MEASURING CLINICAL AND NON-CLINICAL DISSOCIATION: A COMPARISON OF THE DES AND QED

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ABSTRACT

We examined the psychometric properties of the Dissociative Experiences Scale (DES) and the Questionnaire of Experiences of Dissociation (QED) in clinical and non-clinical samples. A total of 200 subjects participated in the study: 170 undergraduate students, 15 patients diagnosed as having multiple personality disorder, and 15 patients diagnosed as having an eating disorder. The DES was found to have very high internal consistency for clinical, non-clinical, and combined samples. Internal consistency for the QED was adequate for clinical and combined samples, and slightly lower than acceptable for the non-clinical sample. Examination of convergent validity coefficients supported generally equivalent validity in clinical and non-clinical samples for the two instruments. Both instruments were able to discriminate between dissociative and non-clinical or eating disordered patients, although the DES was somewhat more effective. Using the DES, MPD and eating disordered patients could be discriminated with 100% accuracy.

INTRODUCTION

Over the last several years, there has been a resurgence in interest in dissociative disorders and dissociative phenomenon. One of the major advances has been the development of objective means of assessing dissociative symptoms. The most widely used instrument has been the Dissociative Experiences Scale (DES) (Bernstein & Putnam, 1986). Through a variety of recent research, the reliability and validity of the DES has been established (see Carlson & Putnam, 1993, for a recent review).

An instrument that has received less attention is the Questionnaire of Experiences of Dissociation (QED) which was developed by Riley (1988) as an alternative assessment technique for the measurement or study of dissociation. In Riley's original report, the QED was found to have moderate internal consistency (.77). Riley also reported data on a very small sample of patients with multiple personality disorder (MPD) (n = 3) and/or somatization disorder (n = 21). Both groups scored substantially higher on the QED than did a group of normal controls, but statistical-significance tests were not reported (and were not feasible with the small sample of MPD patients).

The purpose of this study was to directly compare the DES and the QED for use in assessing dissociative symptoms. More specifically, the goals were: 1) to examine the internal consistency of both instruments in clinical and non-clinical samples; 2) to determine the degree of convergence of the two instruments within clinical and non-clinical samples 3) to examine the ability of each instrument to discriminate between dissociative and non-dissociative clinical or non-clinical samples.

METHOD

Subjects

A total of 200 subjects participated in the study. One hundred and seventy normal controls were undergraduate students who were recruited from a southeastern university. They were offered extra credit for their participation. Ages ranged from 18 to 46 with a mean of 21.3 and a standard deviation of 3.93. The sample was comprised of 98 women and 72 men. The results of a multivariate analysis of variance (MANOVA), based on Wilks' criterion, suggested that men

TABLE 1
Descriptive Information for Dissociative Experiences Scale (DES) and Questionnaire of Experiences of Dissociation (QED)

	Undergraduate Students (n = 170)			
	Mean	**Std Dev**	**Min**	**Max**
DES	16.33	11.26	1.07	54.29
QED	10.56	4.27	2.00	21.00
	Eating Disorder (n = 15)			
	Mean	**Std Dev**	**Min**	**Max**
DES	16.54	9.72	3.93	32.68
QED	14.20	5.00	5.00	22.00
	Multiple Personality Disorder (n = 15)			
	Mean	**Std Dev**	**Min**	**Max**
DES	59.85	15.84	35.54	95.00
QED	21.67	3.22	14.00	26.00

and women did not differ on the dissociation scales, $F(2,167) = 1.97$, $p > .05$. Thus, they were combined for further analyses.

Thirty clinical subjects were included in the sample, including fifteen women diagnosed as having multiple personality disorder according to *DSM-III-R* (American Psychiatric Association, 1987) criteria. Diagnoses were made by a clinical psychologist using a semi-structured interview process similar to that described by Kluft (1985). All subjects were engaged in outpatient treatment in either Pennsylvania or Louisiana. There were no statistically significant differences among the MPD patients from the two locations, so they were combined for further studies. The ages of these women ranged from 25 to 48 with a mean of 38.64 and a standard deviation of 6.32. Fifteen additional women were recruited from an inpatient treatment facility for women with eating disorders. Based on *DSM-III-R* criteria the women were diagnosed as anorexia nervosa (n = 4), bulimia nervosa (n = 4), anorexia nervosa and bulimia nervosa (n = 3) or eating disorder NOS (n = 4). Diagnoses were made by a masters-level admissions team member using a semi-structured interview. Diagnoses were confirmed by the patients' individual therapists, who were either psychiatrists or clinical psychologists. The ages for this sample ranged from 14 to 39 years, with a mean of 25.5 and a standard deviation of 9.22.

