Alexithymia, Absorption, and Cognitive Failures in Depersonalization Disorder

A Comparison to Posttraumatic Stress Disorder and Healthy Volunteers

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Abstract: Alexithymia, absorption, and cognitive failures are traits that have been implicated in dissociative psychopathology. Forty-six participants with depersonalization disorder (DPD), 21 with posttraumatic stress disorder, and 35 healthy controls completed measures of dissociation, alexithymia, absorption, cognitive failures, and childhood trauma. The DPD and posttraumatic stress disorder groups had significantly and comparably elevated absorption and cognitive failures scores. Only the DPD group had significantly elevated alexithymia scores, specifically in "difficulty identifying feelings." Regression analyses revealed that "alexithymia—difficulty identifying feelings" was predictive of both DPD diagnosis and depersonalization scores. In contrast, amnesia scores were predicted by childhood trauma and absorption. In conclusion, the link between depersonalization and alexithymia appeared to be specific rather than broadly related to early trauma or to trauma-spectrum psychopathology.

Key Words: Alexithymia, absorption, cognition, dissociation, depersonalization.

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In stress-diathesis models of dissociation, several traits have been put forth as generally associated with dissociative pathology. Such traits may comprise vulnerabilities or diatheses, which when coupled with stressful or traumatic life events, may lead to dissociative phenotypes. This article examines 3 such traits, namely alexithymia, absorption, and cognitive failures.

Introduced by Nemiah and Sifneos (1970) more than 3 decades ago, the term "alexithymia" literally translates as 'without words for emotion'. It refers to difficulty identifying emotions, difficulty communicating feelings, and an externally oriented style of thinking (Larsen et al., 2003). Findings regarding the relationship between alexithymia and dissociation are mixed. On one hand, in nonclinical samples dissociation has been found to be associated with 1 facet of alexithymia, notably the "difficulty in identifying feelings" (Elzinga et al., 2002; Irwin and Melbin-Helberg, 1997). Specifically, Irwin and Melbin-Helberg (1997) found that "alexithymia—difficulty in identifying feelings" accounted for about 20% of the variance in dissociation scores in their student population. In another student sample, alexithymia was also found to be the strongest predictor of dissociation among several personality and environmental variables (Modestin et al., 2002). Grabe et al. (2000) studied a large mixed sample of psychiatric and nonclinical participants, and found that the 2 alexithymia dimensions of "difficulty identifying feelings" and "difficulty expressing feelings" correctly classified 72.5% of cases into pathological versus nonpathological dissociation groups.

On the other hand Wise et al. (2000), studying a mixed sample of psychiatric outpatients, argued that the relationship between dissociation and alexithymia might be an artifact of depressed mood. However, germane to this issue was a recent study by Maaranen et al. (2005), which showed that in a general population sample the link between pathological manifestations of dissociation and alexithymia survived statistical correction for depression levels. However, 1 major shortcoming of all the above studies investigating the link between dissociation and alexithymia has been the failure to employ highly relevant clinical populations, that is patients afflicted with dissociative disorders.

Absorption is another trait centrally related to the construct of dissociation. Fantasy, daydreaming, and imagination are essential for healthy psychological functioning; the inability to control these processes, however, can lead to psychological problems. In effect, absorption is widely viewed as the primary form of nonpathological dissociation, in contrast to the pathological dissociation of depersonalization, amnesia, and identity alterations. Taxometric analyses have supported that nonpathological dissociation may be a dimensional construct whereas pathological dissociation may be a categorical or taxonic one (Waller et al., 1996). Absorption has been described as "the use of one's full commitment of available perceptual, motoric, imaginative, ideational resources to a unified representation of the attentional object" (Tellegen and Atkinson, 1974). Twin and adoptee studies have found considerable heritability to absorption, with genetics contributing from 55% (Jang et al., 1998) to 59% (Becker-Blease et al., 2004) of the variance. The dissociative trait of absorption has been put forth as a diathesis to acute dissociative reactions under severe stress (Sterlini and Bryant 2002). Absorption is also generally found to be elevated across the dissociative disorders, including depersonalization disorder (Simeon et al., 2006).

