Australian and New Zealand Journal of Psychiatry, 38, **678-686, 2004.**

Running head: SOMATOFORM DISSOCIATION, TRAUMA, AND DEFENCE

Somatoform Dissociation, Reported Abuse, and Animal Defence-like Reactions

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Abstract

Objective: To test the hypotheses that among general psychiatric outpatients, somatoform dissociation is associated with posttraumatic stress-symptoms and with reported potentially traumatizing events, especially with events that involve bodily threat from a person, also when reported age at onset, duration, and subjectively rated impact of potentially traumatising events are considered. **Methods**: Administration of self-report questionnaires evaluating the severity of somatoform and psychoform dissociation, posttraumatic stress-symptoms, and reported traumatizing events, using samples of consecutive and unselected psychiatric outpatients (N = 153). **Results**: Somatoform dissociation was strongly correlated with posttraumatic stress-symptoms and with reported cumulative traumatisation as assessed with two different self-report trauma questionnaires. Among a wide range of trauma types, bodily threat from a person best predicted somatoform dissociation. Emotional neglect and age further improved the prediction, but emotional neglect and abuse did not predict somatoform dissociation when interpersonal threat to the body was not reported. Somatoform dissociation was also best predicted by bodily threat when reported age at onset, duration, and subjective impact of reported traumatisation were included in the analyses.

Conclusion: This retrospective study suggests that recurrent interpersonal bodily threat may evoke animal defence-like psychobiological systems manifesting as somatoform dissociation, and that this type of threat is often accompanied by emotional neglect. These hypotheses should now be tested in prospective studies.

Key words: somatoform dissociation, psychoform dissociation, trauma, defence

[Word count: 212]

Dissociation manifests in psychoform and somatoform dissociative symptoms [1,2]. Psychoform dissociation pertains to disturbances of memory, consciousness, identity, and altered perception of the environment, symptoms that phenomenologically involve psychological variables, such as dissociative amnesia and identity fragmentation. Somatoform dissociation designates dissociative symptoms that phenomenologically involve the body, i.e., phenomena that are manifestations of a lack of integration of somatoform experiences, reactions, and functions [1,2]. For example, one dissociative part of the patient's personality can experience bodily anesthesia, analgesia, or paralysis in one or more parts of the body. However, when dominated by another dissociative part of his personality, the patient can experience common body sensations, or pain in one or more parts of the body, and moves normally. Sometimes one dissociative part influences the experiences and behaviors of another part. For example one part may influence the body movements of another part such that the second part involuntarily makes the body movement that are initiated and controlled by the second part.

Somatoform dissociation is correlated with reported traumatisation in clinical and non-clinical samples [3-10]. In these studies, somatoform dissociation is associated most strongly with bodily threat and threat to life from a person among a wide range of potentially traumatising events. These findings are consistent with the somatoform dissociation-animal defence model that links major somatoform dissociative symptoms with animal defence-like reactions [11,12]. These symptoms would represent expressions of the psychobiological system of defence [13] that is evoked by predatory threat in many animal species.

The two major defensive subsystems are freezing, with the related development of analgesia (i.e., lack of pain perception), and total submission associated with bodily and emotional anesthesia. Thus, the animal defence-like reactions that manifest as somatoform dissociative symptoms are freeze-like symptoms (i.e., motor inhibitions such as having

difficulty moving and speaking, or being unable to perform these acts), analgesia, and symptoms that mark total submission (i.e., paralysis and somatosensory and emotional anesthesia).

Nijenhuis et al. [11] also hypothesised that bodily threat evokes animal defence-like, somatoform dissociative reactions especially in early childhood when psychobiological integrative capacity is still limited, and especially when the threat is of a recurrent nature. Thus, when a child is exposed to severe and recurrent bodily threat, the defensive (sub)system(s) may not, or may not sufficiently become integrated into the developing personality. Personality can be conceptualized as a range of different action systems that normatively become integrated as a result of ontogenetic development [14, 15]. Accordingly, one or more dissociative parts of his personality mediated by animal defence-like action systems will be fixated on threat cues, and engage in flight, freeze/analgesia, fight, or total submission/bodily anesthesia and paralysis. In contrast, the functioning of one or more other dissociative parts of the personality is mediated by action systems for functioning in daily life such as caretaking, exploration of the environment, and play [15].

