

A more proximal impact of dissociation than of trauma and posttraumatic stress disorder on schneiderian symptoms in patients diagnosed with schizophrenia

Matthias Vogel^{a,*}, Dorothee Schatz^a, Carsten Spitzer^b, Philipp Kuwert^a, Bertram Moller^a, Harald J. Freyberger^a, Hans Jürgen Grabe^a

^aDepartment of Psychiatry and Psychotherapy, Ernst-Moritz-Arndt-University, Greifswald, D-18437 Stralsund, Germany

^bDepartment of Psychosomatic Medicine and Psychotherapy, University of Hamburg, D-20246 Hamburg, Germany

Abstract

Background: Dissociation is often related to psychologic trauma and is also commonly correlated with posttraumatic stress disorder (PTSD). Schneiderian symptoms occur in dissociative disorder and PTSD, whereas dissociation and trauma are also frequent in patients with schizophrenia. Dissociation and schneiderian symptoms may reflect posttraumatic symptomatology in some patients diagnosed with schizophrenia who might not develop PTSD.

Method: Seventy-one patients completed an interview assessing symptoms of schizophrenia, depression, dissociative disorder, and PTSD. Data were collected using the Positive and Negative Syndrome Scale, the Montgomery-Asberg Depression Rating Scale, the *Arbeitsgemeinschaft Methodik und Dokumentation in der Psychiatrie* scale for dissociation, and a Structured Clinical Interview for the *Diagnostic and Statistical Manual of Mental Disorders, Revised Third Edition*–based questionnaire. Multiple analysis of covariance was used to compare psychopathologic measures between groups with or without PTSD criteria A1 and A2, PTSD, and high and low levels of dissociation, controlling for substance abuse.

Result: Trauma and dissociation were associated with more severe symptoms of schizophrenia. Especially high dissociation was associated with an increase in symptom load, whereas criterion A and PTSD had little or no such effect.

Discussion: In the present study, those with more severe schizophrenic and depressive symptoms were also characterized by high dissociation. The possible relation to trauma and schizophrenic diathesis is discussed along with the limitations of the study.

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1. Introduction

Dissociation exists along a continuum that ranges from common subclinical abnormalities like daydreaming or lapses in attention to states of pathologic fragmentation of mental processes resembling severe psychopathology, for example, in the form of multiple personality disorder. Dissociative symptoms vary and often affect conscious, executive, and perceptive functions. Dissociation can disturb motor functions, lead to stuporous states, and also cause memory loss and detachment from one's own mental processes, body, or environment [1]. Schneiderian symptoms (ie, "made" or unwilling actions, thoughts, feeling, thought

withdrawal, thought broadcasting, and hallucinations in the form of commenting, conversing, or arguing voices), typically associated with schizophrenia, are known to occur in dissociative disorder as well [2,3].

Dissociative phenomena are commonly related to prior traumatization [4]; and the belief from their initial description was, and remains, that specific mental functions can be separated from conscious awareness in response to psychologic stress [5]. This relationship has been confirmed by a number of studies [6–8]. Other studies, however, have related dissociative symptoms to concurrent psychiatric disease rather than to trauma [9,10]. Whatever its origin, dissociation is associated with psychiatric illness frequently, with a prevalence of up to 25% among patients with psychiatric disorder [11,12] and a prevalence of up to 60% in cases of schizophrenia [13].

Dissociation plays a significant role in posttraumatic syndromes such as posttraumatic stress disorder (PTSD), in

* Corresponding author. Tel.: +49 3831 452100; fax +49 3831 452105.
E-mail address: matthias.vogel@uni-greifswald.de (M. Vogel).

which amnesia makes the individual unaware of prior trauma. At the same time, schneiderian symptoms can also be seen in cases of PTSD [14,15]. Similarly, schizophrenic syndromes may also be accompanied by dissociation; and, as a result, it is difficult to distinguish between symptoms that are either schizophrenic or dissociative in nature because of a considerable overlap in the defining symptoms of schizophrenia and dissociation [13]. In addition to their syndromal overlap, dissociation, PTSD, and schizophrenia share a commonality in that trauma is frequently seen in the biographies of patients diagnosed with either dissociative disorder [16] or schizophrenia [17]. These similarities have given rise to a conceptual discussion. Mueser et al [18] have suggested PTSD to play a key role in mediating the toxic effects of trauma, thus shaping the course of severe mental illness through the effects of specific PTSD symptoms (avoidance, overarousal, and reexperiencing the trauma) and by its association with retraumatization, substance abuse, and difficulties with interpersonal relationships—all common correlates of PTSD.