Individuals high on dissociation also may report committing more everyday life cognitive failures, such as missing signs on the road or being distracted (Merckelbach et al., 1999). Genarro et al. (2006) have discussed the ways in which everyday cognitive failures may represent disruptions in the "unity of consciousness." Findings relating dissociation to a susceptibility to cognitive failures in nonclinical samples do converge with findings from clinical samples reporting cognitive failures in the dissociative disorders, such as in dissociative identity disorder (Rossini et al., 1996), as well as in depersonalization disorder (DPD) under high attentional demand conditions (Guralnik et al., 2000).

Thus, the tendency to dissociate seems to exhibit robust relationships with the susceptibility to alexithymia, absorption, and

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cognitive failures. However, most studies relating dissociation to these traits have employed largely nonclinical or even clinical samples without prominent dissociative pathology. Also, to the best of our knowledge no prior study has attempted to integrate all 3 of these traits as they interrelate with dissociation, and to compare them to another trauma-spectrum disorder to examine the specificity of the findings to dissociation.

METHODS

Participants

Participants were 46 patients with Depersonalization Disorder (DPD) without lifetime posttraumatic stress disorder(PTSD); 21 patients with PTSD without dissociative disorder; and 35 healthy volunteers without Axis I or II disorders (HC). The study was approved by the Institutional Review Board of Mount Sinai School of Medicine, and all participants gave written informed consent (Simeon et al., 2007b). Participants were diagnostically evaluated with the Structured Clinical Interview for dissociative disorders (Steinberg, 1994), the Structured Clinical Interview for DSM-IV Axis I disorders (First et al., 1994), and the Structured Interview for DSM-IV personality disorders (Pfohl et al., 1995). PTSD participants were also evaluated with the Clinician-Administered PTSD scale (Blake et al., 1995). Both DPD and PTSD participants were required to be free of current major depression, eating disorder, substance use disorder, and lifetime psychotic or bipolar I disorder. Participants were medically and neurologically healthy.

Measures

The Dissociative Experiences Scale (DES) (Bernstein-Carlson and Putnam, 1993) is a 28-item self-report scale that asks respondents to indicate the frequency of various dissociative experiences, rated on a 0% to 100% scale scored in 10% increments. The DES exhibits high internal consistency (Cronbach's α: 0.95) and test-retest correlations ranging from 0.74 to 0.84. In addition to total score, subscale scores were calculated following the originally proposed 3-factor solution of amnesia, absorption, and depersonalization/derealization (Carlson et al., 1991).

The Cambridge Depersonalization Scale (CDS) (Sierra and Berrios, 2000) consists of 29 items asking respondents to rate depersonalization symptoms over the 'last 6 months' on a 5-point frequency scale (anchors: 0 = never; 4 = all the time) and a 6-point duration scale (anchors: 1 = few seconds; 6 = more than a week). All frequency and duration scores are summed to obtain a total score. The scale has sound psychometric properties and is able to differentiate patients with depersonalization disorder from the other patient groups and healthy controls.

The Toronto Alexithymia Scale (TAS)-20 (Bagby et al., 1994) is a 20-item self-report scale of alexithymia. Respondents indicate on a 5-point scale to which degree the respective item applies to them (anchors: 1, strongly disagree; 5, strongly agree). The TAS-20 possesses good internal consistency (Cronbach's α: 0.82) and test-retest reliability. Three well-validated factors have been identified by means of factors analysis: Difficulty Identifying Feelings (DIF; Cronbach's α: 0.86), Difficulty Describing Feelings (DDF; Cronbach's α: 0.78), and Externally-Oriented Thinking (EOT; Cronbach's α: 0.65).