In a first test of this hypothesis, supportive evidence for this somatoform dissociation-animal defence model was found [12]. Among 12 somatoform dissociative symptom clusters, those expressive of freezing, analgesia, total submission, and urogenital pain best predicted dissociative disorders in a sample of 50 outpatients with dissociative disorders, primarily dissociative disorder not otherwise specified and dissociative identity disorder [16], and 50 general psychiatric outpatients with other DSM-IV diagnoses. In this sample, 94% of dissociative disorder patients were correctly classified by these symptom clusters. In an independent cross validation sample, 96% of cases were correctly classified by anesthesia/analgesia and urogenital pain, both before and after correction for the influence of general psychopathology.

Findings of a recent neuroimaging study support the hypothesis that particular dissociative parts of the personality but not other parts typically engage in emotional, animal defence-like reactions [17, 18]. While listening to trauma memory scripts, these "emotional" parts of the personality of patients with dissociative identity disorder but not "apparently normal" parts habitually engaging in daily life tasks, experienced many somatoform dissociative symptoms, and had increases of heart rate and blood pressure. The somatoform dissociative symptoms notably included motor inhibitions, anesthesia, and analgesia. Compared to the apparently normal parts, the emotional parts had more cerebral blood flow in the insula and parietal operculum, and less flow in medial prefrontal, parietal and occipital cortex.

Prior studies have not explored the relationship between posttraumatic stress-symptoms and somatoform dissociation. Because of their relationships with (reported) traumatisation, it was hypothesised that somatoform dissociation would be correlated at least moderately with posttraumatic stress-symptoms. Since the correlation between reported traumatisation and somatoform dissociation can be mediated by psychoform dissociation and (chronic) posttraumatic stress-symptoms, the current study explored whether somatoform dissociation correlates with reported potentially traumatising events independently from these other, but related types of psychopathology. Somatoform dissociation predicted reported traumatisation over and above the influence of psychoform dissociation in gynecology patients with chronic pelvic pain [6]. It was hypothesised that a similar picture might emerge for psychiatric patients.

In sum, the present study aimed to explore three hypotheses. First, when somatoform dissociation is trauma-related, these symptoms would correlate with posttraumatic stress symptoms. Second, when there is a specific relationship between somatoform dissociation and bodily threat, somatoform dissociation would predict reported bodily threat independent

from the effects of posttraumatic stress-symptoms and psychoform dissociation. Third, this relationship would also apply when age at onset, duration, and subjective impact of reported traumatisation are considered.

Method

Participants

Because the hypotheses are not specific to particular clinical groups, but relate to a general psychobiological model, a clinical sample was taken from new referrals to a general psychiatric outpatient department, patients who were in outpatient treatment, as well as patients who were in day treatment. Patients not invited to participate in the study included (1) those with severe mental illness, and (2) those whom the attending clinician deemed likely to decompensate as a result of completing of the self-report instruments, notably the trauma questionnaires. .

The sample, N = 153, included 53 consecutive new referrals to a general psychiatric outpatient department, and 45 patients in regular care (they attended once every week or two weeks, for one hour of treatment). An additional 27 patients had more intensive treatment on an outpatient basis (treatment is for a longer period – at least two hours or more per week). The remaining 28 patients received full day treatment.

The patients came from a number of Dutch mental health institutions.

The consecutive cases (35% of the sample) involved referrals to a general psychiatric outpatient department. Referrals to this institution involve the spectrum of DSM-IV diagnoses. In 43% of the other cases, the DSM-IV diagnoses of the participants were available. The diagnoses included a broad range of mental disorders such as anxiety disorders, phobias, eating disorders, depersonalization disorder, bipolar mood disorder, schizophrenia, and borderline personality disorder.

