



THE MEASUREMENT OF DISSOCIATION IN NORMAL AND CLINICAL POPULATIONS: META-ANALYTIC VALIDATION OF THE DISSOCIATIVE EXPERIENCES SCALE (DES)

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ABSTRACT. *The Dissociative Experiences Scale (DES) has now been used in over 100 studies on dissociation. This article reports on a series of meta-analyses to test some of the theoretical assumptions underlying the DES and to examine the instrument's reliability and validity. Studies with the DES were identified through Psychlit, Medline, Social Sciences Citation Index, and Current Contents. Across studies in similar domains (e.g., studies on multiple personality disorders) combined effect sizes were computed using the Rosenthal-Mullen approach. The DES showed excellent convergent validity with other dissociative experiences questionnaires and interview schedules (combined effect size: $d = 1.82$; $N = 5,916$). The DES also showed impressive predictive validity, in particular concerning dissociative disorders (Multiple Personality Disorder: combined effect size $d = 1.05$; $N = 1,705$) and traumatic experiences (post-traumatic stress disorder: combined effect size $d = 0.75$; $N = 1,099$; and abuse: combined effect size $d = 0.52$; $N = 2,108$). However, the discriminant validity was less well established. The DES is sensitive to response and experimenter biases. It is recommended to average DES-scores over more points in time and over more judges. The DES seems to measure the current view on past dissociative experiences. The model of dissociation as a form of autohypnosis failed to receive support from the data. A developmental model to interpret dissociation is proposed.*

DISSOCIATION IS OFTEN considered a psychological defense mechanism for victims of traumatizing events such as sexual molestation, natural disaster, or combat (Putnam, 1991). It is suggested that it allows these victims to compartmentalize perceptions and memories, and to detach themselves from the full impact of the trauma. At a later stage, dissociation may delay the necessary working through of the traumatic experiences (Spiegel, 1991). In the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV; American Psychiatric Association, 1994) the essential feature of Dissociative

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Disorders has been defined as a disruption in the usually integrated functions of consciousness, memory, identity, and perception of the environment.

Bernstein and Putnam (1986) developed a self-report measure to assess the degree to which subjects experience dissociation — the Dissociative Experiences Scale (DES). It consists of 28 items, and subjects are asked to indicate on a visual analogue scale which percentage of the time they experience dissociative symptoms. The scale items were constructed using data from interviews meeting DSM-III criteria for dissociative disorders and from consultations with clinical experts in the treatment of dissociative disorders. The DES has been used as a screening instrument, distinguishing potential dissociative-disorder patients from other psychiatric patients, and as a research instrument.

Is it possible to measure individual differences in dissociative experiences reliably and validly by means of a self-report instrument such as the DES? This question is central to the current meta-analytic validation of the DES. First, we assessed the instrument's convergent validity across studies. Several questionnaires and interview schedules have been developed to measure dissociation, dissociative experiences, or related phenomena. Questionnaires, such as the Perceptual Alteration Scale (PAS; Sanders, 1986), the Tellegen Absorption Scale (TAS; Tellegen & Atkinson, 1974), the Questionnaire of Experiences of Dissociation (QED; Riley, 1988), the Bliss-scale (Wogan, 1995), the Dissociative Questionnaire (DIS-Q; Vanderlinden, Van Dyck, Vandereycken, Vertommen, & Verkes, 1993), and the dissociation scale of the Trauma Symptom Checklist (TSC-40-DIS; Gleaves & Eberenz, 1995), have somewhat different formats and content but their authors all claim to assess some aspect of dissociation or a related phenomenon. Interviews based on the DSM-III-R criteria for dissociative disorders, such as the Structured Clinical Interview for DSM-III-R Dissociative Disorders (SCID-D; Steinberg, 1994) and the Dissociative Disorders Interview Schedule (DDIS; Ross, Heber, Norton, Anderson, Anderson, & Barcher, 1989), measure dissociative symptoms and syndromes that should be associated with DES scores. Second, the DES should show discriminant validity (Campbell, 1960). Subjects from different socio-economic, racial, and cultural backgrounds should perceive the DES items in similar ways if their scores are used for comparison. Dissociation is not expected to be sex-related. One may expect weak associations with age (Strick & Wilcoxon, 1991). Lastly, the DES should not be affected strongly by response biases: that is, systematic error variance caused by social desirability or expectancy effects. Third, the reliability of the DES is an important issue. The data on the internal consistency or alpha reliability of the instrument are summarized, and the studies on test-retest reliability are discussed. Furthermore, the existence of DES subscales are addressed.