The Tellegen Absorption Scale (TAS) (Tellegen and Atkinson, 1974) is a popular self-report measure of absorption and has been extensively used in various research contexts. It consists of 34 true/false items and is reported to have sound psychometric properties, with good test-retest stability and internal consistency (Cronbach's α: 0.92).

The Cognitive Failures Questionnaire (CFQ) (Broadbent et al., 1982) asks respondents to indicate how often they have such everyday experiences, and has good internal consistency (Cronbach's α: 0.93). Cognitive failures refer to everyday lapses in perception, memory, and motor function. Self-reports of cognitive failures go hand-in-hand with poor performance on inhibitory tasks (Robertson et al., 1997).

The Childhood Trauma Questionnaire (CTQ) (Bernstein et al., 2003) is a widely used self-report scale of childhood interpersonal trauma rated on a 5-point scale. In the present study we employed the short form, consisting of 25 items for which Bernstein et al. (2003) reported satisfactory psychometric qualities (Cronbach's α: 0.95). Factor analysis has revealed 5 factors, accounting for 48% of the total variance, each consisting of 5 items: emotional abuse, physical abuse, emotional neglect, sexual abuse, and physical neglect.

Data Analysis

As the CDS, CFQ, TAS-20, and TAS were introduced at somewhat different time points, numbers of participants that completed each questionnaire and hence degrees of freedom differ somewhat between measures (Table 1). For statistical comparison, differences between the DPD, PTSD, and HC groups were evaluated with analysis of variance, with Bonferroni correction for post hoc pairwise comparisons.

We conducted binary logistic regression analyses, which allowed us to index the unique capacity of our variables to predict group membership controlling for other possible predictors. Moreover, this approach allowed us to investigate any confounding influence of age on our findings, as the PTSD group was older than the other 2 groups. Variables were entered in a stepwise fashion (forward-likelihood ratio). In addition, we conducted stepwise linear regression analyses to predict total and subscale dissociation scores using alexithymia, absorption, cognitive failures, childhood trauma, age, and gender as predictors.

RESULTS

Age, gender, age of illness onset, and duration of illness for the 3 groups are presented in Table 1. The 3 groups did not differ in gender ($\chi^2 = 13.74$, $df = 2$, $p > 0.05$), and the 2 psychiatric groups were comparable in illness duration ($t = 0.03$, $df = 65$, $p > 0.05$). The 3 groups differed in age ($F = 10.31$, $df = 2, 99$, $p < 0.01$), the PTSD group being significantly older than both DPD ($t = -4.45$, $df = 65$, $p < 0.01$) and the HC ($t = 0.03$, $df = 65$, $p > 0.05$) groups. The psychiatric groups differed in age of illness onset ($F = 21.93$, $df = 2, 99$, $p < 0.01$), with the PTSD group displaying a later onset than the DPD group ($t = -3.58$, $df = 54$, $p > 0.01$).

Between-Group Comparisons

Dissociation Measures

Table 2 presents scores and statistical comparisons between the 3 groups for DES total score; DES amnesia, absorption, and

TABLE 1. Age, Gender, Education, Age of Illness Onset, and Duration of Illness for the DPD, PTSD, HC Groups

	DPD	PTSD	HC
Total *N* (women)	46 (23)	21 (13)	35 (16)
Age	30.59 (10.28)	43.19 (11.75)	31.94 (11.43)
Age of onset	16.28 (8.49)	28.90 (13.35)	—
Illness duration	14.45 (12.57)	14.35 (12.53)	—
N (%) completed			
CFQ	46 (100%)	20 (95%)	35 (100%)
TAS	42 (91%)	16 (76%)	33 (94%)
TAS-20	33 (72%)	15 (71%)	31 (89%)

Standard deviations in parentheses.