Based on the commonness of trauma and its putative aftermath, dissociation, in schizophrenia, Ross and Keyes [13] have introduced a theory of dissociative schizophrenia that might reflect posttraumatic syndromes involving both schneiderian symptoms and dissociation. Regarding the possible relation of psychosis, dissociation, and trauma, the flip side of the coin is that susceptibility to experiencing schneiderian and/or dissociative symptoms could be accompanied by a greater vulnerability for undergoing trauma or having undergone childhood trauma. That is, posttraumatic symptomatology, psychotic syndromes, and dissociation may be largely interactive and thus effectively be maintained by each other. Therefore, a schizophrenic diathesis could be identical with a proneness to dissociation that may provide an opportunity for a stressor to germinate into psychosis in some cases of schizophrenia. The mentioned findings and conceptualizations illustrate the need and interest to study the syndromes that are phenomenologically embedded in the overlap of the defining symptoms of dissociative disorder, schizophrenia, and PTSD, and possibly diagnosed as one or the other of these diagnoses.

The etiology of schizophrenia that is widely believed to originate in endogenous pathways to psychosis and the concepts of a trauma-related and/or dissociative subtype of schizophrenia do not contradict each other; but Read et al [19] has introduced a traumagenic model that relates effects of traumatic events on the developing brain to the biological abnormalities found in persons diagnosed with schizophrenia, thus integrating the psychosocial environment and endogenous pathways to psychosis. A dual approach to etiology, however, has a long-standing tradition, as it basically pursues the diathesis/stress model of Zubin and Spring [20]. With respect to the nature of the trauma itself, there is indication of an association of childhood neglect with dissociation in patients diagnosed with schizophrenia [21]. Meanwhile, the contributing role of PTSD to dissociation in

schizophrenia is possibly a minor one because there is indication that PTSD is rather associated with an increase in general psychopathologic distress [10,22], but not with an increase in dissociation. However, PTSD serves as a unifying construct that depends on specific requirements, such as distinct traumas and responses to them (for a review, see Weathers and Keane [23]). Therefore, it may not capture all stressors that are relevant for people with schizophrenia on an individual basis.

Investigating the effects of trauma, PTSD, and dissociation on symptoms of schizophrenia is a sound approach to testing the hypotheses of Mueser et al and of Ross and Keyes. A trauma-related genesis of psychotic symptoms would either be accompanied by high dissociation, according to Ross and Keyes [13], or mediated by PTSD, according to Mueser et al [18]. The present study investigates the relationship of trauma, PTSD, and dissociation in patients with schizophrenia based on the assumption that a trauma-dissociation pathway to psychosis would yield different results than a PTSD-mediated pathway to dissociation, psychosis, or both.

2. Sampling/method

Seventy-four patients diagnosed with schizophrenia according to the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV)* criteria gave their written informed consent and participated in the study. Three patients did not complete the interview. Symptoms were assessed in interviews using the Positive and Negative Syndrome Scale (PANSS) [24], the Montgomery-Asberg Depression Rating Scale (MADRS) [25], a Structured Clinical Interview for the *Diagnostic and Statistical Manual of Mental Disorders, Revised Third Edition* [26]–derived interview on PTSD, and the *Arbeitsgemeinschaft Methodik und Dokumentation in der Psychiatrie* (AMDP) module “dissociation” [27] by a thoroughly trained rater. To investigate the role of trauma, PTSD criterion A was assessed according to *DSM-IV* [28] criteria. Criterion A is a conjunctive rule with criteria A1 and A2 as joint requirements. A1 specifies potentially traumatic events that an individual experienced, witnessed, or was confronted with. A2 assesses the person’s response involving fear, hopelessness, or horror. The AMDP scale for dissociation and conversion is a 30-item rating scale (cf Table 3) with good psychometric properties. The score for each item is 0 (not at all), 1 (mild), 2 (moderate), or 3 (severe). This observer-rated scale for the assessment of dissociative and conversive phenomena is described elsewhere [29]. For the purpose of this study, we analyzed the 15 items referring to psychologic dissociation. To better explore the extent of psychologic dissociation, the scale was divided into subscales for dissociation (AMDP-DIS), conversion (AMDP-CON), and a “formal” dimension, as recommended by the authors. The conversion symptoms

were not of interest for our hypothesis; and the remaining items, which address “secondary gain from the disorder,” “somatic concept” (concerning the pathogenesis), “belle indifference,” “association with a stressor,” “psychosocial impairment,” and “introspection,” were introduced to assess secondary correlates of dissociation and not considered relevant for the expectedly primary relationships of interest in the present study.