The proof of the pudding, however, is in assessing the instrument's predictive validity (Nunnally, 1978): Is the DES related to the syndromes for which it has been developed as a screening instrument? As Bernstein and Putnam (1986) predicted, the DES should be related to dissociative disorders, such as Multiple Personality Disorder (MPD), Dissociative Disorder Not Otherwise Specified (DDNOS), and other Dissociative Disorders (ODD), and at the same time it should not be associated with psychiatric disturbances without dissociative characteristics, such as Personality Disorders, Affective Disorders, Anxiety Disorders, Schizophrenia, or physical disorders such as Seizure Disorder. Furthermore, as dissociation is conceptualized as a defense mechanism, it should be present in cases where defense is functional — at least in the short run. Therefore, the DES may be expected to discriminate Post-Traumatic Stress Disorder (PTSD) or Abuse subjects from other (psychiatric or normal) subjects. There has also been speculation on the basis of clinical reports that Eating Disorders may include certain dissociative components (Demitrack, Putnam,

Brewerton, & Brandt, 1990), and that subjects who tend to be hypnotizable also tend to have more frequent dissociative experiences (Bliss, 1986). Lastly, because the DES has been applied in several different diagnostic groups, including more than 12,000 subjects, we found it useful to derive some normative data from the extant studies, and to compare the means of those groups.

METHOD

Data Base

Pertinent studies were identified through Psychlit, Medline, and the Social Sciences Citation Index, as well as through the "snowball" method (Mullen, 1989). Recent studies were identified using Current Contents. Studies were found through computer searches using the keywords "dissociative," "experiences," "scale," "DES," and "dissociation," and by using the reference to the Bernstein and Putnam (1986) article. Criteria for inclusion of a study in one of the meta-analyses were as follows: (a) The DES was used to compare nonclinical or clinical groups; (b) Means or medians were reported; and (c) There was sufficient statistical detail to compute effect sizes.

The selection procedure yielded 22 studies on the relation between DES and alternative measures for dissociation, 34 studies on the discriminant validity of the DES, and 79 studies on the predictive validity of the DES. Only published papers were included; because a separate journal for studies on dissociation started at around the same time as the DES became available (*Dissociation: Progress in the Dissociative Disorders*), probably most DES studies have been published. In 1993, Carlson, Putnam, Ross, and Torem (1993) published their multicenter study on the validity of the DES as a screening instrument for MPD. This study was not included in our meta-analysis, because their sample and the other — separately reported — samples in the meta-analysis would almost certainly overlap. The number of hypothesis tests for the separate meta-analyses varied between 11 and 53, which is sufficient for the computation of combined effect sizes (Mullen, 1989; Van IJzendoorn, 1995). The data that were extracted for the meta-analyses from the individual studies are available from the first author.

Meta-Analytic Procedures

In primary-level studies the unit of analysis is the subject; in a meta-analysis of several primary-level studies the unit of analysis is the outcome of those studies. Because of this difference in unit of analysis, the meta-analytic approach has to be based on a different set of statistical techniques. These techniques should, for example, take into account the fact that data in a meta-analysis are usually based on different sample sizes and, therefore, lack the homogeneity of variance required for conventional statistics (Rosenthal, 1991; Mullen, 1989). In the present meta-analysis the statistical tests associated with the pertinent studies were transformed into a few common metrics for effect size: the correlation coefficient (r), and the standardized difference between the means of two groups (Cohen's d). The meta-analytic procedures applied to these common metrics have been described in detail by Mullen (1989), and they were successfully used in earlier meta-analyses (e.g., Van IJzendoorn, 1995). Effect sizes were combined according to the weighted Stouffer method (Mullen, 1989), tests for homogeneity were performed, and predictor variables were used to explain the variability of effect sizes (Mullen, 1989). When one study yielded several effect sizes, a separate meta-analysis was performed to combine these effect sizes.

The following predictors of variation in study outcomes were included: publication year, sample size, sex ratio, and some features of the study designs. For the meta-analysis

on convergent validity, the type of measure was included as predictor (questionnaire or interview). For the meta-analysis on MPD, type of diagnostic measure (structured interview vs. clinical diagnosis), as well as type of comparison group (normal, students, epileptics, other psychiatric disorders, other physical disorders) were included as predictors. For the meta-analysis on PTSD, whether or not a structured interview was used to establish PTSD was included as a predictor. In the meta-analysis on abuse, type of abuse (sexual, physical, or unspecified), and the method of measurement of abuse (questionnaire or interview) were used as predictors. For the meta-analysis on Eating Disorders, type of Eating Disorder was included (Anorexia, Bulimia, or unspecified). It may be expected that in meta-analysis the different flaws and biases of the individual studies will cancel each other out. Nevertheless, for some systematic differences it is possible to assess the influence statistically (Mullen, 1989; Rosenthal, 1991).

