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Is Dissociation a Multidimensional Construct? Data From the Multiscale Dissociation Inventory

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The dimensionality of dissociation was examined in a combined sample of 1,326 general population, clinical, and university participants who completed the Multiscale Dissociation Inventory (MDI). Principal components analysis identified five moderately intercorrelated factors (mean $r = .39$): *Disengagement*, *Identity Dissociation*, *Emotional Constriction*, *Memory Disturbance*, and *Depersonalization/Derealization*. Differential relationships were found between individual MDI factors and demographics, trauma history, clinical status, posttraumatic stress, and scores on other dissociation measures. Surprisingly, after controlling for sex and age, trauma exposure accounted for only 3 to 7% of the variance in MDI factors. The notion of dissociation as a general trait was not supported. Instead, dissociation may represent a variety of phenomenologically distinct and only moderately related symptom clusters whose ultimate commonality is more theoretical than empirical.

Dissociation has been variously characterized by clinicians and scientists since its introduction into the psychological nomenclature in the mid- to late-1800s (Moreau de Tours, 1845; cf. Janet, 1887; Van der Hart & Horst, 1989). Nemiah (1993), for example, describes this phenomenon as the exclusion from consciousness and the inaccessibility of voluntary recall of mental events, singly or in clusters, of varying degrees of complexity, such as memory, sensations, feelings, fantasies, and attitudes (p. 107). The *Diagnostic and Statistical Manual of Mental Disorders*, fourth edition-text revision (DSM-IV-TR; American Psychiatric Association, 2000), on the other hand, refers to a disruption in the usually integrated functions of consciousness, memory, identity, or perception of the environment (p. 519). Central to most definitions of dissociation is a significant change in normal consciousness or awareness that arises from reduced or altered access to one's thoughts, feelings, perceptions, and/or memories. Such alterations are typically thought to be defensive, usually arising in response to a traumatic event (Putnam, 1993).

The DSM-IV-TR lists five dissociative disorders: (a) depersonalization disorder, involving perceptual alienation and separation from one's body; (b) dissociative amnesia, consisting of psychogenic, clinically significant inability to access specific memories; (c) dissociative fugue, characterized by extended travel with associated memory and/or identity disturbance; (d) dissociative identity disorder, involving the experience of having two or more personality states within oneself; and (e) dissociative disorder not otherwise specified, used when significant dissociative symptoms are present but cannot be classified into one of the preceding diagnostic categories. As indicated by the phenomenological range of these disorders, the symptoms attributed to dissociation are numerous and vary considerably in form.

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Additional evidence of the variability in dissociative phenomenology comes from factor analyses of the Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986). Although it generates a single score, factor analyses of the DES have revealed multiple distinct dimensions. These independent factors vary from study to study, but often include absorption, depersonalization/derealization, and amnesia (e.g., Alper et al., 1997; Amdur & Liberzon, 1996; Carlson et al., 1991; Ross, Joshi, & Currie, 1991).

Even though the DSM-IV and some researchers highlight this seeming dimensionality in dissociative responses, other investigators conclude that dissociation is a unifactorial phenomenon, wherein seemingly disparate types of symptoms represent different (often severity-related) manifestations of a single underlying process (e.g., Bernstein, Ellason, Ross, & Vanderlinden, 2001; Dell, 2002; Fischer & Elnitsky, 1990; van IJzendoorn & Schuengel, 1996). This notion of dissociation as a unidimensional state or trait is frequently endorsed by clinicians, who tend to refer to *dissociation*, *dissociative capacity*, or a *dissociative continuum* when describing such symptoms (e.g., see edited volumes by Bremner & Marmar, 1998; Spiegel, 1993). A unidimensionality assumption also is implicit in most existing measures of dissociation [e.g., the Dissociation scale of the Trauma Symptom Inventory (TSI; Briere, 1995), the Trauma-Specific Dissociation (T-DIS) scale of the Detailed Assessment of Posttraumatic Stress (DAPS; Briere, 2001), and the DES], all of which sum across items to generate a single score. This dissociation score reflects some combination of the number of different symptoms endorsed and the severity or frequency of those symptoms—a procedure that is valid only to the extent that symptom type and frequency/severity index the same underlying construct.

Given at least some empirical data suggesting that dissociation is a multidimensional construct, the Multiscale Dissociation Inventory (MDI; Briere, 2002) was developed. This test consists of six scales, separately measuring phenomena ranging from derealization to multiple personalities. Because each of these scales yields a separate score, the potential confound of symptom type with symptom severity or frequency is decoupled. As evidence of the dimensionality of this instrument, two factor analyses of the MDI are reported in the test manual (Briere, 2002): one on clinical participants and one on a general population sample. The general population sample analysis revealed seven factors, generally corresponding to the Emotional Constriction, Disengagement, and Depersonalization scales of the MDI, followed by two factors that split the Memory Disturbance scale and two factors characterized by Identity Dissociation items. Factor analysis of MDI items from the clinical sample, on the other hand, yielded four components: Detachment and Memory Disturbance, Identity Dissociation, Emotional Constriction, and Depersonalization/Derealization.