The total sample involved 92 women, 57 men, and 4 participants who did not state their gender. The mean age of the sample was 35.01, SD = 11.23, range 18-69. Of the sample, 8.7% had primary education, 56.7% completed intermediate education, and 34.7% had higher education. There were 38.2% of respondents that were single, 32.2% were married, 16.1% were co-habitating, 12.8% were divorced, and 0.7% were widowed.

Instruments

Traumatic Experiences Checklist (TEC [5,19])

The TEC is a self-report questionnaire inquiring about 29 types of potentially traumatizing events with good psychometric characteristics in clinical samples. Using the current data set, it was found that the internal consistency of the TEC (Cronbach's = .86, test, and α = .90, retest) was good, as was test-retest reliability over a three to four week period (r = .91), and convergent validity. The correlation with the SLESQ [discussed below] was r = .77.

The TEC allows for calculating scores for severity of trauma types involving four variables: (a) presence of the event; (b) age at onset, indicating whether trauma had occurred, or started, in the first six years of life or thereafter, (c) duration of the trauma, indicating whether trauma had lasted shorter or longer than one year; and (d) subjective response, indicating whether the subject did not feel traumatised or only slightly traumatised, versus moderately, severely, or extremely traumatised by the event(s).

These variables were given a score of 1 if they applied, and a score of 0 if they did not apply. The scores were calculated per setting in which the trauma occurred: that is, in the family of origin, in the extended family, or in other settings. Next, these scores per trauma type were added. Thus, the possible composite score per trauma type (emotional neglect, emotional abuse, sexual harassment, and sexual abuse) ranged from 0 to 12. The range of scores for bodily threat/intense pain (including physical abuse, three items, life threat from a

person, intense pain, and bizarre punishment, one item each) was calculated somewhat differently. The occurrence of physical abuse involved assessment of three settings in which the abuse might have occurred, with a range of scores from 0 to 12. As to life threat from a person, pain and bizarre punishment, the TEC does not specifically assess the setting in which the event occurred. The scores for each of these three items ranged from 0 to 4, while the total score for bodily threat/intense pain ranged from 0 to 24.

The created trauma variables proved to be homogeneous constructs when studying patients with dissociative and other DSM-IV disorders [5]. Using the present data set, it was found that the internal consistency, constituent item score-total scores for presence and severity of trauma types, and test-retest reliability of the scores for presence and severity of trauma types were satisfactory [20].

Stressful Life Events Screening Questionnaire (SLESQ [20])

The SLESQ has more precise item descriptors compared to the TEC. The SLESQ showed good test-retest reliability (.89), with a median kappa of .73. The median kappa between the SLESQ items and an interview two weeks later was .64. Thus, the convergent validity of the SLESQ is adequate. The prevalence rates of the various types of trauma assessed by the SLESQ are were similar to the rates assessed in comparable samples with other instruments, indicating adequate concurrent validity.

Somatoform Dissociation Questionnaire (SDQ-20 [2,21])

The SDQ-20 is a 20-item self-report questionnaire measuring somatoform dissociation. Examples of SDQ-20 items include: Sometimes my body, or a part of it, feels numb; Sometimes my body, or a part of it, is insensitive to pain; Sometimes I feel pain in my genitals (at times other than sexual intercourse); Sometimes I am paralysed for a while. The items are scored with a 5 point Likert scale. The scores range from 20 to 100. The items are strongly scalable on a unidimensional latent scale. The internal consistency of the instrument

was high (Cronbach's $\alpha = .95$), the test–retest reliability was very satisfactory [22], and the scores were not dependent on gender or age. The high intercorrelations with measures of psychoform dissociation supported the convergent validity of the SDQ-20 [2, 21-23]. Patients with dissociative disorders scored higher in comparison with patients with other DSM-IV diagnoses, which demonstrated criterion-related validity. Discriminant validity was supported by the SDQ-20's capacity to distinguish among diagnostic groups over and above general psychopathology [23]. Somatoform dissociation was correlated with reported trauma [24] in patients with dissociative disorders [25] and in gynecology patients with chronic pelvic pain [6] This was especially true of reported physical abuse and sexual trauma. These findings supported the construct validity of the SDQ-20.