TABLE 2. Mean Levels (Standard Deviations) and Statistical Comparison of Dissociation (DES), Childhood Trauma (CTQ), Absorption (TAS), Cognitive Failures (CFQ), and Alexithymia (TAS-20) Scores Between the DPD, PTSD, and HC Groups

	DPD	PTSD	HC	*F*	*p*
DES					
Total[a,b,c]	28.94 (17.17)	17.47 (12.18)	3.27 (2.68)	39.35	<0.01
Amnesia[a,c]	10.98 (15.22)	10.35 (11.15)	1.21 (2.15)	7.99	<0.01
Absorption[a,b,c]	35.97 (22.69)	24.81 (15.61)	5.33 (4.25)	32.35	<0.01
Depersonalization[a,b]	42.54 (24.12)	7.86 (11.11)	1.00 (2.50)	66.81	<0.01
CDS[a,b]	108.73 (55.74)	28.24 (18.45)	5.88 (7.33)	68.82	<0.01
CTQ					
Total[b,c]	41.88 (14.65)	56.10 (22.19)	35.62 (9.55)	11.76	<0.01
PA[b,c]	6.96 (2.72)	9.33 (3.75)	6.65 (3.00)	5.73	<0.01
EA[a,c]	10.43 (4.79)	12.67 (6.29)	7.44 (2.90)	8.85	<0.01
PN[c]	7.15 (2.97)	8.67 (3.15)	6.74 (2.42)	3.19	<0.05
SA[b,c]	5.91 (2.75)	10.76 (7.61)	5.47 (1.28)	13.52	<0.01
EN[b,c]	11.13 (4.86)	14.67 (6.13)	9.63 (3.83)	7.21	<0.01
TAS[a]	47.35 (15.72)	46.80 (16.28)	30.54 (13.21)	14.05	<0.01
CFQ[a,c]	18.55 (8.96)	18.07 (6.73)	12.32 (5.96)	6.21	<0.01
TAS-20					
Total[a]	49.43 (12.82)	42.44 (8.63)	38.97 (9.26)	8.70	<0.01
DIF[a,b]	19.64 (6.73)	13.75 (3.92)	11.03 (3.88)	24.47	<0.01
DDF	13.33 (5.34)	11.06 (2.72)	10.88 (4.14)	3.13	<0.05
EOT	18.45 (4.33)	18.50 (4.20)	18.58 (3.96)	0.01	0.99

Pairwise comparisons significant at the 0.05 level (2-tailed, Bonferroni corrected) are designated as: [a]DPD differs from HC, [b]DPD differs from PTSD, [c]PTSD differs from HC.

depersonalization subscales; and the CDS total score. Analysis of variance revealed that the 3 groups differed significantly on all DES indices. Briefly, the DPD group scored higher on all DES measures compared with the HC group. The PTSD group also exhibited higher scores on all DES measures, with the exception of the DES depersonalization subscale, compared with the HC group. Moreover, the DPD group exhibited significantly higher dissociation scores than the PTSD group, with the exception of comparable scores on the DES amnesia subscale. In addition, the DPD group exhibiting higher CDS scores than both other groups, which scored comparably.

Alexithymia, Absorption, and Cognitive Failures

Table 2 presents scores and comparisons for the TAS-20 and its 3 subscales, the TAS, and the CFQ. In brief, the 2 psychiatric groups scored comparably and significantly higher than the HC group on the TAS and the CFQ. With respect to alexithymia, the 3 groups differed significantly on total score and on the DIF and DEF subscales, but not on the EOT subscale. Pairwise comparisons showed that the DPD group exhibited higher scores on the DIF subscale compared with both the PTSD and the HC group.

