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Relationships between Self-Reported Potentially Traumatizing Events, Psychoform
and Somatoform Dissociation, and Absorption, in Two Non-Clinical Populations

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Abstract

Objective: Some authors have suggested that the personality characteristic ‘fantasy proneness’ may mediate the correlation between reported potentially traumatizing events and dissociative symptoms. Other authors question the reported magnitude of this correlation in non-clinical samples because these are usually derived from student samples and may therefore suffer from a restriction of range. The primary aim of this study is to assess the relationship between a self-report measure of traumatisation and psychoform dissociation as well as somatoform dissociation in a non-clinical population, while accounting for the influence of fantasy proneness. **Method:** Two random non-clinical samples, i.e., a student and an adult non-student sample, completed a range of relevant self-report questionnaires. Absorption was used as an index of fantasy proneness. **Results:** The range of reported potentially traumatising events was restricted in students, compared to non-students. In both samples a significant correlation was found between reported potentially traumatizing events and dissociation. After partialling out absorption, the relationship between reported potential traumatisation and psychoform dissociation diminished substantially in both samples. The magnitude of the correlation with somatoform dissociation decreased to a lesser degree, so that it remained significant in both samples. **Conclusions:** The correlation between somatoform dissociation and reported traumatisation, after partialling out absorption, gives a reliable estimate of the magnitude of the relationships between potentially traumatising events and dissociation. Findings regarding traumatisation and dissociation in students should be generalised to the general population cautiously.

Key words: trauma, somatoform and psychoform dissociation, absorption

The Relationship between Self-Reported Trauma and Psychoform and Somatoform
Dissociation in a Non-Clinical Population

Traumatic experiences and dissociative symptoms seem to be intrinsically related. There are two main, not mutually exclusive theories about this relationship. One theory proposes that some people have the capacity to dissociate and will use this capacity to ward off the impact of horrible experiences [1]. In this view, dissociation is a coping mechanism with negative side-effects, because non-integrated traumatic experiences—i.e., aversive sensorimotor and highly affectively charged experiences — tend to intrude consciousness. According to Nijenhuis, Van der Hart, and Steele [2] these intrusions relate to rudimentary or more complex dissociative emotional parts of the personality. The emotional parts manifest themselves in dissociative symptoms such as dissociative flashbacks, nightmares, and re-experiencing traumatising events. The emotional parts can intrude into the consciousness of those parts of the personality dedicated to functioning in daily life, or take over executive control of consciousness and behavior for some time. As for those aspects associated with functioning in daily life, survivors use dissociative skills to avoid traumatic memories and the emotional parts—manifesting in symptoms such as dissociative amnesia, depersonalization, emotional and bodily numbing--but these dissociative skills are fallible. In other theories [2-4], dissociation arises because severe stress can interfere with normal integrative mental processes, notably when the individual's integrative capacity is limited due to factors such as immaturity of the brain and prior stress exposure. Due to a lack of integration, cues that are saliently related to the traumatising event will elicit different psychobiological reaction patterns for different dissociative parts of the personality [5]. For emotional parts, these cues almost automatically trigger more or less complete traumatic

memories, involving a lack of inhibition. However, parts dedicated to functioning in daily life inhibit emotional reactivity to trauma-related cues, but are depersonalized and may have incomplete declarative memories of the traumatizing event(s). Posttraumatic stress disorder (PTSD) and Acute Stress Disorder (ASD) are categorized as anxiety and clearly stress-related disorders in the DSM IV, but there are sufficient arguments to consider them as essentially dissociative in nature [6]. This perspective is supported by theories that describe traumatic memories of PTSD patients as dissociated imprints of the sensory and affective elements of traumatic experiences [7]. The associated visual, olfactory, affective, auditory, and kinaesthetic experiences can all be categorized as somatoform dissociative symptoms.

In line with these theories, higher levels of dissociation are reported in groups of traumatised individuals compared to non-traumatised control groups [8]. Chronicity and severity of trauma were also found to predict level of dissociation in abused children [9]. Furthermore, an association between traumatisation and dissociation is supported by moderate correlations between a measure of traumatisation and dissociation in groups of traumatised individuals [10]. In a student sample of 312 subjects, the correlation between self-reported physical abuse and dissociative symptoms was 0.18, and between self-reported sexual abuse and dissociative symptoms 0.21 [11]. Combining data from 26 studies on patients and non-patients in a meta-analysis resulted in a correlation of 0.25 between a measure of physical or sexual abuse and dissociation [12]. The modest size of these correlations is not surprising given the difficulty in capturing the severity and impact of traumatisation reliably in an index. Furthermore, correlations are a measure of *linear* association between an index of traumatisation and a measure of dissociation. A model that

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smells, pain, and loss of consciousness [17]. In patients with conversion disorder, those who reported multiple types of traumatisation had higher scores on the SDQ-20, but not on the DES, indicating a relationship between the severity of reported traumatisation and the level of somatoform dissociative symptoms [18]. An assessment of both types of dissociation may give a more complete picture of the relationship between traumatisation and dissociation.