Although the extent and types of dissociation appear to vary considerably between clinical and nonclinical populations (e.g., Putnam et al., 1996), examination of the analytic approach used in the MDI and many DES studies suggests that some of the differences in the reported factor structures may be due to statistical issues. First, some MDI and DES items (e.g., those tapping multiple personalities) are rarely endorsed in the general population sample, producing a significant cellar effect, and yet are relatively common in clinical samples. Such differential endorsement might easily produce different factor structures in the two MDI samples. Second, both MDI analyses (and most studies of the DES) employed the Kaiser eigenvalue criterion (Kaiser, 1960) for component extraction. Although often used, this approach can overestimate the number of usable components (Zwick & Velicer, 1986), a phenomenon that varies as a function of sample characteristics and may have operated differently within the MDI clinical and general population samples. Third, an orthogonal axis rotation (wherein all factors are forced to be independent of one another) was used in the MDI manual and almost all DES studies; however, upon further consideration, it is likely that dissociative symptom clusters are significantly intercorrelated. To the extent that the factors are related, the assumption of factorial independence is likely to have biased the resultant factor structures. Finally, the clinical sample used in the MDI study was relatively small ($N = 90$). Samples of this size limit the power of the factor analysis to detect the proper number of extractable components (Gorsuch, 1983), thereby potentially altering the item loadings of the resultant factors.

To address these various issues, this article reports a more focused analysis of the dimensionality of the MDI and, more broadly, of the dissociation construct. For the purposes of this study, a combined sample was created that was comprised of the clinical and general population samples described earlier, a trauma-exposed community sample used in validation studies for the MDI, and a large sample of university students. This approach provided a substantially larger and more heterogeneous group of participants with a broader range of possible dissociative symptoms, wherein even more rare symptoms would be represented at sufficient levels to allow their formation into discrete factors, if justified. In addition, different component extraction and axis rotation approaches were used to better determine the number of underlying factors and to take into account any interfactorial correlation. Finally, the resultant factor scores were then evaluated for their

relationship to theoretically meaningful variables (e.g., trauma exposure and PTSD) so that the discriminant validity of a multifactorial model of dissociation could be tested.

Method

Participants

General Population Sample

As part of the standardization of the MDI, a national-sampling service generated a random sample of registered owners of automobiles and/or individuals with listed telephones in the U.S. general population. Individuals from this sample were mailed a questionnaire containing the MDI and several other measures, including the DAPS (Briere, 2001). Participants received $5 upon mailing back the questionnaire. In addition, 70 university students were tested with the same protocol (but without financial compensation) to provide additional participants in the lower age ranges. All questionnaires were anonymous, although financial compensation in the general population sample was tied to names and addresses that were destroyed before data analysis. Overall, 623 of 5,485 potential participants (11.4%) returned the MDI, of which 618 were substantially complete. Although the actual normative sample used for the MDI was a subset of these individuals (i.e., those reporting at least one event that met the definition of a trauma in Criterion A of the DSM-IV criteria for PTSD), the present analyses used the entire sample. The mean age of this group was 47.0 years ($SD = 17.0$, range = 18–91 years). Of the total sample, 328 (53%) were male. Racial composition was 494 (80%) Caucasian, 36 (6%) African American, 20 (3%) Hispanic, 16 (3%) Asian, 17 (3%) Native American, 7 (1%) other, and 28 (5%) did not indicate their race. When compared to 2000 census data, this sample underrepresented non-Caucasians by 5% and women by 4%.

Clinical Sample

The clinical sample was composed of 90 participants who were recruited by 11 clinicians across the United States from their evaluation or treatment caseloads. Clinicians involved in this study were among those who had purchased tests from Psychological Assessment Resources in the past and who responded to a mailed invitation to be part of the MDI validation study. Participants recruited by clinicians were not selected on the basis of any variable (e.g., intelligence or clinical diagnosis), although several clinicians were specialists in trauma-related disorders and therefore were more likely than others to recruit participants with trauma histories. The mean age of this sample was 37.3 years ($SD = 10.8$), 68 (86%) were women, and the racial composition was 63 (71%) Caucasian, 9 (10%) African American, 8 (9%) Hispanic, 3 (3%) Native American, 1 (1%) Asian, and 5 (6%) other or unknown.