RESULTS

Convergent Validity

In Table 1, the meta-analytic results for the relation between the DES and alternative measures for dissociation are summarized. The overall combined correlation across different measures was $r = 0.67$. The overall mean Cohen's $d = 1.82$ ($N = 5,916$). According to Cohen's (1988) criteria for a weak ($d = 0.20$), medium ($d = 0.50$), and strong ($d = 0.80$) effect size, this convergent validity figure is quite impressive. The DES did not only correlate with similar questionnaires (PAS, TAS, QED, BLISS), but also with measures based on interviews (SCID-D and DDIS). In fact, the association between the DES and the interview measures appeared to be stronger than the association between the DES and the questionnaires ($d = 2.05$ and $d = 1.81$ respectively; $p = 0.003$, for the difference). The relevant SCID-D and DDIS subscales showed a considerable overlap with the DES in terms of item content. Interviewing may reduce error variance that is introduced with paper-and-pencil methodology. The DES was only moderately correlated with the Peri-traumatic Dissociative Experiences Questionnaire (PDEQ) (Marmar et al., 1994), but the PDEQ does not measure lifetime dissociation.

Discriminant Validity

In 19 studies the association between sex of subjects and the DES was reported ($N = 4,074$). The combined effect size of these studies was Cohen's $d = -0.01$; that is,

TABLE 1. Convergent Validity of the Dissociative Experiences Scale (DES)

Convergent Measure	Number of Studies	<i>N</i>	<i>r</i>	Cohen's <i>d</i>	<i>p</i>
PAS	7	1627	0.63	1.64	0.0000
TAS	6	1421	0.54	1.30	0.0000
QED	4	1903	0.80	2.68	0.0000
Bliss scale	2	355	0.53	1.24	1.28 E - 22
SCID-D	2	117	0.76	2.33	1.51 E - 19
DDIS	3	137	0.68	1.83	1.29 E - 14
TSC-40 DIS	1	125	0.73	2.14	6.13 E - 20
PDEQ	1	231	0.41	0.90	6.86 E - 11
Total	26	5916	0.67	1.82	0.0000

females did not appear to be more dissociative than male subjects. As expected, we found a weak association between the age of the subjects and their scores on the DES in 14 studies ($N = 2,474$). The combined effect size was: Cohen's $d = -0.24$, which is comparable to a correlation of $r = -0.12$. Younger subjects appeared to report more dissociative experiences than older subjects, but one has to keep in mind that the DES has not been developed for use with children (Putnam, Helmers, & Trickett, 1993). The youngest subjects were adolescents and they appeared to be responsible for the age effect (see below). In five studies (Berger, Saito et al., 1994; Boon & Draijer, 1993; Ross, Joshi, & Currie, 1990; Saxe et al., 1994; Torem, Hermanowski, & Curdue, 1992) the associations between level of education and the DES scores appeared to be non-significant. In one study (Dunn, Paolo, Ryan, & Van Fleet, 1993), a correlation of $r = -0.10$ ($p < .05$) was found, that is, a higher educational level tended to be associated with somewhat lower DES scores. In the same study, Dunn and his colleagues (1993) found a significant correlation between IQ and the DES ($r = -0.28$; $p < .0005$). The reason for the association between higher IQ and lower DES scores may be the reading level the DES requires from the respondents. Paolo, Ryan, Dunn, and Van Fleet (1993) found that minimally a high school reading level was required to understand the items of the DES. This may also be one of the explanations for the higher scores of African American subjects on the DES (Dunn et al., 1993). Zatzick, Marmar, Weiss, and Metzler (1994), however, found that initial differences in DES scores between African American, Caucasian, and Hispanic war veterans disappeared after adjusting for war zone stress exposure. More studies are needed to replicate these results and to be able to address these discriminant validity issues meta-analytically. In the studies of Sandberg and Lynn (1992), and De Silva and Ward (1993), the DES was not associated with social desirability as measured through the Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1960).

From the perspective of discriminant validity, psychiatric, and physical disorders without a dissociative component should not be associated with high DES-scores. This issue will be addressed in the last paragraph of this section. It should be noted that the DES has been found to correlate strongly with measures for general distress, for example, the General Health Questionnaire (Walker, Katon, Neraas, Jemelka, & Massoth, 1992) ($r = 0.69$, $df = 35$), the Minnesota Multiphasic Personality Inventory-2 (MMPI-2) F-scale (Dunn et al., 1993) ($r = 0.40$, $df = 263$), and the Hopkins Symptom Check List-90 (HSCL-90) subscales for phobic-anxiety ($r = 0.58$, $df = 117$), anger-hostility ($r = 0.67$, $df = 117$), somatization ($r = 0.66$, $df = 117$), depression ($r = 0.62$, $df = 117$) (Norton et al., 1990), and the Global Severity Index (GSI) of the number and intensity of symptoms experienced ($r = 0.67$, $df = 88$) (Zlotnick et al., 1995). Furthermore, the DES was associated with the somatization scale of the Diagnostic Interview for Children and Adolescents ($r = 0.34$, $df = 31$) (Atlas, Wolfson, & Lipschitz, 1995). The DES is also associated with depression as assessed with Beck's Depression Inventory (Gleaves & Eberenz, 1995: $r = 0.51$, $df = 123$; Segal & Lynn, 1993: $r = 0.28$, $df = 83$) but not with depression as measured by the Hamilton Depression Scale (McCarthy et al., 1994).