2.1. Statistical analyses

Five multiple analyses of covariance (MANCOVAs) were run comparing groups with and without (1) criterion A1 and (2) 1 trauma or more than 1 trauma, respectively, (3) criterion A2, (4) PTSD, and (5) high and low dissociation. For the dichotomization into high and low dissociators, we chose the median (8.0; SE, 7.3) of AMDP-DIS measures. The interrelation between high/low dissociation and criterion A2 was investigated by means of χ^2

testing. Nominal regression was used to delineate the more proximate relationship with dissociation, entering trauma and PTSD as dependent variables. The Spearman correlation coefficient was used to investigate relationships between PANSS subscales, MADRS, and measures of dissociation.

3. Results

The study was approved by the ethical board of the University of Greifswald. The participants were consecutively admitted inpatients of a psychiatric university clinic in northern Germany. Voluntary, written, informed consent was given before the interviews by all subjects. Twenty-five of the 74 participants were female (33.8%). Mean age was 39.0 years (14.0): men, 36.4 years (13.5); women, 44.0 years (13.9). The sample is characterized in Table 1. Eleven patients (15.5%) had a PTSD, 39 reported a trauma

Table 1
Sociodemographic information

	No trauma n = 22 mean (SD) n (%)	Trauma, no PTSD n = 39 mean (SD) n (%)	T, P χ^2 , P	No PTSD n = 63 mean (SD) n (%)	PTSD n = 11 mean (SD) n (%)	T, P χ^2 , P	Low dissociation n = 40 mean (SD) n (%)	High dissociation n = 33 mean (SD) n (%)	T, P χ^2 , P
Age	38.9 (14.0)	39.6 (15)	$T = -0.18$ $P = .9$	39.3 (14.5)	36.8 (11.1)	$T = 0.5$ $P = .6$	41.5 (14.4)	36.3 (13.1)	$T = 1.6$ $P = .1$
Female	7 (11.1)	15 (23.8)	$\chi^2 = 0.1$	22 (29.7)	3 (4.1)	0.2 (0.6)	16 (21.6)	9 (12.2)	$\chi^2 = 1.8$
Male	15 (23.8)	26 (41.3)	$P = .7$	41 (45.4)	8 (10.8)		24 (32.4)	24 (32.4)	$P = .4$
Marital status									
Single	15 (23.8)	30 (47.6)	$\chi^2 = 6.3$	45 (60.8)	6 (8.1)	$\chi^2 = 1.5$	24 (32.4)	26 (35.1)	$\chi^2 = 6.3$
Married	5 (7.9)	4 (6.3)	$P = .1$	9 (12.2)	2 (2.7)	$P = .7$	8 (10.8)	3 (4.1)	$P = .4$
Divorced	0	6 (9.5)		6 (8.1)	2 (2.7)		4 (5.4)	4 (5.4)	
Widow	2 (3.2)	1 (1.6)		3 (4.1)	1 (1.4)		4 (5.4)	0	
School									
No school	0	0	$\chi^2 = 6.2$	0	1 (1.4)	$\chi^2 = 7.1$	0	0	$\chi^2 = 74.2$
<8 Classes	1 (1.6)	4 (6.3)	$P = .1$	5 (6.8)	0	$P = .1$	3 (4.1)	2 (2.7)	$P < .01$
8 Classes	6 (9.5)	5 (7.9)		11 (14.9)	1 (1.4)		7 (9.5)	5 (6.8)	
10 Classes	11 (17.5)	30 (47.6)		41 (55.4)	8 (10.8)		26 (35.1)	23 (31.3)	
12 Classes	4 (6.3)	2 (3.2)		6 (8.1)	1 (1.4)		4 (5.4)	3 (4.1)	
Education									
Apprenticeship, ongoing	1 (1.6)	1 (1.6)	$\chi^2 = 4.2$ $P = .2$	2 (2.7)	0	$\chi^2 = 1.7$ $P = .6$	1 (1.4)	1 (1.4)	$\chi^2 = 5.2$ $P = .5$
Apprenticeship, complete	14 (22.2)	28 (44.4)		42 (56.8)	6 (8.1)		25 (33.8)	23 (31.1)	
University	2 (3.2)	0		2 (2.7)	1 (1.4)		3 (4.1)	0	
No degree	5 (7.9)	12 (19.0)		17 (23.0)	4 (5.4)		11 (14.9)	9 (12.2)	
Accommodation									
Home	11 (17.5)	15 (23.8)	$\chi^2 = 4.7$	26 (35.1)	4 (5.4)	$\chi^2 = 0.6$	19 (25.7)	11 (14.9)	$\chi^2 = 6.4$
Supported	9 (14.3)	12 (19.0)	$P = .1$	21 (28.4)	5 (6.8)	$P = .7$	15 (20.3)	10 (13.5)	$P = .2$
Parents	2 (3.2)	14 (22.2)		16 (21.6)	2 (2.7)		6 (8.1)	12 (16.2)	
Occupation									
Full-time	2 (3.2)	1 (1.6)	$\chi^2 = 3.6$	3 (4.1)	0	$\chi^2 = 3.3$	2 (2.7)	1 (1.4)	$\chi^2 = 46.6$
Part-time	0	1 (1.6)	$P = .8$	1 (1.4)	0	$P = .9$	1 (1.4)	0	$P < .01$
Occasionally	0	1 (1.6)		1 (1.4)	1 (1.4)		1 (1.4)	0	
Industrial training	0	1 (1.6)		1 (1.4)	0		0	1 (1.4)	
Rehabilitation	1 (1.6)	1 (1.6)		2 (2.7)	0		2 (2.7)	0	
Housewife	2 (3.2)	2 (3.2)		4 (5.4)	1 (1.4)		3 (4.1)	2 (2.7)	
Jobless	7 (11.1)	15 (23.8)		22 (29.7)	4 (5.4)		9 (12.2)	17 (23.0)	
Pension	10 (15.9)	19 (30.2)		29 (39.2)	5 (6.8)		22 (29.7)	12 (16.2)	

