increments in current general dissociative tendencies.

Apart from CSA, practically all women in this study reported a wide range of other types of trauma, foremost emotional abuse and neglect. Reported physical abuse accompanied the reported CSA in about two thirds of cases. Thus, according to the participants, the CSA did not occur in isolation, but within a neglectful and abusive social context. This finding concurs with the results of longitudinal (Widom, 1999) and cross-sectional studies (Draijer & Langeland, 1999; Nijenhuis et al., 1998b), suggesting that CSA and CPA tend to occur in an emotionally abusive and neglectful social context.

As hypothesized, peritraumatic psychological and somatoform dissociation were associated with severity of reported CSA. Peritraumatic dissociation was associated with the severity of the reported CSA as assessed in the interview by posing direct questions regarding the nature of the sexual acts. More specifically, peritraumatic psychological dissociation correlated with intermediate levels of CSA severity, and peritraumatic somatoform dissociation with the total severity score, and at a trend level with very severe CSA. This is an indication that peritraumatic somatoform dissociation may be particularly associated with severe threat of the integrity of the body. Emotional abuse and neglect did not correlate with peritraumatic dissociation. This concurs with our finding that current somatoform and psychological dissociation correlated with emotional neglect and abuse less strongly than with sexual trauma and physical abuse in patients with dissociative disorders (Nijenhuis et al., 1998b).

Peritraumatic somatoform dissociation, but not peritraumatic psychological dissociation, was especially associated with reported physical abuse. In fact, reported physical abuse predicted peritraumatic somatoform dissociation over and above the severity of CSA. This finding adds to the body of data that suggests a particular association between somatoform dissociation and threat to the integrity of the body. In concurrence with this association, most SDQ-P items describe animal defense-like reactions such as freezing and total submission. Thus the results of this study are consistent with the model which holds that threat to the integrity of the body can evoke dissociative reactions that are manifestations of animal defense-like, emotional psychobiological systems (Nijenhuis, van der Hart, & Steele, 2000).

The accuracy of the CSA memories was explored by including an item about corroboration in the interview. About two thirds of the participants looked for external corroboration and about three quarters of this subgroup found it. Whether or not corroboration for (aspects of) the CSA was found did not depend on the type of recall. This result concurs with data from other studies suggesting that delayed memories of CSA are as reliable as continuously accessible memories of CSA (Dalenberg, 1996; Williams, 1995). Finding corroboration of delayed memories of abuse is not uncommon. For example, in a study by Chu et al. (1999), 90% of the participants with complete amnesia who sought confirmation of their abuse were able to find some evidence that confirmed it. These data obviously do not suggest that all reports of delayed CSA memories are accurate. Inaccuracies may exist in some reports and in the peripheral details of other reports.

A major methodological limitation of the present study was the use of retrospective data. Thus, the current data could be subject to memory distortions and inaccuracies. However, Marmar et al. (1999) found that reports of peritraumatic dissociation were stable over time in a longitudinal study, and that the results of prospective longitudinal studies of peritraumatic dissociation (e.g., Koopman et al., 1994; Shalev et al., 1996) converged with the results from retrospective studies. Due to the modest number of participants, the power of the statistical tests is limited. Another limitation is that all participants were members of a Dutch national organization against CSA, which could affect the applicability of the study to other populations. Finally, no attempt was made to assess the validity of the reported independent corroboration of CSA memories.

In conclusion, while somatoform dissociation has been rediscovered in the last decade, the current article is the first one to systematically address a wide range of peritraumatic somatoform dissociative phenomena. Our understanding of acute trauma responses and their role in the development of posttraumatic psychopathology can be enhanced by including peritraumatic somatoform dissociation in future research.

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The Development of the Somatoform Dissociation Index (SDI): A Screening Measure of Dissociation Using MMPI-2 Items

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ABSTRACT. The development of a new instrument for measuring dissociation, the Somatoform Dissociation Index (SDI), based on somatic items embedded in the MMPI is described. Logistic regression analyses revealed a set of 11 MMPI items that best optimized discrimination of dissociative and non-dissociative patients. The SDI's split-half reliabilities were .85 and .83 across studies. Cronbach's alpha scores were .82 and .86, respectively. Convergent validity was confirmed by significant correlations between the SDI and three commonly used measures of dissociation. A cutoff score of 6 was the SDI score with the highest accuracy of clinical classification when dissociation was quantified by summing salient responses to the individual items. The utility of the SDI and the Somatoform Dissociation Questionnaire as viable measures of dissociation was compared and discussed. *[Article copies available for a fee from The Haworth Document Delivery Service: 1-800-342-9678. E-mail address: <getinfo@haworthpressinc.com> Website: <http://www.HaworthPress.com> © 2001 by The Haworth Press, Inc. All rights reserved.]*

In measuring the architecture of dissociation, five processes pertaining to the alteration of consciousness are generally considered: amnesia, depersonal-

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