Reliability

In 16 studies the mean alpha reliability was 0.93. The DES is a highly consistent scale. This may also be derived from studies on the factor structure of the 28 DES-items. Although Bernstein and Putnam (1986) originally suggested three factors (absorption, amnesia, and depersonalization), later studies by Fischer and Elnitsky (1990) and Marmar and colleagues (1994) have shown that only one factor could be derived

from the items. Re-analyzing the original Bernstein and Putnam (1986) data, Waller (in press) found that the skewness of the DES distribution may spuriously cause three factors to be derived from the one-dimensional DES. In a Tobit factor analysis the evidence in favor of a three-dimensional model was lacking (Waller, Putnam, & Carlson, 1995). In this meta-analytic validation of the DES, data on the DES-subscales will, therefore, not be included.

Bernstein and Putnam (1986) found a test-retest correlation of 0.84 in 26 normal subjects across 4–8 weeks. Dubester and Braun (1995) found a test-retest correlation of 0.93 over a period of 2 weeks in their sample of 78 inpatients at a dissociative disorders clinic. Frischholz, Braun, Sachs, and Hopkins (1990) found a test-retest correlation of 0.93 in 30 patients with a dissociative disorder across a 4-week period. Sanders (1992) found a stability of 0.79 in 46 students across 6–8 weeks, and 0.90 in 16 students across 11 weeks. Putnam, Chu, and Dill (1992) even demonstrated that the DES was quite stable across a 1-year period in a sample of 83 mothers ($r = 0.78$).

Predictive Validity

In Table 2 the data on the association between the DES, and MPD, PTSD, abuse, hypnotizability, and Eating Disorders have been summarized.

Dissociative Disorders

In 19 studies on 1,705 subjects, the relation between the DES and MPD was addressed. The overall effect size was: Cohen's $d = 1.05$, comparable to a correlation coefficient of $r = 0.46$. In terms of Cohen's (1988) criteria, this is a large effect size. MPD patients have not only been compared with normal adults or students but also with other psychiatric patients, as well as with physically impaired patients (seizure disorder). If the studies including normal adults were compared with studies including other comparison groups, the combined effect size for the difference between MPD and normals ($d = 0.63$) was smaller than that for the difference between MPD and the other groups ($d = 1.06$; $p = 0.034$). In contrast, the combined effect size for epileptics versus MPD ($d = 1.16$) was significantly larger than that for the other groups versus MPD ($d = 1.02$; $p = 0.01$).

TABLE 2. Predictive Validity of the Dissociative Experiences Scale (DES)

Validity Issue	Number of Studies	<i>N</i>	<i>r</i>	Cohen's <i>d</i>	<i>p</i>
MPD	19	1705	0.46	1.05	1.46 E - 39
PTSD	12	1099	0.35	0.75	2.89 E - 21
Abuse	26 ^a	2108	0.25	0.52	1.06 E - 21
Sexual	26	1550	0.21	0.42	9.87 E - 12
Physical	20	1360	0.21	0.42	7.03 E - 10
Sexual/Physical	7	809	0.28	0.58	2.12 E - 12
Hypnotizability	10	2513	0.13	0.27	6.83 E - 10
Eating disorders	12	1488	0.22	0.44	8.92 E - 12

^aSome studies were divided into several samples or included tests for the relation between the DES and sexual abuse as well as physical or sexual/physical abuse, on the same sample or several samples within one study.

In the meta-analysis on MPD and DES, the DES-scores of MPD patients were sometimes compared with the DES-scores of patients with somewhat less severe dissociative disorders such as DDNOS (Frischholz et al., 1990; Draijer & Boon, 1993). Therefore, a meta-analysis was performed in which all types of dissociative disorders were compared with nondissociative groups. The combined Cohen's $d = 1.08$ ($N = 1,895$), which is comparable to a correlation of $r = 0.47$.

The type of measure for the dissociative disorder diagnosis was an important predictor of the variation of effect sizes between the studies. If one of the structured interview schedules for dissociative disorders was used, the combined effect size ($d = 1.32$) was significantly larger than if other diagnostic criteria such as the clinical interview were used ($d = 0.96$; $p = 0.015$). Publication year or sample size were not related to differences in effect sizes.

Traumatic Experiences

In the states-of-consciousness model of dissociation (Putnam, 1991) a dissociative bias is supposed to be preserved or enhanced by traumatic experiences for which dissociation serves as a defense mechanism. If the DES measures dissociation, it should be associated with the pathological sequelae of traumatic experiences, such as combat experiences and abuse. In 12 studies on 1,099 subjects, the relation between the DES and PTSD was investigated. The combined effect size for the 12 studies was: Cohen's $d = 0.75$ ($p = 2.89 \text{ E} - 21$). The combined effect size is quite large and robust. However, the studies on veterans with and without PTSD (Marmar et al., 1994; Bremner, Southwick, Brett, & Fontana, 1992; Hyer, Albrecht, Boudewyns, Woods, & Brandsma, 1993; Orr et al., 1990; Orr, Pitman, Lasko, & Herz, 1993) and Warshaw et al.'s (1993) study with a comparison group that experienced trauma make it clear that trauma may not be a sufficient cause for high DES-scores.