according to PTSD criterion A1 (54.9%), criterion A2 was present in 38 (53.5%), and 32 belonged to the high dissociators' group (45.1%). The traumas listed in criterion A1 were not associated with dissociation, except for "kidnapping" (reported by 3 of 33 high dissociators [4.1% of total] and 1 of 40 low dissociators [1.4% of total]; $\chi^2 = 15.2, P < .01$). Among those who were positive for criterion A1, 17 reported 1 trauma; and 22, more than 1 trauma. Criterion A2 (present in 17 low and 22 high dissociators) and dissociation were not associated ($\chi^2 = 0.8, P = .4$). Table 2 shows the results of the MANCOVAs that were all controlled for substance abuse, age, and sex as covariates. The main finding is a more proximal impact of dissociation than of trauma (criterion A) on schizophrenia symptoms and no influence of PTSD on schizophrenia symptoms. Table 3 shows correlations of psychopathologic measures with dissociative items.

In nominal regression analysis, neither trauma (odds ratio = 0.8, Wald = 2.1, $P = .1$) nor PTSD (odds ratio = -0.5, Wald = 0.4, $P = .5$) predicted high dissociation in patients with schizophrenia.

4. Discussion

The present cross-sectional study investigates the relationship of categorical findings of dissociative, schizophrenic, and depressive symptoms to a history of trauma or PTSD in patients diagnosed with schizophrenia.

Dissociation and trauma were associated with more severe symptoms of schizophrenia and depression than PTSD. Because all MANCOVAs were controlled for substance abuse, without a significant interaction, substance abuse apparently did not interfere with these results. Nominal regression analyses revealed no association of either trauma or PTSD with high dissociation, and the means of the AMDP measures did not differ substantially between those with a trauma and those with a PTSD.

This syndromal pattern is hardly explicable as a matter of comorbidity because dissociation and trauma, but not the categorical diagnosis of PTSD, turned out to potentially increase positive, negative, and general schizophrenia symptoms and depressive symptoms. These findings are consistent with the hypothesis that a dissociative pathway to psychosis could induce core symptoms of schizophrenia in a subgroup of patients diagnosed with schizophrenia. Trauma and dissociation were not associated with symptom clusters of schizophrenia and depression equally. The relationship between dissociation and PANSS and MADRS scores was more proximate, and trauma lacked an association with MADRS ratings. The study revealed that those with high dissociation were also confronted with a more severe episode of schizophrenia than those with trauma.