Taylor et al. (1992) established a cutoff score of 61 on the TAS-20 total score as indicative of clinically high levels of alexithymia. Because of the lack of reported cuff-off scores for the 3 subscales we followed the approach of Taylor et al. (1992), defining high alexithymic individuals as being one and a half standard deviation above the mean for each subscale, using the normative data reported by Parker et al. (2003). This resulted in cutoff scores for the DIF, DEF, and EOT subscales of 22.2, 18.8, and 25.8, respectively. Using these cutoff scores, 10 (23%), 14 (33%), 10 (23%), and 3 (7%) of the DPD groups were classified as being high on alexithymia on the TAS-20 total, DIF, DEF, and EOT scores respectively. In contrast, only 1 individual from the PTSD group (6%) scored above cutoff for the TAS-20 total score, whereas 1 HC scored above cutoff, for the DEF and EOT subscores (3%). When these findings were examined categorically, the DPD group exhibited a significantly higher frequency of highly alexithymic individuals on the TAS-20 total score as compared with the HC group ($\chi^2 = 9.07$, $df = 1$, $p < 0.01$), as well as a significantly higher frequency than both the PTSD and the HC groups with respect to the DIF subscore (HC: $\chi^2 = 13.53$, $df = 1$, $p < 0.01$; PTSD: $\chi^2 = 7.03$, $df = 1$, $p < 0.01$) and the DEF subscore (HC: $\chi^2 = 6.38$, $df = 1$, $p < 0.05$; PTSD: $\chi^2 = 4.60$, $df = 1$, $p < 0.05$), but not the EOT subscore ($\chi^2 = 1.64$, $df = 2$, ns).

Childhood Trauma

Scores and comparisons for the CTQ and its 5 subscales are also presented in Table 2. Briefly, the PTSD group exhibiting higher levels of childhood trauma than the DPD group on all indices except emotional abuse and physical neglect. Both the DPD and the PTSD group exhibited higher EA levels than the HC group, while not significantly differing from each other.

Logistic Regressions: Predictors of Group Membership

In investigating which factors uniquely distinguished the DPD and HC groups, only the TOAS—DIF subscale attained significance, whereas all other variables were unable to improve the prediction of group membership (Table 3); based solely on TAS-20—DIF scores, 78% of the HC and DPD group were correctly classified. Second, we predicted DPD versus PTSD group membership using the same approach: the TAS-20—DIF subscale was identified as a first predictor with higher levels of DIF being predictive of DPD; in the second step, higher levels of childhood trauma were found to be predictive of PTSD (Table 3). In combination, TAS-20—DIF and CTQ scores were highly predictive allowing for the correct classification of 80% of PTSD and

DPD patients. Third, when using the same approach to predict PTSD versus HC group membership, a different pattern of results emerged. Specifically, higher levels of childhood trauma and absorption were indicative for the PTSD group, allowing for 84% correct classification.

Linear Regressions: Predictors of Dissociation Scores

Next we examined the prediction of dissociation scores by means of linear regression analyses using cognitive failures, absorption, alexithymia, childhood trauma, age, and gender as the 6 predictors (Table 4). Depersonalization symptoms, as measured by the DES depersonalization subscale as well as the CDS, were only significantly predicted by the TAS-20—DIF. In contrast, DES amnestic symptoms were predicted by childhood trauma and absorption. Finally, DES total and absorption scores were predicted by a combination of the aforementioned predictors (i.e., TAS-20—DIF, CTQ, and TAS).

TABLE 3. Stepwise Binary Logistic Regression Analyses Predicting Group Membership With the Following Predictors: CTQ, TAS, CFQ, TAS-20 and its Subscales, Gender, and Age

Groups	*B*	*SE*	*Wald*	*p*	*Exp(B)*
DPD vs. HC					
Step 1					
TAS-20 DIF	0.26	0.07	15.03	<0.01	1.30
DPD vs. PTSD					
Step 1					
TAS-20 DIF	0.16	0.06	6.60	0.01	1.18
Step 2					
TAS-20 DIF	0.23	0.08	8.24	<0.01	1.26
CTQ	−0.07	0.03	6.71	0.01	0.94
PTSD vs. HC					
Step 1					
CTQ	0.07	0.03	8.02	<0.01	1.08
Step 2					
CTQ	0.08	0.03	7.41	<0.01	1.08
TAS	0.16	0.07	4.82	<0.05	1.17