Community Sample

The community sample consisted of 59 trauma-exposed residents of the southern United States who were recruited through newspaper ads and flyers for a study on the impact of traumatic events. Participants completed a battery of clinical interviews and tests, including measures of traumatic events across the life span and PTSD. The mean age of this sample was 36.1 years ($SD = 12.7$), 51 (86%) were women, and the racial breakdown was 47 (80%) Caucasian, 9 (15%) African American, 2 (3%) Hispanic, and 1 (2%) other.

University Sample

This sample consisted of 573 students from a mid-sized Canadian university. The mean age of this sample was 19.5 years ($SD = 3.2$), 425 (74%) were women, and the racial breakdown was 456 (85%) Caucasian, 56 (10%) Asian, 9 (2%) native Canadian/First Nations people, 2 (0%) African Canadian, and 16 (3%) other.

Combined Sample

Combined, and with missing MDI data eliminated, the resultant sample consisted of 1,326 participants. The mean age of this sample was 33.7 years ($SD = 17.9$), 795 (60%) were women, and 64 (5%) did not indicate their sex. The racial breakdown was 1,084 (82%) Caucasian, 73 (6%) Asian, 54 (4%) African American or African Canadian, 30 (2%) Native American or Native Canadian, 28 (2%) Hispanic, 23 (2%) other, and 34 (3%) unknown.

Measures

The MDI is a 30-item self-report test of dissociative symptomatology, with scales that measure six types of dissociative responses: Disengagement, Depersonalization, Derealization, Emotional Constriction, Memory Disturbance, and Identity Dissociation. Each symptom is rated according to its frequency of occurrence over the

prior month on a scale of 1 (*never*) to 5 (*very often*). The MDI was normed and standardized on 444 trauma-exposed individuals from the general population, and has been found to have good reliability and validity (Briere, 2002).

To evaluate the relationship between MDI dimensions and other phenomena, data on other measures also were requested from clinicians in the clinical and community samples. Because clinicians varied widely in the tests they used in their routine clinical practice, these instruments were not available for all participants. Measures included the DES ($n = 118$), the TSI (Briere, 1995) ($n = 97$), the Trauma Specification items and the T-DIS scale of the DAPS (Briere, 2001) ($n = 135$), and the Anxiety and Depression scales of the Personality Assessment Inventory (PAI; Morey, 1991) ($n = 89$–90). Lifetime history of exposure to traumatic events (coded as present or absent) was determined based on endorsements of DAPS Trauma Specification items in three separate areas: sexual child abuse or adult sexual assault, physical child abuse or adult physical assault, and exposure to serious accidents or natural disasters.

Significance Testing

Given the large size of the combined sample, and thus its statistical power to detect even small effects, multivariate findings from this dataset were considered significant at $p < .001$; however, post hoc analyses of significant multivariate tests and analyses using the smaller clinical and community samples were evaluated at the conventional alpha of $p < .05$.

Results

Factor Analysis

A scree test (Cattell, 1966) of the eigenvalues generated by principal components analysis indicated five extractable factors (see Table 1 for the eigenvalues associated with these components, as well as those for the next three components for comparison purposes), accounting for 68% of total item variance. As indicated in Table 1, this number of factors also met the Kaiser eigenvalue criterion. Because it was assumed that dissociative symptom clusters would be correlated to some extent, an oblique (Oblimin) rotation was performed and the average correlation between the resultant components obtained (see Table 2 for the factor correlation matrix). This value ($r = .39$) indicated that when allowed to freely relate, the factors of the MDI were only moderately correlated. As a point of reference, these intercorrelations were less than or equivalent to the associations between MDI factor scores and two manifestly nondissociative constructs—anxiety and depression—as measured by the PAI in the clinical-community subsample (see Table 2). Because this level of factor intercorrelation could support either an orthogonal or oblique model, an orthogonal rotation (Equimax) also was performed for interpretive purposes (see Table 3). Both solutions yielded essentially the same item-factor pattern, although the Equimax solution was closer to simple structure. To preserve the actual correlation between factors, however, factor scores from the Oblimin rotation were used in subsequent analyses.

Table 1. Eigenvalues of the First Eight Extracted MDI Factors in the Combined Sample

MDI factor	Eigenvalue	Percent of variance	Cumulative percent of variance
I	13.5	44.9	44.9
II	2.6	8.7	53.6
III	1.8	6.0	59.5
IV	1.4	4.6	64.1
V	1.1	3.6	67.6
VI	0.7	2.5	70.2
VII	0.7	2.3	72.5
VIII	0.6	2.1	74.6

Note. MDI = Multiscale Dissociation Inventory.

As indicated in Table 3, the factors generated by these analyses generally corresponded to the scales of the MDI, as previously published, except that the Depersonalization and Derealization scale items formed a single component. The Emotional Constriction factor was negatively loaded relative to other factors, and so the valence of the loadings on this factor was reversed in subsequent analyses for interpretive convenience. As presented in Table 4, correlation analysis of the six MDI scales with the Oblimin factor scores indicate that the MDI scales well represent the apparent underlying factor structure of the MDI, except that depersonalization and derealization appear to represent a single underlying dimension.