Larger samples appeared to yield smaller effect sizes ($p = 0.01$) (Rosenthal, 1991). Publication year and sex of subjects did not explain variation of effect sizes between studies. In 26 studies, the association between the DES and physical or sexual abuse experiences has been reported ($N = 2,108$). The combined effect size was $d = 0.52$, which was highly significant ($p = 1.06 \text{ E} - 21$). It was a medium effect size, which was independent of type of abuse: for sexual abuse $d = 0.42$, for physical abuse $d = 0.42$, and for abuse that could have been sexual, physical, or both $d = 0.58$. Whether questionnaires or interviews were used to assess abuse made no difference: the 13 questionnaire studies yielded an effect size of $d = 0.52$, whereas the 11 interview studies showed a combined effect size of $d = 0.56$ ($p = 0.07$). Sample sizes were negatively associated with effect sizes ($p = 0.02$), that is, smaller samples showed larger effect sizes (Mullen, 1989).

Hypnotizability

In the autohypnosis model of dissociation (Bliss, 1986) a relation between hypnotizability and dissociation is assumed to exist. This issue has been investigated in 10 studies ($N = 2,513$). The combined effect size was quite modest: $d = 0.27$ ($p = 6.83 \text{ E} - 10$). Most studies included nonclinical subjects, in particular students. The only study with a clinical sample — bulimics — showed a much larger effect size, but further studies on clinical subjects are needed to establish a consistent trend. Because of the modest set of studies and the homogeneity of their results, the predictors are not reported on statistically. One exception may be allowed: In the past it has been hypothesized that the association between hypnotizability and dissociation would be inflated if subjects

knew that they would participate in a hypnosis study (demand characteristics as response bias). This effect did indeed seem to exist: In the studies in which there was no control of the potential contamination, the effect size was $d = 0.29$, whereas in the studies in which the subjects were kept in ignorance of the content of the experiment, the effect size was $d = 0.19$. The difference was significant ($p = 0.014$).

Eating Disorders

From the very beginning, eating disorders have been linked to dissociative experiences (Covino, Jimerson, Wolfe, Franko, & Frankel, 1994). The dissociative experiences of amnesia, timelessness, depersonalization and derealization are seen as common characteristics of a binge episode (Covino, et al., 1994). There were 12 studies on 1,488 subjects investigating the relation between dissociation and eating disorders. The combined effect size for this set of studies amounted to $d = 0.44$ ($p = 8.92 \text{ E} - 12$). There were no differences between effect sizes of the studies focusing on bulimia and those focusing on anorexia ($p = 0.07$). Dissociation tended to be somewhat more strongly related to anorexia than bulimia. It should be noted that in the only study with depressed comparison subjects the effect size was zero (Greenes, Fava, Cioffi, & Herzog, 1993). Furthermore, in the Valdiserri and Kihlstrom (1995) study dissociation appeared to be more strongly related to aspects of ego dysfunction than to abnormal eating, per se.

Means of Different Diagnostic Groups

In 85 studies on almost 12,000 subjects, the means or medians of different diagnostic groups have been reported. In Figure 1, the means of 16 different groups, each based on several samples, are presented. If means were absent, medians were inserted as a reasonable approximation of the means. This happened for only 10 studies.

From Figure 1 it can be derived that the dissociative disorders scored highest (MPD, DDNOS, and dissociative disorder patients of unknown description) followed by subjects with a traumatic history (PTSD and abuse). Subjects with personality disorders, affective disorders, eating disorders, anxiety disorders, schizophrenia, and psychiatric disorders without dissociative components did indeed show much less high means. The seizure disorders group even scored somewhat lower than the normal groups, whereas the war veterans scored relatively high. In Table 3, the means of the diagnostic groups are presented. If parametric data (means and standard deviations) were available, they are presented on the right side of the table. These data are required to test whether new samples show comparable or deviating distributions of DES scores.

For comparison, the mean score of normal subjects was 11.57 ($SD = 10.63$), and for students the mean score was 14.27 ($SD = 11.54$). Sizes of the standard deviations were strikingly large in all groups except the dissociative disordered categories. Undiscovered dissociation and comorbidity may be the causes for the large variation of DES scores in these groups. The distribution of means was not bimodal. Against the background of potential comorbidity and undiscovered dissociation, the means for normals and nondissociative patients were remarkably similar. The contrasts between the different groups were not statistically tested, as the data refer to samples, not to subjects.