DISCUSSION

The main findings of the study can be summarized as follows. The PTSD and DPD groups showed comparable levels of absorption and cognitive failures that were elevated as compared with controls. However, the DPD group showed higher levels of alexithymia, and specifically in DIF (difficulty identifying feelings), with respect to the PTSD and the HC groups. In line with this finding, a substantial minority of the group showed clinically significant elevations in alexithymia (⅓ of sample for difficulty identifying feelings), whereas hardly any PTSD or HC participants did. Alexithymia was highly discriminatory of DPD diagnosis, distinguishing it from both other groups, and was the sole predictor of depersonalization scores across diagnoses. Higher levels of childhood trauma were predictive of PTSD, distinguishing it from both other groups. Heightened absorption also contributed to the prediction of PTSD diagnosis as compared with HC.

As one might expect, the DPD group exhibited higher levels on all manifestations of dissociation as compared with the PTSD and the HC group, except for amnesia. On amnesia, both psychiatric groups scored comparably higher than controls. Moreover, the PTSD group exhibited higher overall rates of retrospectively reported childhood trauma, and amnesia scores across diagnoses were most strongly predicted by childhood trauma. The DPD rates of childhood trauma were more similar to healthy controls with the exception of emotional abuse (Simeon et al., 2001). This is line with the conceptualization of PTSD as the direct result of an extreme traumatic event, whereas DPD is thought to be related to a wider range of precipitants such as severe emotional stress, overwhelming episodes of mental illness, marijuana, and hallucinogen ingestion (Simeon et al., 2003), as well as self-reports of histories of emotional abuse (Simeon et al., 2001) as replicated in this sample.

The 2 clinical groups showed strikingly similar elevations in cognitive failures, in accord with a number of prior findings. Specifically, dissociation, as measured by the DES, shows a robust

TABLE 4. Stepwise Linear Regression Analyses Predicting Dissociation Scores Across Diagnostic Groups With the Following Predictors: CTQ, TAS, CFQ, TAS-20 and Subscales, Gender, Age

Dependent Variable	Step	R^2	Predictor	*B*	*SE*	*Beta*	*T*	*p*
DES total	1	0.43	TOAS DIF	1.65	0.23	0.65	7.34	<0.01
	2	0.51	TOAS DIF	1.46	0.22	0.58	6.73	<0.01
			CTQ	0.31	0.09	0.30	3.44	<0.01
	3	0.54	TOAS DIF	1.25	0.23	0.50	5.41	<0.01
			CTQ	0.27	0.09	0.26	3.02	<0.01
			TEAS	0.45	0.20	0.21	2.25	<0.05
DES amnesia	1	0.34	CTQ	0.42	0.07	0.58	6.03	<0.01
	2	0.41	CTQ	0.37	0.07	0.50	5.25	<0.01
			TEAS	0.41	0.14	0.27	2.87	<0.01
DES absorption	1	0.41	TOAS DIF	2.06	0.29	0.64	7.02	<0.01
	2	0.50	TOAS DIF	1.80	0.28	0.56	6.41	<0.01
			CTQ	0.42	0.12	0.31	3.58	<0.01
	3	0.54	TOAS DIF	1.51	0.30	0.47	5.07	<0.01
			CTQ	0.37	0.12	0.27	3.14	<0.01
			TEAS	0.64	0.26	0.23	2.48	<0.05
DES depersonalization	1	0.45	TOAS DIF	2.58	0.33	0.68	7.80	<0.01
CDS	1	0.55	TOAS DIF	6.47	0.73	0.74	8.90	<0.01

association with cognitive failures in nonclinical samples (Merckelbach et al., 1999). Moreover, research shows that the pathological facets of dissociation go along with subtle disruptions in executive functioning (Giesbrecht et al., 2004), whereas the dissociative disorders in general (Rossini et al., 1996) and DPD in particular (Guralnik et al., 2007; Guralnik et al., 2000) have been related to subtle attentional deficits. Similarly, the diagnostic criteria for PTSD encompass difficulty concentrating and memory problems (American Psychiatric Association, 2000), and patients suffering from PTSD exhibit impairments of attention and memory (Golier and Yehuda, 2002).