Factor Differences Between Subsamples

As indicated in Table 5, participants varied considerably in their MDI factor scores as a function of their subsample membership, $F(5, 3638.8) = 81.05$, $p < .001$, multivariate $\eta^2 = .23$. Post hoc ANOVAs revealed that in general, those in the general population had the lowest MDI factor scores, those in the clinical sample had the highest scores, and those in the university and

Table 2. Intercorrelation of Oblimin Factor Scores in the Combined Sample ($N = 1{,}326$) and Factor Score Correlations with PAI Anxiety and Depression Scales in the Clinical–Community Subsample ($N = 89$–90)

		MDI factor intercorrelations					MDI factor correlations with PAI scales	
	MDI factor score	I	II	III	IV	V	Anxiety	Depression
I.	Disengagement	–	.27	.49	.40	.48	.49	.63
II.	Depersonalization/derealization		–	.43	.28	.43	.42	.52
III.	Memory Disturbance			–	.34	.49	.44	.53
IV.	Emotional Constriction				–	.33	.47	.64
V.	Identity Dissociation					–	.39	.55

Note. All correlations are significant at $p < .01$ (two-tailed test). PAI = Personality Assessment Inventory.

Table 3. Factor Analyses of the MDI Using Two Axis Rotations

		Oblimin rotation					Equimax rotation				
Scale	MDI item	I	II	III	IV	V	I	II	III	IV	V
DENG	Not paying attention because you were in your own world	**.89**[a]	.27	−.48	.39	.44	**.79**	.23	.09	.19	.26
	"Spacing out"	**.87**	.29	−.45	.33	.43	**.80**	.20	.13	.19	.21
	Staring into space without thinking	**.84**	.29	−.49	.41	.42	**.74**	.24	.12	.17	.29
	Absent-mindedness or forgetfulness	**.80**	.23	−.48	.49	.37	**.68**	.24	.05	.11	.39
	Driving or walking without noticing where you were going	**.61**	.31	−.44	**.60**	.45	.41	.20	.13	.22	**.52**
IDDIS	Different people taking charge inside of your mind	.21	**.90**	−.37	.26	.34	.05	.14	**.87**	.11	.15
	Having different people inside of you with different names	.17	**.86**	−.32	.27	.29	.03	.11	**.85**	.06	.17
	Feeling like two or more people were fighting or arguing inside of yourself	.28	**.86**	−.45	.30	.41	.10	.21	**.80**	.17	.18
	Feeling like there was more than one person inside of you	.39	**.74**	**−.51**	.24	**.53**	.20	.27	**.64**	.31	.11
	Switching back and forth between different personalities	.25	**.72**	−.35	.31	.38	.08	.13	**.65**	.18	.21
ECON	Knowing you should be mad or sad about something, but not having any feelings	.39	.39	**−.91**	.34	.40	.13	**.84**	.19	.15	.23
	Not being able to feel emotions	.41	.39	**−.90**	.31	.40	.16	**.83**	.19	.15	.20
	Not having any emotions or feelings at a time when you should have been upset	.45	.36	**−.90**	.32	.40	.21	**.82**	.16	.14	.20
	Feeling frozen inside, without feelings	.38	**.50**	**−.85**	.26	**.52**	.13	**.74**	.31	.29	.13
	Knowing you must be upset, but not being able to feel it	**.54**	.31	**−.80**	.28	.47	.32	**.69**	.11	.24	.16
MEMD	Realizing that you must have done something that you don't remember doing	.43	.39	−.43	**.81**	.40	.16	.19	.22	.14	**.76**
	People telling you that you said or did something that you don't remember saying or doing	**.54**	.28	−.44	**.75**	.35	.31	.22	.10	.10	**.69**
	Suddenly finding yourself somewhere and not knowing how you got there	.32	.43	−.35	**.75**	.44	.05	.11	.27	.23	**.70**
	Having blank spells	**.52**	.40	−.36	**.75**	.34	.10	.25	.28	.44	
	Suddenly realizing that hours had gone by and not knowing what you had been doing during that time	**.65**	.30	−.47	**.58**	.43	.44	.16	.14	.20	**.50**
DPER	Feeling like you didn't belong in your body	.37	**.65**	**−.50**	.27	**.79**	.12	.24	.49	**.65**	.14
	Feeling outside of your self	**.55**	**.60**	**−.51**	.21	**.77**	.35	.23	.44	**.61**	.07
	Your body feeling like it was someone else's	.48	.45	−.43	.29	**.73**	.27	.18	.27	**.62**	.17
	Your hands or feet not feeling connected to the rest of your body	.32	.34	−.41	.32	**.68**	. 09	.20	.18	**.59**	.23
	Feeling mechanical, like a robot	**.56**	.42	**−.62**	.23	**.55**	.38	.44	.25	.35	.10
DREAL	Suddenly things around you not feeling real or familiar	**.55**	.38	**−.51**	.37	**.82**	.31	.24	.16	**.69**	.25
	Your home or work suddenly seeming unfamiliar	.34	.29	−.43	.46	**.76**	.06	.20	.08	**.67**	.38
	Thing around you suddenly seeming strange to you	**.68**	.33	−.49	.38	**.75**	.48	.21	.12	**.59**	.26
	Feeling like you were in a dream	**.74**	.34	−.46	.35	**.64**	**.58**	.18	.15	.46	.22
	Things around you suddenly seeming not quite right, a little bit off	**.73**	.29	**−.56**	.38	**.64**	**.55**	.31	.08	.44	.26