Dissociative Experiences Scale (DES [25])

The DES is a 28-item self-report questionnaire that evaluates psychoform dissociation. The scores range from 0 to 100. The DES has adequate test-retest reliability, good internal consistency, and good clinical validity.

PTSD-self scoring (PTSD [26])

The PTSD-ss is a self-report screening instrument for DSM-IV posttraumatic stress disorder. The 21 items of the scale evaluate the severity of re-experiencing, avoidance, and hyperarousal symptoms. The internal consistency of the three symptom groups was, respectively, $\alpha = .88.$, $\alpha = .88$, and $\alpha = .93$ [19]. The convergent validity is good, sensitivity is 86%, and specificity 80%.

Procedure

Attending clinicians provided a letter of invitation to participate in the study to psychiatric patients whom they regarded as meeting eligibility criteria (i.e., psychiatric patients without severe mental illness able to complete the self-report questionnaires unaided

and without considerable risk of decompensation). After informed consent, the participants completed the TEC, DES, SLESQ, and SDQ-20 unaided, in that order, in their own time. Next, they sent the questionnaires to the research assistant. Counterbalancing was not applied because it was felt that the chosen order would present the participants with the least stress. Most of the participants (N = 103) completed the TEC for the second time after a delay of three to four weeks, and they subsequently also completed the PTSD-ss. Attending clinicians were not informed of the scores of their patients. The participants were not paid for their effort.

Scoring and Data Analyses

Because the distribution of the scores on the DES and SDQ-20 were skewed (skewness > 1), logaritimic transformations to base e of these measurements were performed on these two variables. Associations among the measures of psychopathology and total trauma scores and scores for trauma types were calculated using Pearson product moment correlations.

Age did not affect the measures of psychopathology (all Pearson product moment correlations were not significant). However, women had higher scores for somatoform dissociation (t = - 2.240 (141.9), p = .027), psychoform dissociation (t = - 2.164 (141.9), p = .032), and posttraumatic stress-symptoms (t = –3.671 (99), p < .0001). Thus, gender was entered in the relevant multiple regression analyses.

According to Tabachnick and Fidell [27], collinearity of independent variables may build spurious associations with a dependent variable in the regression equation. This logical problem may arise with correlations > .70. Psychoform and somatoform dissociation were strongly intercorrelated, but the magnitude did not exceed the critical value for collinearity.

To assess the power of somatoform dissociation, psychoform dissociation, posttraumatic stress-symptoms, and gender to predict the TEC and SLESQ total scores, stepwise multiple regression analyses were performed using forward selection (p to enter < .05) and backward elimination (p to remove > .10) based on likelihood ratio estimates. Estimating the types of trauma that best predicted symptoms of somatoform dissociation, a stepwise multiple regression analysis was performed, entering TEC scores for presence of trauma types, and a reduced number of SLESQ variables, respectively. Estimating the influence of trauma severity in terms of presence, age at onset, duration, and subjectively rated current impact on somatoform and psychoform dissociation, and posttraumatic stress-symptoms, the scores for severity of TEC trauma types were entered stepwise into multiple regression analysis.

To control for collinearity among the scores for presence and severity of trauma types to predict somatoform dissociation, Pearson product-moment correlations among these TEC variables were calculated. To assess whether gender or age affected the trauma scores, t-tests were performed and Pearson product-moment correlations were computed, respectively. With regard to most constructed trauma variables (total score and scores for trauma types), women had significantly higher scores than men. The scores for severity of TEC sexual trauma (r = .18), bodily threat from a person/pain (r = .19) and bodily threat otherwise (r = .18) correlated with age. Thus gender and age were entered in the relevant regression analyses.

Statistical analyses were performed with SPSS-PC 9.0 [28].