Surprisingly, PTSD did not account for any significant psychopathologic impairment at all. An earlier study found an increase in dimensional measures of general psychopathologic distress in patients with schizophrenia combined with a concomitant PTSD but not an increase in

Table 2
Comparison between groups with a history of trauma (criteria A1 and A2), PTSD, and high and low dissociation, respectively, by means of MANCOVA

Category (n)	PANSS positive mean (SD)	PANSS negative mean (SD)	PANSS general mean (SD)	PANSS total mean (SD)	MADRS mean (SD)	AMDP-DIS mean (SD)
Criterion A1 absent (22)	21.1 ± 4.7	21.8 ± 8.1	43.6 ± 9.3	86.4 ± 16.0	15.6 ± 10.7	6.0 ± 5.1
Criterion A1 present (39)	24.9 ± 6.4	25.4 ± 6.3	48.6 ± 11.3	98.9 ± 19.9	15.5 ± 10.1	11.8 ± 8.1
<i>F</i>	5.8	4.2	3.1	6.2	0.0	9.2
<i>P</i>	.02	.05	.09	.02	.9	<.01
A1: 1 trauma (17)	26.2 ± 6.4	27.1 ± 6.5	51.7 ± 14.0	105.0 ± 23.6	19.3 ± 10.2	13.2 ± 7.3
A1: >1 trauma (22)	23.9 ± 6.4	24.1 ± 6.0	46.3 ± 8.2	94.3 ± 15.5	12.6 ± 9.3	10.7 ± 8.7
<i>F</i>	3.8	2.8	2.6	4.7	1.7	5.2
<i>P</i>	.03	.07	.08	.01	.2	.01
Criterion A2 absent (23)	20.6 ± 6.4	22.2 ± 20.6	48.2 ± 11.0	97.2 ± 34.0	17.8 ± 14.1	8.6 ± 11.2
Criterion A2 present (38)	20.6 ± 5.0	25.2 ± 4.9	44.6 ± 10.3	100.5 ± 21.7	19.4 ± 10.2	11.1 ± 6.4
<i>F</i>	0.0	1.4	0.3	0.03	0.02	0.4
<i>P</i>	1.0	.2	.6	.9	.9	.6
No PTSD (60)	23.5 ± 6.1	24.1 ± 7.2	46.8 ± 10.8	94.4 ± 19.4	15.5 ± 10.3	9.7 ± 7.8
PTSD (11)	23.0 ± 7.9	25.3 ± 8.9	49.3 ± 11.4	97.6 ± 22.2	19.3 ± 11.7	9.0 ± 5.2
<i>F</i>	0.1	0.3	0.5	0.2	1.2	0.1
<i>P</i>	.7	.6	.5	.6	.3	.8
PTSD: 1 trauma (5)	26.0 ± 6.1	27.2 ± 9.9	53.0 ± 14.8	106.2 ± 25.8	17.2 ± 10.6	9.6 ± 6.2
PTSD: >1 trauma (6)	20.0 ± 9.6	23.4 ± 8.6	45.6 ± 6.3	89.0 ± 15.9	21.4 ± 13.6	8.4 ± 4.6
<i>F</i>	0.2	0.06	0.1	0.2	0.2	0.2
<i>P</i>	.7	.8	.8	.7	.7	.7
Low dissociation (39)	20.9 ± 5.9	22.3 ± 6.9	43.7 ± 8.9	86.9 ± 15.7	13.8 ± 10.1	4.6 ± 3.3
High dissociation (32)	26.1 ± 7.4	26.3 ± 7.4	52.7 ± 11.6	103.0 ± 20.3	18.4 ± 10.5	15.7 ± 6.2
<i>F</i>	13.0	5.5	8.2	13.8	3.7	–
<i>P</i>	<.01	.02	.01	<.01	.05	–

The median of AMDP measures was 8.0 (7.3). Boldface indicates significance level, chosen to be .05.