Note. DENG = Disengagement; IDDIS = Identity Dissociation; ECON = Emotional Constriction; MEMD = Memory Disturbance; DPER = Depersonalization; DREAL = Derealization.
[a]Structure loadings considered most meaningful (**bolded**) if $|c| \geq .50$.

Table 4. Correlation Between MDI Scales and MDI Oblimin Factor Scores

	Factor				
MDI scale	I Disengagement	II Identity Dissociation	III Emotional Constriction	IV Memory Disturbance	V Depersonalization/ Derealization
Disengagement	**.96**	.32	.56	.51	.50
Depersonalization	.59	.63	.64	.33	**.89**
Derealization	.76	.39	.60	.46	**.86**
Memory Disturbance	.67	.46	.53	**.89**	.54
Emotional Constriction	.51	.44	**1.0**	.35	.50
Identity Dissociation	.39	**.87**	.63	.35	.54

Note. All correlations significant at $p < .001$ (two-tailed test). Corresponding scale and factor score correlations are **bolded**. MDI = Multiscale Dissociation Inventory.

trauma-exposed community samples fell midway between these extremes.

Covariation With Other Variables

Overall Prediction

MDI factors were significantly associated with demographic variables and trauma exposure for each of the five MDI factors: Disengagement, $R^2 = .31$, $F(5, 1208) = 106.56$, $p < .001$; Identity Dissociation, $R^2 = .05$, $F(5, 1208) = 12.61$, $p < .001$; Emotional Constriction, $R^2 = .12$, $F(5, 1208) = 34.31$, $p < .001$; Memory Disturbance, $R^2 = .06$, $F(5, 1208) = 16.44$, $p < .001$; and Depersonalization/Derealization, $R^2 = .07$, $F(5, 1208) = 18.90$, $p < .001$.

Demographics

Age and sex, entered at Step 1 for each equation, were significantly associated with MDI factors. As presented in Table 6, after controlling for participant age, women had higher scores than men on the Disengagement, Identity Dissociation, and Depersonalization/Derealization factors, but did not differ on Memory Disturbance or Emotional Constriction. In the same analyses, younger age was associated with higher scores on all MDI factors except Identity Dissociation after controlling for sex.

A one-way multivariate analysis of variance (MANOVA) of the relationship between MDI factor scores and race indicated a very small, but statistically significant, relationship, $F(25, 4763.9) = 2.38$, $p < .001$, multivariate $\eta^2 = .01$ (see Table 7). Post hoc analyses of variance revealed small, but significant, findings for Disengagement, $F(5, 1286) = 5.12$, $p < .001$, $\eta^2 = .02$; Memory Disturbance, $F(5, 1286) = 3.48$, $p < .004$, $\eta^2 = .01$; and Depersonalization/Derealization, $F(5, 1286) = 4.33$, $p < .001$, $\eta^2 = .02$, but no significant race differences for Identity Dissociation or Emotional Constriction. As indicated in Table 7, Tukey tests of these race differences revealed that Asians scored slightly higher than most other racial groups on these three MDI factors, and Caucasians had marginally higher Disengagement scores than African Americans.

Trauma Exposure

Trauma exposure variables, entered at Step 2 for each equation, were significantly associated with additional dissociation variance for all five MDI factors (see Table 6). A previous history of sexual abuse or assault was

Table 5. MDI Factor Score Means and SDs for Groups Composing the Combined Sample

	General Population ($N = 616$)		University ($N = 567$)		Clinical ($N = 84$)		Community ($N = 59$)		ANOVA		
MDI factor score	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	$F(31322)$	η^2	$p <$
Disengagement	-0.70_a	0.49	0.66_b	0.89	$0.69_{b,c}$	1.08	-0.05_d	0.86	350.42	.44	.001
Identity Dissociation	-0.17_a	0.26	0.00_a	0.67	1.52_b	3.07	0.01_a	0.74	89.91	.16	.001
Emotional Constriction	-0.39_a	0.53	0.23_b	1.05	1.25_c	1.54	$0.01_{b,d}$	1.13	106.17	.19	.001
Memory Disturbance	-0.32_a	0.53	0.23_b	1.04	0.76_c	1.94	$0.14_{b,d}$	1.23	53.29	.11	.001
Depersonalization/Derealization	-0.29_a	0.39	0.17_b	1.12	1.09_c	1.99	$-0.19_{a,b,d}$	0.68	64.23	.13	.001

Note. Means not sharing a common subscript are different at $p < .05$ (Tukey's test).