Results

Reported Trauma and Somatoform Dissociation, Psychoform Dissociation, and Symptoms of Posttraumatic Stress

Somatoform dissociation was intercorrelated with psychoform dissociation (r = .62, p <.0001) and posttraumatic stress-symptoms (r = .47, p <.0001). Tables 1, 2 and 3 show the Pearson product moment correlations among the TEC and SLESQ total and item scores and somatoform dissociation, psychoform dissociation, as well as symptoms of posttraumatic stress. For the SDQ-20, 14 of 29 TEC items were positively correlated for the DES nine TEC items, and for the PTSD-ss 10 TEC items after Bonferonni corrections for Type I error. The SDQ-20 positively correlated with five separate SLESQ items after this correction, the DES with three, and the PTSD-ss with six SLESQ items.

Stepwise multiple regression analyses, using forward entrance of somatoform dissociation, psychoform dissociation, posttraumatic stress-symptoms and gender, showed

[INSERT TABLE 1, 2 AND 3 ABOUT HERE]

that the TEC total score was predicted by somatoform dissociation (beta .48) and posttraumatic stress-symptoms (beta .30)(F = 39,44 (1, 97), p < .0001, total equation adjusted R^2 = .45). The SLESQ total score was also predicted by somatoform dissociation (beta .40) and posttraumatic stress-symptoms (beta .29)(F = 26,08 (1,99), p <.0001, total equation R^2 = .28).

To estimate the types of reported potentially traumatising events that best predicted symptoms of somatoform dissociation, a reduced number of created TEC variables was entered into a stepwise multiple regression analysis. Items that did not correlate with somatoform dissociation were disregarded a priori (losses by death, divorced parents; see Table 1), as were items that were only modestly correlated with somatoform dissociation and

difficult to cluster (own divorce, war experiences, second generation war victim, witnessing others undergo trauma). The tested scores for presence of TEC trauma types involved reported emotional trauma; bodily threat; life-threatening experiences from illness, surgery, or an accident; sexual trauma; and family-related problems. The Pearson product-moment correlations among these variables ranged from r = 0.01 (family-related problems x bodily threat otherwise) to r = .62 (emotional trauma x bodily threat from a person), meaning that all correlations remained below the critical value for collinearity.

Somatoform dissociation was best predicted by reported bodily threat, beta .40 (F change 58.621 (1, 142), p < .0001) and emotional neglect, beta .28 (F change 12.442 (1, 141), p = .001)(total equation adjusted R^2 = .34). Psychoform dissociation was best predicted by reported emotional neglect, beta .34 (F change 36.971 (1, 144), p < .0001) and bodily threat, beta .21 (F change 6,040 (1, 143), p = .015; total equation adjusted R^2 = .23). Symptoms of posttraumatic stress were best predicted by a model including reported sexual trauma, beta .24 (F change = 24,474 (1, 98), p < .0001), family-related problems, beta .31 (F change = 13.990 (1, 97), p <.0001), and emotional neglect, beta .23 (F change = 4.693 (1, 96), p = .033; total equation adjusted R^2 = .31).

The same type of calculation was applied to the SLESQ variables and yielded similar results. Because collinearity existed between the SLESQ items measuring reported sexual trauma and bodily threat from a person (r = .79), these items were combined into one cluster. The cluster score-constituent item scores ranged from r = .28 to r = .71, all p < . 001. Cronbach's α was .62. Because women had higher scores for this cluster than men ((t = -2.736 (147), p = .007), gender was controlled for in the regression analysis. The other items of the SLESQ could not be meaningfully clustered. Somatoform dissociation was best predicted by reported sexual trauma and bodily threat from a person, beta .32 (F change = 26,289 (1, 141), p < .0001) and witnessing murder, severe injury, or sexual abuse that happened to

someone else, beta .18 (F change 4,619 (1,140), p = .033; total equation adjusted R^2 = .20). This cluster also best predicted psychoform dissociation (adjusted R^2 = .12), and posttraumatic stress-symptoms were predicted by this cluster in conjunction with reported traumatic loss of a close family member, partner or friend (adjusted R^2 = .32).