Research on predisposing personality characteristics has focused on absorption, but has also incorporated fantasy proneness and hypnotisability. Absorption might be a risk factor for the development of dissociative symptoms, but evidence for this hypothesis is lacking to date [19]. Absorption is usually defined as a disposition for having episodes of "total" attention that fully engage one's representational resources [20]. Fantasy proneness is a related concept but refers to the extent to which an individual displays a personal history of intense involvement in imaginative activities (Wilson & Barber, 1981 in [21]). Whereas absorption is essentially interactive, triggered by external events, one might consider fantasy proneness to be more "self-involved" and stimulated by internal as well as external sources [21].

Fantasising may actually serve a purpose in traumatised subjects when they use it as a means to escape from reality. From such a point of view, fantasising can be considered a coping mechanism [22]. Merckelbach and Muris [23] do not comprehend dissociation as related to highly stressful experience, but suggest a radically different perspective. They propose that fantasy proneness can give rise to both self-reports of traumatizing events and of dissociative experiences and thus might explain the relationship between these events and symptoms. Merckelbach and Muris' (2001) finding that there is a correlation between

fantasy proneness, as measured by the Creative Experiences Questionnaire (CEQ) and dissociation, as measured by the Dissociative Experiences Scale (DES; [14]) is consistent with this hypothesis. However, it also fits the hypothesis of fantasy as a coping skill regarding trauma among individuals who also dissociate, and DES scores in a normal population may assess absorption rather than true dissociation. As Merckelbach and Muris' study did not include a correlation between traumatisation and fantasy proneness, and did not distinguish between absorption and true dissociation, a direct test on the influence of fantasy proneness on the relationship between traumatisation and dissociative symptoms is still lacking. Moreover, causality obviously cannot be deduced from correlational relationships.

The primary aim of this study is to assess the relationship between a self-reportmeasure of traumatisation and psychoform dissociation as well as somatoform dissociation in a non-clinical population, while accounting for the influence of fantasy proneness. A secondary aim is to compare the extent to which students and non-student adults report potentially traumatising events (for brevity, henceforth described as traumatising events) and dissociative symptoms.

Method

Participants

The student sample consisted of 23 men and 50 women. The age range was from 17 to 29 ($M = 21.8$ years, $SD = 2.3$). The students received € 5 or course credits. Students were recruited through an advertisement in our university magazine and through flyers distributed throughout the campus. The non-student sample consisted of 88 men and 59

women. Their age range was from 19 to 77 ($M = 46.4$ years, $SD = 14.5$). The non-students were recruited by inviting a random sample from residents of the city of Nijmegen to participate in an experimental study on suggestibility. As part of the study, subjects were asked to fill out some questionnaires. About one in five subjects who received a letter of invitation agreed to participate and received a € 5 gift voucher.

Measures

Psychoform dissociation was measured with the Dissociative Experiences Scale (DES) [14]. The DES is a 28-item self-report questionnaire that requires the subjects to indicate to what extent presented statements apply to them. The DES measures psychoform dissociative phenomena including amnesia, loss of control, identity confusion and fragmentation, and absorption. The statements include, for example, the experiences of having done something without knowing when and how, or of having been somewhere without knowing how the place was reached. This widely used screening instrument for dissociative symptoms in clinical samples was found to have good reliability and clinical validity.

Somatoform dissociation was measured with the Somatoform Dissociation Questionnaire (SDQ-20) [17]. The SDQ-20 is a 20 item questionnaire that measures analgesia, anaesthesia, motor disturbances, alternating preferences of tastes and smells, pain, and loss of consciousness. Five-point scales are used to indicate to what degree presented statements apply. Statements include: “It sometimes happens that I feel pain while urinating”; and “It sometimes happens to me that I grow stiff for a while.” The total score ranges from 20 to 100. The reliability of the scale is high and the construct validity is good [24].

Traumatisation

Checklist (TEC) [25]

version of the TEC v

traumatising events.

traumatising events

for emotional neglect

taking the square root of the score minus 20. Differences between the correlations of the two samples were tested after application of Fisher's r to Z transformation.

Results

Traumatic experiences

Levene's test for the equality of variances indicated that the range of the number of types of traumatic experiences was greater in adults than in students ($F(72, 146) = 10.91, p = .001$). Similarly, the range of the indices of physical abuse ($F(72, 146) = 3.90, p = .05$), of sexual harassment ($F(72, 146) = 17.85, p < .001$) and of the trauma area total composite score of the TEC ($F(72, 146) = 5.25, p = .023$) was greater in adults than in students. These ranges were indeed restricted in the student sample. Variances of emotional neglect, emotional abuse and sexual abuse did not differ between samples. Transformation of TEC total scores successfully removed these differences in range, as Levene's test on the transformed scores was not significant.