Table 6. Hierarchical Multiple Regression Analyses of MDI Factor Scores as a Function of Participant Age, Sex, and Exposure to Trauma ($N = 1{,}214$)

		DENG		IDDIS		ECON		MEMD		DPER/DREAL	
Step	Predictor	β	R^2ch	β	R^2ch	β	R^2ch	β	R^2ch	β	R^2ch
1	Age	−.45**		.01		−.17**		−.14*		−.14**	
	Sex	.17**		.11*		.03		.01		.10*	
			.27**		.01**		.05**		.02**		.04**
2	Sexual abuse/assault	.11**		.14**		.21**		.11**		.16**	
	Physical abuse/assault	.07*		.10**		.13**		.13**		.05	
	Accident/disaster	.09**		.02		.02		.05		.05	
			.03**		.04**		.07**		.04**		.04**

Note. R^2ch = change in equation R^2 after predictor set has been entered. DENG = Disengagement; IDDIS = Identity Dissociation; ECON = Emotional Constriction; MEMD = Memory Disturbance; DPER/DREAL = Depersonalization/Derealization.
*$p \leq .05$. **$p \leq .01$.

associated with elevations on all five factor scores whereas a physical abuse or assault history was positively related to all factor scales but Depersonalization/Derealization. Prior exposure to accidents and disasters was related only to the Disengagement factor. Although MDI factors were positively related to trauma exposure, the changes in R^2 at Step 2 (representing the amount of variance accounted for by trauma after controlling for participant sex and age at Step 1) were relatively small, ranging from 3% (for Disengagement) to 7% (for Emotional Constriction).

Other Dissociation Measures

Multiple regression analysis of the relationship between MDI factors and other dissociation measures revealed that MDI factors were significant predictors of the TSI Dissociation scale, the DAPS T-DIS scale, and the DES, accounting for 64, 66, and 79%, respectively, of the variance. As presented in Table 8, these analyses indicate that the MDI Identity Dissociation and Depersonalization/Derealization factors were related to all three dissociation scales, the Disengagement factor was associated with the TSI and DAPS scales, the Memory Disturbance scale predicted the TSI Dissociation scale and the DES, and the Emotional Constriction factor was unrelated to any scale.

PTSD Symptom Clusters

As shown in Table 9, after age, sex, and the other PTSD clusters were taken into account, the DAPS Reexperiencing scale (measuring Cluster B) was associated with Disengagement, the DAPS Avoidance scale (measuring Cluster C) was related to Identity Dissociation, Emotional Constriction, and Depersonalization/Derealization, and the DAPS Hyperarousal scale (measuring Cluster D) was associated with Disengagement and Memory Disturbance.

Discussion

Using the MDI as a source of items, the current study identified five separate variance components within what is generally considered to be dissociative symptomatology. If additional dissociation items also were included

Table 7. Relationship Between Race and Three Significant MDI Factor Scores

	Caucasian ($N = 1084$)		Black African American or African Canadian ($N = 54$)		Asian ($N = 73$)		Hispanic ($N = 28$)		Native American or Native Canadian ($N = 30$)		Other ($N = 23$)	
MDI scale score	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Disengagement	0.01_a	1.00	-0.40_b	0.73	0.40_c	0.96	$-0.37_{a,b}$	0.96	$-0.06_{a,b,c}$	1.15	$0.17_{a,b,c}$	1.04
Memory Disturbance	-0.03_a	0.99	$-0.01_{a,b}$	1.02	0.44_b	1.12	$0.25_{a,b}$	1.44	$-0.11_{a,b}$	0.69	$0.09_{a,b}$	0.74
Depersonalization/ Derealization	-0.02_a	0.96	-0.20_a	0.81	0.48_b	1.44	$0.03_{a,b}$	1.04	-0.25_a	0.43	$-0.01_{a,b}$	1.69

Note. Means not sharing a common subscript are different at $p < .05$ (Tukey's test).