Relationship of Scores for Reported Severity of Trauma Types and Somatoform Dissociation

As applied to the scores for presence of trauma types, the severity score for reported bodily threat from a person/intense pain was associated with somatoform dissociation most strongly (r = .47, p <.001). The correlation of bodily threat and psychoform dissociation was r = .26 (p <.01), and the correlation with posttraumatic stress-symptoms r = .43 (p <.001). A multiple regression analysis with stepwise entrance of severity scores for reported emotional neglect, emotional abuse, bodily threat from a person/intense pain, sexual harassment, and sexual abuse showed that after controlling for gender, somatoform dissociation was best predicted by bodily threat from a person/intense pain, beta .36 (adjusted R^2 = .12, F change 13.573 (1, 92), p < .0001). Psychoform dissociation and posttraumatic stress-symptoms were best predicted by emotional neglect, and emotional abuse severity scores, respectively.

The composite scores may have been flawed by the inclusion of retrospective estimations of impact of trauma. It could be that this inclusion would index the severity of current symptomatology rather than index the original impact of trauma. However, deleting this variable from the composite scores did not alter the results.

Reported Cumulative Traumatization, Dissociation and Posttraumatic Stress-symptoms

Several groups were created, and their TEC scores were considered in order to test the hypothesis that reports of multiple PTSD criterion A experiences [16] (i.e., experiences

involving “actual or threatened death or serious injury, or a threat to the integrity of self and others” [p. 427]) are associated with the severity of dissociation and symptoms of posttraumatic stress. The groups consisted of participants who did not report traumatic experiences (N = 15, 9.8%, group 1); reported only non-criterion A experiences, including emotional neglect and abuse (N = 15, 9.8%, group 2); reported only one criterion A experience (N = 32, 20.9%, group 3); up to four criterion A events (N = 59, 38.6%; group 4); and more than four criterion A events (N = 32, 20.9%, group 5). In group 4, 39 participants (66.1%), and in group 5 all but two participants (93.8%), reported emotional neglect and/or emotional abuse. Thus in the current sample, exposure to multiple criterion A experiences was accompanied by emotional neglect and emotional abuse in the majority of cases. ANOVA revealed that the SDQ-20 ($F = 11.11$ (4, 143), $p < .0001$), DES ($F = 6.614$ (4, 146), $p < .0001$), and PTSD-ss ($F = 9.188$ (3, 89), $p < .0001$), discriminated among these 5 groups (SDQ-20 and DES) and 4 groups respectively (the PTSD-ss obviously could not be completed when the participant did not report any traumatic experience) (see Table 3). Post hoc Tukey HSD tests showed that the symptom measurements only differentiated group 5 from the other groups.

[INSERT TABLE 3 ABOUT HERE]

Consecutive cases and other cases

The study could be biased when the main hypothesis, i.e., that threat to the integrity of the body from a person is strongly correlated with somatoform dissociation, would not hold for separate groups, i.e., the group with consecutively sampled cases or the other participants. However, the severity of somatoform dissociation (and psychoform dissociation, and posttraumatic stress symptoms) did not differ for the consecutive cases and the other cases (all

t-tests not significant), and the correlation between the SDQ-20 and bodily threat was similar for both groups (r = .46 among the consecutive cases, and r = .53 among the other cases).

Discussion

Findings are consistent with the hypotheses. Somatoform dissociation was correlated with posttraumatic stress-symptoms, and predicted reported traumatisation over and above the influence of psychoform dissociation and symptoms of posttraumatic stress. Somatoform dissociation was best predicted by threat to the body and life from a person/intense pain among a wide range of trauma types. Somatoform dissociation was also best predicted by bodily threat when age at onset and duration of reported traumatisation were considered. These findings highlight that future studies of dissociation and trauma should consider somatoform dissociation, and that the entire domain of dissociation should not be equated with psychoform dissociation. For example, one study [29] concluded that "dissociation (in addition to PTSD symptoms) is a primary response to sexual abuse but that it is less strongly associated with physical abuse experiences." (p. 219). A different picture emerges when somatoform dissociation is considered as well.

Reported emotional neglect improved the predictive power of the regression model. This suggests that emotional trauma is a risk factor for the maintenance of peritraumatic somatoform dissociative reactions to severe bodily threat. That is, neglectful care givers may fail to teach offspring how to modulate state, and may fail to assist them in integrating highly stressful experiences in the aftermath of potentially traumatizing events [30].