Table 1 presents the various aspects of reported traumatizing events in the two samples. The mean number of types of traumatising events as measured by the TEC is equally large in non-students as in students, 3.25 vs 2.27 respectively, $Z = -1.706, p = .088$. In students, 79.5 % reported events that are included in one of the five categories of the TEC, whereas in non-students this proportion is 85%. The trauma area composite scores of the other categories did not differ significantly from each other. The proportion of students reporting emotional neglect did not differ significantly from the proportion of non-students, 19.2% compared with 28.6%. Similar proportions of students and non-students reported emotional abuse, 18.6% and 28.6 % respectively. Physical abuse was reported by 12.3 %

of the students and 15.0 % of the non-students. Although 12.3 % of the students and 20.4 % of the non-students reported sexual harassment, this difference was not significant. Sexual abuse was reported by 5.5 % of the students and 8.2 % of the non-students.

Insert Table 1 here

Dissociative experiences

The variance of psychoform dissociative phenomena as measured by the DES was significantly smaller in adults than in students, $F(72,146) = 5.36, p = .02$. The variance of somatoform dissociative phenomena as measured by the SDQ-20 did not differ between the two samples. Students had higher DES scores compared to non-students and higher SDQ-20 scores. This difference between samples remained intact after transformation of DES and SDQ-20 scores. A score on the DES of 25 is the recommended cut-off score in the screening for DSM-IV dissociative disorder [28]. Among the students there were four individuals with such a high score, and among the non-student sample, five individuals. Similarly, a cut off score of 30 is recommended for the SDQ-20 [29]. Five students and seven non-students displayed this level. Only two non-students displayed scores above the cut-off level on both DES and SDQ-20.

Insert Table 2 here

Relationship between Traumatic Experiences and Dissociation

As shown in Table 2, there were significant zero order Pearson correlations between the total score of the TEC, i.e. the number of types of traumatising events, and psychoform dissociation in both samples. This correlation was significantly lower in adults than in students, $p < .001$. When the effect of absorption was partialled out, this correlation only remained significant in the student sample. Again, the correlation was significantly higher in students than in adults. The zero order Pearson correlation between the total score of the TEC and somatoform dissociation was also significant in both samples and did not differ significantly between samples. The correlation remained significant in both samples after partialling out the effect of absorption. Again, no significant difference between the magnitude of the correlation in the samples was observed.

Discussion

In line with many other studies, the findings of the current study indicate that a reported history of traumatisation is to some extent related to psychoform dissociation as measured by the DES in two nonclinical samples. The study also documents an association between reported traumatisation and somatoform dissociation, as measured by the SDQ-20, in these samples. However, the magnitude of these correlations and the number of

statistically significant correlations decreased when controlling for absorption as an index of fantasy proneness.

Because most studies on non-clinical subjects gathered data from students, such studies probably suffer from a restricted range in dissociative phenomena and traumatic experiences [10]. In our study, the range of the number of reported traumatising events is indeed significantly smaller in students than in normal adults. In contrast, the range of psychoform dissociation is higher in students than in adults, while the range of somatoform dissociation did not differ. One therefore needs to be cautious in generalising results from studies of traumatisation in student samples to the general population.

The absolute number of traumatising events did not differ significantly between samples. Although people have a risk of experiencing a potentially traumatic event every day, some of the experiences that are captured in the TEC pertain to experiences that are generally encountered before the age of 18. This applies specifically to emotional neglect, emotional abuse, and physical abuse. Therefore, the total score will only increase in few people after they have turned 18. Students reported, however, more psychoform dissociation and more somatoform dissociation than non-students. This finding suggests that younger people dissociate more. Another possibility is that these figures reflect that people get over dissociative symptomatology with age, with or without professional help. Only a longitudinal study could, however, provide conclusive data on this topic.

The relationship between traumatisation and the two measures of dissociation differs between the samples. In adults, the relation between reported traumatisation and psychoform dissociation is significantly weaker than in students. The correlation of reported traumatisation and somatoform dissociation is of similar magnitude in the two

samples. This difference can most likely be attributed to the differences between the two samples, the most prominent distinction being age, followed by gender. For the subjects in the non-student sample probably more time has elapsed since the reported events happened than for the students.