DISCUSSION

The meta-analytic validation of the DES suggests that this instrument has many strengths and some weaknesses. The DES shows excellent convergent validity with similar questionnaires and established interview schedules. The DES also shows

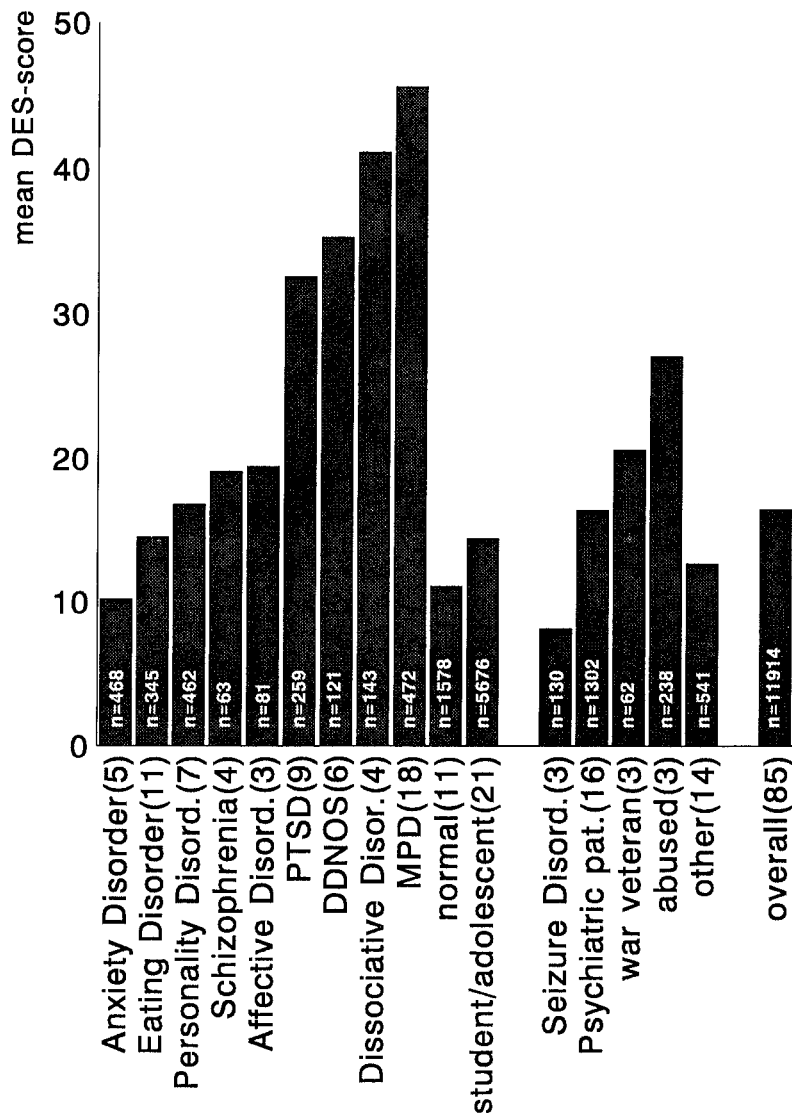


FIGURE 1. Pooled Means of Diagnostic Groups. (Mean DES-scores for the different diagnostic groups were arrived at by pooling the means [or in a few cases the median] for the samples that consisted of persons from these groups. All the diagnostic criteria were derived from the DSM-III-R or the DSM-III. Number of studies on which the means are based are included in parentheses after each diagnostic label.)

impressive predictive validity, in particular in the area of dissociative disorders (MPD, DDNOS, ODD) and traumatic experiences (PTSD, abuse). Many severe psychiatric syndromes and disorders (Schizophrenia, Personality Disorders, Anxiety Disorders, Affective Disorders) do not appear to be associated with high scores on the DES. It should be noted, however, that samples with subjects completing the DES without being aware of their status as MPD patients (Berger et al., 1994; McCallum, Lock, Kulla, Rorty, & Wetzel, 1992; Ross, Ryan, Voigt, & Eide, 1991; Sandberg & Lynn, 1992;

TABLE 3. Means of Different Diagnostic Groups

Diagnostic Group	Parametric or Nonparametric Data			Parametric Data			
	Number of Studies	<i>N</i>	<i>M</i>	Number of Studies	<i>N</i>	<i>M</i>	<i>SD</i>
Anxiety disorder	5	468	10.16	3	407	10.32	9.99
Eating disorder	11	345	14.51	6	203	14.82	11.49
Personality disorder	7	462	16.80	5	349	19.61	16.24
Schizophrenia	4	63	19.10	1	20	17.10	15.30
Affective disorder	3	81	19.43				
PTSD	9	259	32.58	4	121	32.01	19.18
DDNOS	6	121	35.29	3	64	39.49	15.83
Diss. disorder unspec.	4	143	41.15	3	140	41.22	21.99
MPD	18	472	45.63	12	355	44.64	20.26
Normal	11	1578	11.05	7	1458	11.57	10.63
Student/Adolescent	21	5676	14.40	18	4687	14.27	11.54
Seizure disorder	3	130	8.12	1	20	6.70	6.80
Psychiatric patient	16	1302	16.39	14	1174	16.66	16.41
War veteran	3	62	20.58	3	62	20.58	21.63
Abused	3	238	27.06	2	141	29.17	20.99
Other	14	541	12.65				
Overall	85	11914	16.45				

Saxe et al., 1993) show weaker associations between DES and MPD than samples with subjects who know that they are MPD patients ($d = 0.53$ and $d = 1.11$ respectively, $p = 0.028$). It would be preferable if studies with the DES should try to keep the subjects in ignorance of the goals of the study, and those of the DES assessment in particular. In many cases, however, this may be impossible because of the popularity of both the concept and measure of dissociation (Hacking, 1995).