Nash et al. [31] found that the association between psychoform dissociation and reported trauma disappeared when considering family pathology as a covariate. However, reported physical abuse best predicted somatoform and psychoform dissociation over and above family problems, emotional neglect, and emotional abuse [5]. Other studies also

suggested that sexual and physical abuse were the best predictors of psychoform dissociation but emotional neglect and abuse, and maternal dysfunction constituted the climate in which sexual and physical abuse had occurred [5,6,32].

In the current study, emotional trauma predicted psychoform dissociation best. Yet, symptoms of posttraumatic stress, psychoform dissociation and somatoform dissociation were not associated with emotional neglect, emotional abuse, and family problems when these occurred in the absence of bodily threat and sexual trauma. In fact, neither were a single or a few reported PTSD-criterion A events. Thus, high scores for these forms of psychopathology seem specifically related to cumulative threat to the integrity of the body. Other studies have also found that subjects who report exposure to multiple interpersonal traumatisation [33] or whose severe childhood abuse was documented [34] are at special risk for developing trauma-related psychopathology.

Retrospective studies are subject to methodological limitations restricting causal inferences between reported trauma and dissociation [27,35]. Hence, it is not warranted to conclude from the present data that one phenomenon is caused by another. In this context, the conclusion of Nash et al. [31] that adult psychopathology and dissociation in women with a history of childhood sexual abuse might be a consequence, at least in part, of a pathogenic family structure, rather than the abuse per se, must also be considered with caution.

It has been suggested that dissociative symptoms result from fantasy-proneness [36], suggestibility, or general psychopathology [37], and that somatoform dissociation could simply reflect somatization. Florid and recovered cases of complex dissociative disorders had higher scores for fantasy proneness than healthy controls, but used fantasy to create a safer imagery world to cope with traumatic experiences [38]. There is no evidence that somatoform dissociation can be explained by suggestibility [24, 39]. Consistent with this, the SDQ-20 (as well as the DES and PTSD-ss) scores were similar in consecutive new cases and in patients

that had been in treatment for at least some time in the current study. Furthermore, somatoform dissociation is not an effect of general psychopathology [23], and predicted reported trauma over and above the influence of somatization [6]. Finally, somatoform dissociation, but not somatization, was strongly correlated with psychoform dissociation [6].

Limitations of the present study were that the external validity of the reported presence and absence of traumas on the TEC were not assessed. Assessing under- and over-reporting of trauma on the TEC is an important future goal. Keeping these reservations in mind, a range of empirical data suggests that the present results are unlikely to reflect effects of suggestion. Animal defence essentially involves phenomena such as analgesia, anaesthesia and motor inhibitions [11], which are prominent items of the SDQ-20. In addition, peritraumatic and posttraumatic somatoform dissociative symptoms were characteristic of World War I "shell-shocked" soldiers [1]. Also, retrospective and prospective, longitudinal studies show that authentic overwhelming events may evoke peritraumatic somatic symptoms and somatoform dissociative symptoms in children and adults [40-42]. Peritraumatic dissociation, more generally, was predictive of subsequent PTSD [43], dissociative disorders [7, 41], and somatoform disorders [41].

In summary, somatoform dissociation was a potent predictor of reported cumulative traumatisation. Among a wide range of trauma types, somatoform dissociation was associated most strongly with recurrent bodily threat from a person, intense pain, and emotional neglect that started early in life. These associations may be due to the evocation of defensive psychobiological systems in the face of recurrent major threat to the integrity of the body and to life itself from a person. This hypothesis should now be tested in prospective, longitudinal research.