Table 8. Multiple Regression Analyses of Other Dissociation Measures as a Function of MDI Factor Scores

	Other dissociation measures		
	TSI DIS β	DAPS T-DIS β	DES β
MDI factor			
DENG	.34**	.34**	.02
IDDIS	.17*	.20**	.41**
ECON	.13	.11	.10
MEMD	.19*	−.07	.31**
DPER/DREAL	.22*	.41**	.29*
Statistics			
n	97	135	118
R^2	.64	.66	.79
F	34.67**	50.02**	86.17**
df	5, 91	5, 129	5, 112

Note. TSI DIS = Trauma Symptom Inventory Dissociation scale; DAPS T-DIS = Detailed Assessment of Posttraumatic Stress Trauma-specific Dissociation scale; DES = Dissociative Experiences Scale; DENG = Disengagement; IDDIS = Identity Dissociation; ECON = Emotional Constriction; MEMD = Memory Disturbance; DPER/DREAL = Depersonalization/Derealization.
* $p < .05$. ** $p < .01$.

[e.g., those tapping somatoform dissociation (Nijenhuis, 2000) or more directly absorptive phenomena (Allen, Fultz, Huntoon, & Brethour, 2002)], it is likely that an even larger number of symptom factors would have emerged.

The formation of discrete factors does not mean that these factors are all necessarily dissociative. Memory disturbance, for example, may arise from sources beyond dissociation such as dementia or attention/concentration problems (Brandes et al., 2002). Similarly, there has been considerable discussion in the literature whether emotional constriction (especially emotional numbing) is dissociative or, instead, a psychobiological aspect of PTSD (Feeny, Zoellner, Fitzgibbons, & Foa, 2000); however, other symptom clusters such as the Depersonalization/Derealization and Identity Dissociation factors are more prototypical of what the DSM-IV and many clinicians would view as dissociative.

The finding of discrete dissociation factors supports a view of dissociation as a multifaceted collection of distinct, but overlapping, dimensions, as opposed to a unitary trait. The average redundancy between factors in the present study was 15%—a smaller association than was found between these factors and a generic measure of depression. Given this relatively modest correlation between dissociative types, for example, it would be possible for someone to have clinically significant levels of one or two dissociative clusters, yet report a relative absence of symptoms in other dissociative domains. More generally, such data suggest that to say that a person is dissociating may communicate less information than sometimes is assumed, and may obscure clinically meaningful individual differences in dissociative symptomatology.

The convergent validity of the factors found in this study was supported by their substantial correlations with other measures of dissociation. However, at the same time, different MDI factors covaried with different dissociation scales: Although the Identity Dissociation and Depersonalization/Derealization factors were associated with all three scales, the Disengagement factor was uncorrelated with the DES, the Memory Disturbance factor was uncorrelated with the DAPS T-DIS, and the Emotional Constriction factor was unrelated to any dissociation scale.

Table 9. Multiple Regression Analyses of MDI Factor Scores as a Function of PTSD Symptom Clusters ($N = 947$)

	MDI factors				
	DENG β	IDDIS β	ECON β	MEMD β	DPER/DREAL β
Predictors					
Age	−.42**	.04	−.16**	−.13**	−.12**
Sex	.09**	.02	−.03	−.07*	.02
DAPS Reliving	.14**	−.03	−.02	.12	.11
DAPS Avoidance	−.03	.41**	.60**	.10	.25**
DAPS Hyperarousal	.27**	−.01**	.02	.14*	.05
Statistics					
R^2	.37	.21	.35	.13	.19
$F(5, 946)$	110.46**	50.32**	102.65**	28.83**	43.37**

Note. DAPS = Detailed Assessment of Posttraumatic Stress; DENG = Disengagement; IDDIS = Identity Dissociation; ECON = Emotional Constriction; MEMD = Memory Disturbance; DPER/DREAL = Depersonalization/Derealization.
* $p < .05$. ** $p < .01$.

This variability in the relationship between MDI factors and other dissociation measures is relevant to two issues. First, it is potentially problematic that the four measures of dissociation tested here appear to tap somewhat different symptom patterns. For example, a study using the DES is likely to assess a different combination of dissociative phenomena than a study using the TSI Dissociation scale, and thus different conclusions about dissociation may be possible in each instance. However, because these various tests of dissociation have substantial variance in common, it is possible that the findings of any given study remain broadly generalizable to dissociative phenomena, per se, while the relationship between specific forms of dissociation and relevant variables may have been obscured.

Second, these findings bear on the ongoing debate over whether emotional numbing or constriction is a dissociative response. The failure of the Emotional Constriction factor to correlate with other measures of dissociation may suggest to some that this symptom cluster is less dissociative than posttraumatic. Alternatively, it may be that the other dissociation scales are incomplete in not tapping emotional constriction, perhaps based on preconceived notions that emotional numbing is not a dissociative phenomenon. Ultimately, to the extent that dissociation is a theoretical construct, there may be no clear answer to this issue—since it does not appear to be a single phenomenon, what dissociation actually comprises in terms of diverse components is more a definitional issue than an empirical one.