The discriminant validity as well as the reliability of the instrument deserve even more attention. Some studies reported strong associations between the DES and self-report measures of general psychological and physical distress (e.g., Walker, Katon, Neraas, Jemelka, & Massoth, 1992) which may decrease the instrument's discriminant validity. Few studies addressed the critical issue of response biases affecting the DES, and their results are not unequivocal. Gilbertson, Torem, Cohen, and Newman (1992) demonstrated experimentally that the DES is susceptible to malingering. Normal subjects are able to fake "good" or "bad" on the DES depending on what the experimenter asked them to do. Convicted sex offenders are able to present themselves as an extremely normal population when asked to complete the DES (Dwyer, Rosser, & Sawyer, 1992). The questionnaire is usually completed as a whole, and all of the questions are slanted in the same direction. It is, therefore, clear to the subjects what the instrument aims at (Wiener, 1992). If dummy items with neutral content are inserted in the DES, the resulting average score for dissociation appears to be several scale points lower in a student population (Ensink & Van Otterloo, 1989). Furthermore, the DES seems to be somewhat dependent on IQ and it appears to require at least high school reading level. Further research is needed to explore the limits of comprehensibility of the DES items in disturbed populations. Its generalizability to other races and cultures than U.S. Caucasian persons is not self-evident.

To enhance the instrument's reliability and validity and to overcome some of the weaknesses mentioned above, averaging the DES scores over more points in time and over more judges is recommended. Although the DES is a rather stable instrument, test-retest reliability is not maximal, and averaging across several assessments enhances the systematic variance (Crocker & Algina, 1986). Furthermore, self-judgments are intrinsically deficient because judgment errors cannot be averaged out. Following Hofstee (1994), the recommended procedure for assessing dissociative experiences is to also give the DES — phrased in the third person singular — to those who know the target person best. In fact, this is in line with the procedure followed in the Child Dissociative Checklist (CDC; Putnam, Helmers, & Trickett, 1993), which is an observer report measure of dissociation in children.

Recently, Waller et al. (1995) introduced a brief eight-item version of the DES (DES-T) which would assess the category of pathological dissociative experiences. The DES-T, however, still relies on self-report. The brief questionnaire will be highly transparent as to what it is meant to assess because it contains the most extreme items, and it will, therefore, be even more susceptible to response biases than the DES. Normal subjects do not indicate to have experienced the kind of extreme dissociative states that the DES-T presents, which seems to be characteristic of the MPD patients. Finding a categorical response pattern seems circular. The PTSD patients, however, show a less clear-cut categorical response pattern, which casts some doubt on the validity of the DES-T, in particular, its ability to discriminate pathological from non-pathological dissociation. If the DES-T is going to be used as a diagnostic tool instead of a screening device, it should be validated more thoroughly in independent groups.

The question remains as to what exactly the DES measures (Pribor, Yutzy, Dean, & Wetzel, 1993). The validity of the DES, of course, is limited by the validity of the dissociation theory on which it is based. The construct of dissociation can easily be over-stretched to include almost every defense mechanism (Frankel, 1990). If dissociation were a "container" concept, the validity of the DES would be problematic. The meta-analysis on hypnotizability shows how the data resist supporting the alleged link between dissociation and hypnosis. The two phenomena may show some superficial, phenotypical similarities, the underlying dynamics may, however, be very different. The same is true for eating disorders. The rather modest meta-analytic effect size for the DES and eating disorders should not be interpreted to mean that eating disorders are some type of dissociative disorder (Covino et al., 1994). An alternative explanation would be that, in some patients, childhood abuse experiences lead to an eating disorder as well as to a dissociative disorder. The study by McCarthy et al. (1994) suggests that this may be the case. Dissociation and binge eating or substance abuse may also be alternative but distinct strategies to distract and separate oneself from the recollection of traumatic experiences. Because the DES is an efficient and convenient measure, researchers are tempted to include the DES routinely in their clinical studies. This may occasionally lead to "significant" results without a clear theoretical rationale, and this approach equals the proverbial "fishing expedition."