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Table 1. Pearson product-moment correlation among somatoform dissociation, psychoform dissociation, posttraumatic stress-symptoms and TEC variables

	SDQ-20	DES	PTSD-ss
TEC total score	.57	.42	.53
TEC scores for trauma types:			
bodily threat/intense pain	.52	.35	.43

emotional abuse and neglect	.51	.44	.43
sexual trauma	.39	.31	.45

all $p < .001$

Table 2. Pearson product-moment correlation among somatoform dissociation, psychoform dissociation, posttraumatic stress-symptoms and TEC items

Trauma variables	Somatoform dissociation	Psychoform dissociation	Posttraumatic stress-symptoms
Parentification	.29*	.25	.29
Family problems (e.g., parent with			

alcohol or psychiatric problems, poverty)	.26*	.18	.38*
Divorced parents	.05	.05	-.05
Own divorce	.20	.07	.19
Loss of own child or partner in adulthood	-.08	-.08	.04
Loss of member of family of origin in childhood	.13	.07	.18
Severe bodily injury (e.g., loss of limb, burns)	.21	.06	.20
Intense pain from injury, surgery, torture	.42*	.30*	.32*
Threat to life from illness, surgery, accident	.18	.17	.15
Deliberate threat to life from another person	.39*	.26*	.28
Witnessing others undergo trauma	.17	.16	.23
War-time experiences	.22	-.03	.19
Second generation warvictim	.19	.18	.28
Emotional neglect by member family of origin	.37*	.39*	.31*
Emotional neglect by other family member	.42*	.35*	.31*
Emotional neglect by nonfamily members	.36*	.27*	.18
Emotional abuse by member family of origin	.38*	.33*	.40*
Emotional abuse by other family member	.20	.12	.22
Emotional abuse by nonfamily members	.36*	.29*	.35*
Physical abuse by member family of origin	.21	.14	.36*
Physical abuse by other family member	.24	.19	.25
Physical abuse by nonfamily member	.36*	.18	.31*
Bizarre punishment	.39*	.27*	.21
Sexual harassment by member family of origin	.24	.21	.28
Sexual harassment by other family member	.02	.07	.15
Sexual harassment by nonfamily member	.30*	.29*	.39*

Sexual abuse by member family of origin	.32*	.24	.35*
Sexual abuse by other family member	.01	.04	.13
Sexual abuse by nonfamily member	.35*	.19	.29

Bonferroni correction: $\alpha = .05/29 = .002$; * $\underline{p} < .002$

Table 3. Pearson product-moment correlation among somatoform dissociation, psychoform dissociation, posttraumatic stress-symptoms and SLESQ variables

SLESQ	SDQ-20	DES	PTSD-ss
Life-threatening disease	.19	.18	.12
Life-threatening accident	.13	.10	.04
Physical force or weapon used against p.			

in a robbery or mugging	.13	.12	.15
Death of a significant other due to accident homicide or suicide	.16	.16	.36*
Physically forced sexual abuse including vaginal, anal or oral penetration	.33*	.19	.34*
Attempted sexual abuse by use of physical force or threat	.28*	.28*	.34*
Sexual abuse in terms of touching of own private parts or being forced to touch private parts of the perpetrator	.27*	.25*	.34*
Childhood physical abuse	.24*	.13	.27*
Physical abuse otherwise	.18	.15	.21
Being threatened with a weapon in another sense than detailed in the previous items	.11	.12	.23
Witnessing murder, sexual abuse or physical abuse	.33*	.26*	.30*
Serious injuries or life-threat in another sense than detailed in the items above	.02	.01	.02
Total scale	.46*	.38*	.48*

Bonferroni correction: $\alpha = .05/12 = .004$; * $\underline{p} < .004$

Table 4. Somatoform dissociation, psychoform dissociation, and posttraumatic stress-symptoms as related to levels and types of trauma reporting on the TEC

	SDQ-20		DES		PTSD-ss	
	M	SD	M	SD	M	SD
1. no trauma reporting	22.13	5.34	7.24	8.55	-	-
2. emotional neglect and abuse only	22.53	2.61	10.52	6.04	32	9.64
3. one criterion A event	22.58	3.84	11.07	11.03	33.65	7.95

4.	up to 4 different criterion A events	25.38	5.05	13.12	10.46	37.54	9.77
5.	more than 4 different criterion A events	31.71*	10.47	22.58*	15.98	45.36*	7.43

* According to ANOVA and post hoc Tukey HSD, group 5 had higher SDQ-20, DES, and PTSD-ss scores than the other four groups.