Consistent with the notion of absorption being a dissociative symptom, and being one factor tapped by the most frequently used measure of dissociation (Ross et al., 1995), patients with DPD exhibited the highest level of absorption on the DES absorption subscale, while demonstrating comparable levels of absorption to the PTSD group on the TEAS. This finding is consistent with previously reported elevated absorption scores in DPD employing the DES (Simeon et al., 2006), although not in a smaller sample study employing the TEAS (Levin et al., 2004). Interestingly, hypnotizability, which among other constructs also encompasses absorption, has been hypothesized to predispose individuals toward developing acute stress disorder after exposure to a traumatic event (Bryant et al., 2001), and has been put forth as a broader dissociative diathesis (Butler et al. 1996). Germane to this issue is a recent laboratory study by Giesbrecht et al. (2008), which found that individuals who score high on absorption are more likely to exhibit heightened levels of peritraumatic dissociation during painful stimulation induced by means of a cold pressor test. Moreover, in light of the substantial heritability of absorption (Tellegen et al., 1988), our findings add tentative evidence for the idea that absorption might be a risk factor for development of both dissociative and posttraumatic stress reactions after traumatic exposure.

Contrary to the strong similarities in absorption and cognitive failures in our 2 clinical groups, alexithymia appeared to be distinctly associated with DPD. More specifically and consistently with earlier findings, this association was carried primarily by difficulty in identifying feelings (Elzinga et al., 2002; Irwin and Melbin-Helberg, 1997). There exists a suggestion in the literature that the dissociation—alexithymia link might be due to anxiety or depression (Wise et al., 2000); contrary to this notion, our findings were too specific for being readily explained as being an artifact of mood. Notably, if our findings were an artifact of group differences in mood or anxiety, one would expect both clinical groups to differ from the HC group. However, only the DPD showed higher levels of alexithymia, whereas the PTSD group exhibited alexithymia levels comparable to healthy controls.

The finding of nonsignificantly elevated alexithymia scores in the PTSD group in this study is of interest. In a recent meta-analysis of alexithymia in PTSD (Frewen et al., 2008) a total of 12 studies were reviewed, largely using versions of the Toronto Alexithymia Scale, and an overall large effect (0.80) was found when comparing alexithymia in the PTSD versus the control samples. However, effect sizes ranged considerably, with small or less than small effect sizes noted in several studies, and the association between alexithymia and PTSD was most robust for combat-related PTSD and for male gender. Furthermore, dissociation was not examined as a mediating variable, while in the current study we specifically excluded individuals with comorbid dissociative disorders from the PTSD group in an attempt to tease apart the association of alexithymia with dissociation versus posttraumatic stress. The exclusion of dissociative individuals from the PTSD sample, as well as the small sample size and the preponderance of women in the PTSD sample, may in part explain this negative finding.

There exists a literature linking alexithymia to particular disruptions of early family environment. Berenbaum and James (1994) found that in a nonclinical sample, alexithymia was significantly associated with ambivalence concerning the expression of emotion; discomfort concerning negative emotional states; diminished positive family expressiveness; and feeling less emotionally safe during childhood. Lumley et al. (1996) reported that difficulty identifying feelings was associated with general family pathology and low affective parental involvement. Fukunishi et al., 1997a reported that better maternal caring was associated with less total alexithymia and difficulty describing feelings. Kench and Irwin (2000) studied 92 university students via a family functioning scale, which tapped multiple aspects of family communication, and reported that low expressiveness was the sole variable independently predictive of global alexithymia, while an active-recreational orientation and high disengagement significantly predicted difficulty identifying feelings.