Putnam (1991) described four theoretical models of dissociation. The autohypnosis model (Bliss, 1986), which conceptualizes clinical dissociation as self-hypnosis gone awry, does seem to be somewhat problematic in view of the rather modest relation between the DES and scales for hypnotizability. The neurological model, which emphasizes the neurological substratum of dissociative experiences, does not receive support from several studies on dissociation in seizure disorders but research is lacking on other neurological disturbances. The strategic role enactment or malingering model has found partial support in studies showing that respondents are able to fake

"good" or "bad" depending on what the situation requires. However, it is difficult to believe that the large differences between the dissociative disorders groups and the other psychiatrically disturbed groups can be explained solely by referring to malin-gering or response set.

The states-of-consciousness model, which proposes that the core phenomena of dissociative disorders such as the amnesias and disturbances of sense of self, arise out of traumatically induced disruptions of capacities for modulation of states of consciousness and integration of self across highly discrete states of consciousness (Putnam, 1991), has, in fact, not been tested thoroughly. Behavioral genetic studies on the presumed innate bias for dissociative disorders are absent, and little is known about strong tendencies to dissociate in childhood. The link between traumatic experiences and dissociation is not based on convincing data that is independent of the respondents' autobiographical memory. In one of the few studies in which abuse was derived from hospital records, the relation between the DES and abuse was negative (Sanders & Giolas, 1991). In this respect, it may be counterproductive to identify the DES with the frequency of dissociative experiences as they really happened. Instead, the DES seems to assess the respondents' current perception of past (dissociative) experiences. This perception may change in the course of working through negative experiences (Warshaw et al., 1993). This is in line with current as well as older perspectives on autobiographical memory, which describe "normal" autobiographical memory as the continuous reconstruction of past experiences in the light of new experiences. It may often be a better reflection of current views and personality than of objective past events (Rubin, Wetzler, & Nebes, 1986; Van Der Kolk & Van Der Hart, 1991; Wagenaar, 1991).

If the DES is interpreted as measuring "perceived dissociative experiences," the crucial question would logically arise how childhood dissociative experiences accumulate to evolve into a dissociative disorder. In speculating about a developmental model of dissociation we would like to draw on attachment theory (Bowlby, 1985; Main & Hesse, 1990; Liotti, 1992). In attachment theory there is a growing body of research on the effects of parental trauma. Parents who have experienced loss of an attachment figure or another potential trauma, and who show through their discourse about those past experiences that they are still unresolved and disoriented with respect to these negative experiences, appear to raise children who display disorganized and disoriented — dissociative — behavior in stressful situations (Main & Hesse, 1990; Van IJzendoorn, 1995).

It is speculated that the parents' uncontrolled remembrances or reliving of episodes of past traumatic experiences in the presence of their children may inadvertently be frightening for these children, who at the same time have to rely on these parents as their primary haven of security (Main & Hesse, 1990). To escape from this paradoxical situation, the children are assumed to enter a momentary state of disorganization of their own that may develop into a tendency to dissociate under stressful circumstances. The developmental bias to dissociate may in its turn prepare the ground for dissociation as a defense mechanism in confrontation with personal experiences of loss or other trauma. The developmental model would explain why some people develop dissociative disorders in response to trauma and others do not. Only prospective longitudinal studies may provide evidence for the developmental model.

At present there is no evidence for causal relationships between dissociation and other phenomena. The designs are mainly correlational and retrospective, relying almost exclusively on autobiographical memory. For example, the association between the DES and PTSD appears to be a replicated fact. How should this fact be interpreted? Three variables are involved: traumatic experience, the DES-score, and the PTSD diagnosis. Without knowing what the subjects' status was before the trau-

matic experience, a myriad of causal models are possible. The traumatic experience may, for example, trigger a dissociative tendency which in the short run ameliorates the trauma. In the long run, however, it may hamper the constructive processing of the traumatic experiences. The simple causal model would be: Trauma→Dissociation→PTSD. Another possibility would be that a traumatic experience provokes dissociation, and independent of this short-term defense mechanism, it may also result in PTSD in the long run. In that case, the association between the DES and PTSD may be strong but spurious.

Yet, another causal model would include a causal effect of trauma on PTSD, as well as a causal effect of PTSD on the DES (for example because the diagnosis and therapy of PTSD would stimulate scoring high on the DES): Trauma→PTSD→Dissociation. Only prospective, longitudinal, and quasi-experimental studies may shed light on the problem of causality. As yet, these studies are few (see Malinoskyrummell & Hoier, 1991, for a study that compared sexually abused children with nonabused children on observer-rating scales of dissociation). To our knowledge there are no studies of factors that predict individual differences in dissociative reactivity to similar forms of childhood trauma. Experimental intervention studies that systematically change the level of dissociation in subjects with a traumatic experience to see how this affects the development of PTSD (or other dissociative disorders) have not yet been published either. It is this type of longitudinal and experimental studies that may move the study of the DES — and dissociation in general — beyond the current descriptive and exploratory stage. This may very well require the development of a second generation (Putnam et al., 1993) of instruments to measure dissociation, beyond the current predominance of self-report questionnaires.

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