We used the Tellegen Absorption Scale as a “close cousin” [27] of fantasy proneness. How exactly absorption and fantasy proneness are related, and how they relate to distorted memories is not completely clear. A plausible hypothesis that is suggested in the recovered memory debate states that absorption is a capacity that fosters fantasizing, which in turn leads to distorted memories. However, a strong argument against this hypothesis comes from an experimental study showing that individual differences in memory accuracy for autobiographical events were significantly related to absorption but not to fantasy proneness [30]. The measure of fantasy proneness in this study was the Inventory of Childhood Memories and Imaginings, a measure of involvement in fantasy both as a child and as an adult that was also used to construct the CEQ [27]. The authors speculate that those who score high on absorption are more inclined to incorporate post-event information of any sort into the memory reconstruction process [30]. This tendency resembles the capacity to focus more on internal experiences while at the same time relatively neglecting external events that is seen in experimental research in highly hypnotisable individuals [31]. These findings suggest that highly absorbed individuals can have difficulty to distinguish internal and external events while memorizing experiences and that therefore information can be easily be mixed with internal events and not corrected by external events. In this view, absorption may foster errors in details of a memory, which is completely different from making up false memories that have

no relation with reality at all. A more accurate model of the relation between absorption and fantasy proneness and distortion in memories will therefore contain a pathway from absorption to fantasising and a second, separate pathway from absorption to memory distortion.

Absorption is also correlated with dissociation [12]. The instrument that we used to measure psychoform dissociation, the DES, contains a subscale that measures absorption-like phenomena that are commonly seen in mentally healthy people and that manifest in a wide range of mental disorders. Taxometric studies have indicated that it is useful to distinguish between “normal” and “pathological” dissociation. Individuals in the “pathological” dissociative class (taxon) can be identified with a brief, 8-item questionnaire called the DES-T [32]. The remaining items may not measure true dissociation—defined as a lack of integration of mental and behavioural phenomena that an individual experiences and memorizes—but measure absorption-like phenomena, i.e., alterations of consciousness. These alterations are conceptually different from dissociative phenomena [33]. A factor analysis on DES scores of a non-clinical sample suggested a structure of only one dimension of dissociation [34], but it could be that true dissociation is uncommon in the normal population. For these reasons, we have partialled out absorption from the relation between traumatic experiences and dissociation.

As with most other studies, our study is cross-sectional in nature and therefore does not allow any conclusions with respect to a causal relationship between reported traumatisation and dissociation. However, the study documents that whereas the relationship between reported traumatisation and psychoform dissociation is partially mediated by absorption in both non-clinical samples, the relationship between reported

traumatisation and somatoform dissociation in non-clinical adults is not a function of absorption. The findings suggest that the SDQ-20 may be a more reliable indicator of dissociative phenomena than the DES. In a normal population, psychoform dissociation as measured by the DES mainly seems to coincide with absorption.

Several studies of psychiatric patients have indicated that a history of traumatisation does not necessarily lead to lasting dissociative symptomatology [35]. Our data support the notion that many people who experience a potentially traumatising event are able to deal with it and will not develop dissociative symptoms. Most likely, dissociation is particularly associated with specific types of overwhelming events, notably a threat to one's body from another person, and with unfavorable combinations of unnerving events, features of the exposed individual (e.g., young age, prior history, insecure attachment) and characteristics of the situation (e.g., lack of support)[36].

Authors' note

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Table 1. Means and Standard Deviations of Scores for the TEC, DES, and SDQ-20 for Students and Non-students.

	Students (<i>N</i> =73)		Non-students (<i>N</i> =147)		<i>Z</i>	<i>p</i>
	Mean	SD	Mean	SD		
TEC	2.27	2.09	3.25	3.29	-1.71	.088
<i>TEC composite scores</i>						
Emotional neglect	1.56	3.95	2.22	4.38	-1.45	.15
Emotional abuse	1.42	3.65	2.08	4.34	-1.46	.15
Physical abuse	.58	1.99	.96	2.91	-.60	.55
Sexual harassment	.26	.80	.74	1.82	-1.63	.10
Sexual abuse	.21	1.04	.29	1.16	-.72	.47
Composite Total	3.48	7.42	5.25	9.51	-1.23	.22
DES	9.89	7.13	7.32	6.15	-2.76	.006
SDQ-20	24.43	4.36	23.20	4.97	-3.16	.002

Note. *Z*-statistic derived from Mann-Whitney U test.

Table 2. Correlations in the Two Samples between Traumatic Experiences and Cognitive and Somatoform Dissociation, Adjusted for Absorption

	Dissociation			
	DES	SDQ 20	DES	SDQ 20
Traumatic Experiences	Zero order Correlations		Partial correlations	
TEC			Controlling for Absorption	
Adults (<i>N</i> = 147)				
Total Score	.27 ^{**}	.30 ^{**}	.10	.20 [#]
Students (<i>N</i> = 73)				
Total score	.44 ^{**}	.36 [*]	.32 ^{**}	.27 [*]

Note. Significance level of correlations: # $p \leq .05$; * $p \leq .01$; ** $p \leq .001$

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