Association With Trauma

In agreement with other studies (e.g., van IJzendoorn & Schuengel, 1996), the present data reinforce the relationship between trauma exposure and dissociative symptoms. Although accidents and disasters were related to a single MDI factor, sexual trauma was correlated with all five types of dissociation, and physical assault was related to four of five dissociation factors. Surprisingly, however, the amount of unique dissociation variance accounted for by trauma exposure was only 4.4% across MDI factors, representing an effect size (d) of approximately .41—about midpoint between small ($d = .2$) and medium ($d = .5$) (Wolf, 1986). Although not a primary focus of this study, these data suggest that trauma exposure may be only a relatively small aspect in the genesis of dissociative responses, much as has been found for posttraumatic stress in general (Yehuda & McFarlane, 1995). Various studies indicate, for example, that dissociative reactions also are related to insecure parent–child attachment in the early years (Main & Morgan, 1996; Ogawa, Sroufe, Weinfield, Carlson, & Egeland, 1997), which in turn often is associated with early trauma exposure and with more negative psychological responses to later traumas (e.g., Allen, 2001; Ogawa et al., 1997). As is true for PTSD (e.g., Briere, in 2004; Yehuda & McFarlane, 1995), dissociative symptoms also may vary as a function of sensitivity to stress, socioeconomic status (especially as it predicts social support and cumulative trauma exposure), and other variables that intervene between trauma and posttraumatic outcome.

Relationship to PTSD Symptom Clusters

As expected, dissociative symptoms were significantly associated with posttraumatic stress in the current study. When the three PTSD symptom clusters were considered separately, reexperiencing was predicted by Disengagement, avoidance/numbing was related to Identity Dissociation, Emotional Constriction, and Depersonalization/Derealization, and hyperarousal was predicted by Disengagement and Memory Disturbance. Although the substantial relationship between Emotional Constriction (which approximates the numbing component of PTSD) and posttraumatic avoidance was assumed, the remaining correlations provide evidence for the construct validity of the dissociative factors since dissociative symptoms often are comorbid with PTSD (e.g., Feeny et al., 2000); however, the differential correlation of the dissociative factors with the three PTSD clusters suggests that the notion that dissociation correlates with PTSD may be an overgeneralization and that a more fine-grained analysis is required.

Clinical Implications

There are several implications of the current findings. Most obviously, when single-score dissociation measures such as the DES and TSI DIS scales are used clinically, it is not clear whether a given client's elevated score is due to high levels of depersonalization and/or multiplicity, for example, or moderate endorsement of a variety of different dissociative symptom clusters. Although individual item review is possible, interpretation of single items is typically compromised by reduced psychometric reliability and the lack of item-level normative data. As long as it was believed that dissociation represented a unitary phenomenon, this was not a major problem: The issue was only whether the client dissociated or whether scores of a given magnitude represented a dissociative disorder. However, in light of the apparent multidimensionality of

dissociative phenomena, assessment approaches that evaluate symptomatology in a number of different areas are likely to be more helpful than those that provide a single score or label.

Beyond providing more accurate information on specific dissociative symptoms, multidimensional assessment provides an opportunity for more focused clinical intervention. Treatment for depersonalization, for example, is likely to be different than treatment for dissociative identity disorder. Although such differentiation of treatment goals may occur during a clinical interview, standardized test data can provide considerably greater specificity, just as detailed test data may assist in discriminating clinical issues in other areas. In addition, by quantifying the specific level of various dissociative symptom clusters, multidimensional assessment can assist in tracking differential symptom improvement (or the lack thereof) during treatment.

Limitations

Although the sample size and the statistical approach used in this investigation support certain conclusions regarding dissociative phenomena, interpretation of these findings must be tempered by several limitations. The mail-out methodology used to collect the standardization sample omitted, by definition, potential participants who did not have mailing addresses (e.g., the incarcerated, hospitalized, or homeless) as well as those who could not read English. In addition, the general population sample response rate was below that considered optimal for mail-out studies. Finally, combining diverse participants into a single group may have skewed this final sample towards certain participant characteristics more than others (e.g., people from the general population and university students over clinical participants).

Conclusions

The factor structure of the MDI, as well as the unique and differential relationships between individual MDI factors and participant demographics, trauma history, clinical status, posttraumatic stress symptoms, and scores on other dissociation measures suggest that the term *dissociation* may be a misnomer to the extent that it implies a single underlying phenomenon. The replication of previous findings regarding components of dissociation, the modest correlations among the MDI factors (in fact, correlations comparable to their associations with measures of anxiety and depression), and the differential relationships among the MDI factors and other important clinical variables suggest that this heterogeneity is substantial, with implications for both research and practice.

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