Table 3

Dissociation and PANSS and MADRS (sub)scores: Spearman correlation coefficient, significance (2-tailed)

No.	Item/scale mean (SD)	Description 0 = none; 1 = mild; 2 = moderate; 3 = severe	PANSS positive 23.5 (6.3)	PANSS negative 24.2 (7.3)	PANSS general 47.1 (10.7)	PANSS total 94.8 (19.7)	MADRS 16.5 (10.7)
1	Lowered vigilance (quantitative) 1.1 (0.9)	Fluctuating wakeness, dazed feeling, drowsiness.	0.1 NS	0.4 <.01	0.4 <.01	0.4 <.01	0.5 <.01
2	Clouded consciousness (qualitative) 1.4 (0.9)	Poor integration of different aspects of the self, introversion, reduced perceptive faculty, distractibility. Absorption.	0.3 .02	0.4 <.01	0.5 <.01	0.5 <.01	0.5 <.01
3	Narrowed consciousness (qualitative) 1.4 (1.1)	Thoughts, feelings, and wanting focused on few topics. Absorption.	0.5 <.01	0.3 <.01	0.4 <.01	0.4 <.01	0.2 .04
4	Expanded consciousness 0.7 (1.0)	Increased wakeness, more intense perception of space and time, sensory perceptions, widened store of experience.	0.4 <.01	0.04 NS	0.3 .02	0.3 .02	0.1 NS
5	Obsession 0.6 (1.0)	Temporary conviction of being governed by a ghost/power/deity/person.	0.5 <.01	0.1 NS	0.3 .02	0.3 .02	0.1 NS
6	Uncertainty of own Identity 0.6 (0.9)	Subjective feeling of uncertainty/confusion, conflict with identity or parts of it.	0.4 <.01	0.1 NS	0.2 NS	0.2 NS	0.1 NS
7	Changing identity 0.6 (1.0)	Indication of multiple personality; at least 1 additional personality.	0.2 <.01	-0.1 NS	0.9 NS	0.02 NS	-0.8 NS
8	Derealization 0.6 (0.9)	Persons and objects appear unreal, strange, or spatially altered.	0.3 <.01	0.2 NS	0.4 <.01	0.4 <.01	0.3 .01
9	Depersonalization 0.5 (0.7)	Disturbed integrity, alienated and unreal feelings toward self.	0.2 NS	0.1 NS	0.2 NS	0.2 NS	0.1 NS
10	Amnesia 0.5 (0.8)	Memory loss, mostly affecting autobiographic contents of explicit and declarative memory.	0.1 NS	0.2 .04	0.2 NS	0.2 NS	0.1 NS
11	Déjà vu 0.6 (0.9)	Spurious recognition, familiarity, or spurious strangeness.	0.3 .03	0.1 NS	0.2 NS	0.2 NS	-0.04 NS
12	Ecmnesia 0.6 (0.9)	Change in perceived lapse of time, wrong estimate of time passed, void in concept of time.	0.2 NS	0.2 NS	0.2 NS	0.2 NS	0.2 NS
13	Altered perception of space 0.2 (0.7)	Distorted perception of the dimensions of space.	0.1 NS	0.2 NS	0.2 NS	0.2 NS	0.2 NS
14	Hypermnnesia 0.5 (0.8)	Increased memory.	0.1 NS	-0.1 NS	-0.1 NS	-0.1 NS	-0.1 NS
15	Fugue 0.3 (0.7)	Sudden, unexpected movement to another place that cannot be recalled.	0.2 NS	0.2 NS	0.2 .05	0.2 .05	0.1 NS

NS indicates not significant.

dissociation [10]. Other authors, using categorical measures, did not find an increase in the symptoms of schizophrenia [22]. The validity of self-rated measures may be limited because of the difficulty involved in completing them [8]; and therefore, the indication of no PTSD-related variance of schizophrenic syndromes and dissociation in double-diagnosed patients is more likely to be reliable. Indeed, PTSD, the most rigorously defined and studied psychiatric disorder explicitly linked to trauma, may be crucial for the trauma-related induction of dissociative and depressive symptoms in the general population. Its lack of association with schizophrenia and with depressive and dissociative symptom clusters in this study, however, indicates a different impact that trauma develops in patients who are prone to schizophrenia.