All the above findings can be viewed as broadly consistent with the DPD literature, in which emotional abuse and emotional neglect consistently emerge as the 2 categories of childhood trauma most characteristic of DPD. It has also proposed that there is a heritable component to alexithymia (Valera and Berenbaum, 2001). Still, the cross-sectional nature of this study does not allow us to determine whether the alexithymia manifested by the DPD group is primary or secondary in nature. Whereas primary alexithymia is conceptualized as a personality trait that is stable overtime, secondary alexithymia is conceptualized as a state reaction to stressful situations or episodes of psychiatric illness (de Vente et al., 2006, Fukunishi et al., 1997b). Therefore, primary alexithymia may be 1 trait-like risk for the manifestation of DPD, or alternatively the state of chronic depersonalization may precipitate a secondary alexithymic response related to the pervasive sense of unreality and difficulty with the emotional tagging of incoming percepts or bodily sensory inputs. It is also conceivable that components of both primary and secondary alexithymia are present in DPD.

From a theoretical point of view, the present findings may contribute to our understanding of why the psychobiological morphology of depersonalization and alexithymia appear to overlap considerably. For example, Sierra et al. (2002) investigated autonomic responses of patients suffering from DPD to emotional slides from the International Affective Picture System (IAPS; Lang et al., 1999), and found that patients suffering from DPD manifested reduced physiological responses specifically to emotional stimuli. In a similar study, Roedema and Simons (1999) investigated the relationship between alexithymia and emotion-processing deficits in normal volunteers. Interestingly, individuals that were classified as being high on alexithymia showed blunted physiological responses to the emotional IAPS pictures. Moreover, a positron emission tomography study has shown that DPD patients exhibited overall increased activity in the left as compared with the right hemisphere as compared with healthy controls (Simeon et al., 2000), a similar pattern as that proposed for alexithymia (reviewed by Tabibnia and Zaidel, 2005).

From a clinical point of view, our finding of heightened levels of alexithymia, and in particular difficulty expressing feelings, in DPD might possess substantial clinical relevance. First, it might offer an explanation for the chronicity of DPD symptoms even in the light of therapy. This is highlighted by the only published study on psychological interventions for DPD in which 71% of all participants continued to meet diagnostic criteria for DPD after cognitive-behavioral therapy (Hunter et al., 2005). Although such a therapeutic approach can be very useful in dealing with cognitive restructuring and minimization of catastrophic cognitions, it does not primarily address the exploration, expression, and labeling of affective states.

Second and more important, it might inform us about novel and potentially more successful approaches to treating DPD. If indeed DPD patients have a particular deficit in the capacity to elevate emotions from the sensorimotor level to a representational level that is subject to modulation by psychological mechanisms, then psychotherapeutic approaches placing a central emphasis on the experiencing, labeling, and communication of affects as a core component of treatment merit empirical testing in DPD. Such psychotherapies have been eloquently written about (Foscha, 2000), and been manualized and empirically tested (McCullough et al., 2003), placing a central focus on the treatment of "affect-phobia." It is conceivable that if the dissociation of intolerable affects is not intensively addressed in the psychotherapy of chronic depersonalization, the effectiveness of the latter could be notably hampered.

Important strengths of the study include relatively large sample sizes, as well as very strict selection and diagnostic criteria. The most important limitation of the study is its cross-sectional design, which precludes the test of causal relations between constructs, as well as its reliance on self-report, albeit well-validated, measures.

CONCLUSIONS

The current findings have both theoretical and clinical implications, highlighting the robustness of the relationship between depersonalization and difficulty identifying feelings, and emphasizing the importance of working psychotherapeutically with alexithymia at least in those DPD patients in whom it comprises a prominent presenting feature.

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