Vulnerability is understood as circumstance providing an occasion for fundamental psychopathologic changes to manifest themselves, whereas resilience represents the protective mastery resulting from effective coping efforts and competence [20]. Therefore, for highly vulnerable individuals, ordinary stressors of everyday life are sufficient to provoke an episode. Criterion A1 with its definitions of potentially traumatic events is not supposed primarily to reflect banal adversities but events “outside the range of usual human experience that would be markedly distressing to almost everyone” according to *DSM-IV* [28]. It was present in 55% of the participants in this study. Nevertheless, its significance for the development of schizophrenic symptoms was independent from the particular event. Likewise, recurrence of traumas did not signify greater

severity of schizophrenia symptoms. However difficult it may be to prove that psychologic trauma causes psychosis in schizophrenia, an inverse dose-response relation between criterion A1 and schizophrenia symptoms probably indicates an opposite relation between adult trauma and schizophrenic as well as dissociative symptomatology. Therefore, this unexpected finding lends support to the view that the link between dissociation and psychosis in patients with schizophrenia is independent from adult trauma. Apart from small cell sizes, 2-fold reasons could explicate this in accordance with the diathesis/stress model of schizophrenia introduced by Zubin and Springer in 1977 [20]:

1. Schizophrenic diathesis could pass into a gradual or sudden onset of an episode, as maladaptation has occurred as a result of coping failures; and
2. Dissociation in this context is not only a trauma-related phenomenon, but perhaps linked to the circumvention of a presented conflict via defense mechanisms. If so, dissociation may not only represent a marker of vulnerability to posttraumatic symptomatology. In fact, it could indicate susceptibility to psychosis and its forthcoming onset in a subgroup of patients diagnosed with schizophrenia, as schizophrenic symptoms follow close on the heels of coping breakdown and dissociation.

That aside, one may hypothesize that the narrow definition of criterion A2 could obscure the actual interrelation of PTSD, dissociation, and schizophrenia. Notably, although present in 38 of 39 participants fulfilling criterion A1, it did not account for any psychopathologic deterioration. If dissociation were taken into consideration for defining the individual's response to trauma, then, perhaps, a greater impact of PTSD might be unearthed.

After all, dissociation and psychosis possibly share a common trauma-mediated diathesis in some cases of schizophrenia. The present concept of PTSD, however, may be misleading in this context because criterion A is so narrowly defined with respect to both the nature of trauma itself and the individual's response to it.

Besides the possible contribution of genetic factors and current stressors, childhood maltreatment has been consistently associated with dissociation [21,30] in patients diagnosed with schizophrenia. Childhood neglect, in particular, has been related to dissociation in schizophrenia and might mediate a predisposition to a dissociative and posttraumatic symptomatology in adult life [22,31]. The high means of dissociative symptoms among the high dissociators' group and the impact of dissociation itself on the core symptoms of schizophrenia indicate a preexisting proneness to dissociation in a subgroup of patients that is independent from adult trauma and PTSD. It is possible that early trauma in life prevents an individual from the later entry into the PTSD clusters by anticipation of their clinical correlates such as difficulties in interpersonal relationships, retraumatization, and substance abuse. Impairment in social

functioning and substance abuse are also common in people with schizophrenia and possibly associated with a distinct course of schizophrenia or at least an earlier age of onset [32].

The correlations of dissociative symptoms and subscales/scales that the present study found should certainly not be overinterpreted. Nevertheless, it is striking to see strong associations of the items that refer to disordered consciousness and of derealization with the entire spectrum of analyzed symptoms. That aside, schneiderian symptoms were correlated with items that refer to conflicted identity. Unaware consciousness and diffusion of the identity may be important as a defense against adverse mental contents in psychosis. Amnesia, however, was associated with negative symptoms and may critically interact with tendencies of withdrawal and lead to lesser social integration and emotional resonance in interpersonal relationships, thus possibly predisposing to interpersonal neglect.

Nevertheless, limitations of this cross-sectional study warrant cautious interpretation of its results. Aside from the lack of a comparison group, the measures of dissociation by means of AMDP may be difficult to compare with other instruments. Generally, and in this study, a bias of delusional recall might emerge from positive symptoms of psychosis, which were associated with the variables of interest, dissociation, and trauma. We have not controlled for other comorbidity than substance abuse, although depression was taken into consideration and included in the interview. Still, we believe that these results are indicative of a relationship between symptoms of schizophrenia and dissociation that exceeds mere comorbidity or coincidence; and this conclusion is founded on categorical assessments of the symptoms of interest that are said to be more valid than self-rating sources.

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