Instruments

The DES (Bernstein & Putnam, 1986) is a 28-item self-report measure that has become the most widely used instrument for assessing dissociation (Frischolz et al., 1991). Its reliability has been found to be very high for a variety of clinical and non-clinical samples (Carlson & Putnam, 1993).

The QED (Riley, 1988) is a 26-item instrument whose items are scored on a true/false format. According to Riley (1988, p.449) its items were drawn from the clinical literature which had described experiences reported by "classical" hysterics, patients with dissociative disorders, and the dissociative experiences associated with temporal lobe epilepsy. Riley stated that the items did not show significant content overlap with the items in the DES.

Procedures

Undergraduate students were recruited from introductory psychology courses. The instruments were filled out at the end of class periods by those students who were interested in volunteering. Eating disorder patients completed

TABLE 2
Internal Consistency of the DES and QED

Sample	Clinical	Non-Clinical	Combined
Measure			
DES	.98	.92	.96
QED	.88	.77	.84

Note: Estimates are Alpha Coefficients for the DES and KR-20s for the QED, since all QED items are dichotomous. The calculation of the statistics is identical.

TABLE 3
Standardized Canonical Discriminant Function Coefficients

	MPD vs. Undergraduates	MPD v. ED Patients
QED		
Depersonalization/derealization	.73	.47
Memory and Communication Deficits	.62	.48
Hypnotizability	.73	.79
Mental Blocking	.26	-.54
Daydreaming	-.24	-.02
DES		
Amnesia	1.1	1.1
Depersonalization/derealization	1.1	.86
Normal Dissociative Experiences	.50	.91
Absorption	-.08	.02

their instruments as part of an intake packet that they received upon admission to the program. MPD patients were asked to complete the assessment instruments by their outpatient therapists and to return the instruments at the next session.

RESULTS

Descriptive Information on Dissociation Scales

Descriptive information on the dissociation scales is presented in Table 1. Significant group differences were found for both the DES, $F(2,197) = 98.38$, $p < .0001$, and the QED, $F(2,197) = 49.69$, $p < .0001$. Post-hoc comparisons using Tukey's test suggested that the MPD group differed from each of the two other groups on the DES. The undergraduate students and eating disorder patients did not differ from one another. On the QED, scores for all three groups were significantly different.

Internal Consistency

Internal consistency coefficients for the two instruments are presented in Table 2. The coefficients (Alpha coefficients for the DES and KR-20s for the QED) were calculated separately for clinical, non-clinical, and combined samples. As can be seen, estimates were consistently higher for the DES than for the QED.

Item-total correlations were also examined. For the DES, these ranged from .59 to .90 for the clinical sample, from .29 to .74 for the non-clinical sample, and from .43 to .83 for the combined sample. For the QED, item-total correlations ranged from .06 to .44 for the non-clinical sample, and from .08 to .56 for the combined sample. For the clinical sample, two items (18 and 20) had item-total correlations of zero, because they were endorsed by every subject. Fourteen items had item-total correlations of greater than .50.

Validity within Clinical and Non-clinical Samples

To determine whether the instruments exhibited differential validity within clinical and non-clinical samples, the intercorrelations among the two instruments were examined within each sample. Within the clinical sample, the correlation between the two instruments was $r = .76$. Within the non-clinical sample, the intercorrelation was somewhat lower ($r = .58$). We tested the differences in these correlations using a z-test for independent samples (Hinkle, Wiersma, & Jurs, 1988). The difference only approached statistical significance, $z = 1.64$, $p = .051$.

TABLE 4a
Classification Summaries for MPD and Undergraduate Samples Using the QED

Predicted Group		**Non-MPD**	**MPD**
Actual Group	**Percent Correct**		
Non-MPD	92.4%	157	13
MPD	86.7%	2	13
TOTAL:	91.89%		

Note: Jackknifed analysis led to accurate classification of 91.4% of the subjects. One additional control subject was misclassified.

TABLE 4b
Classification Summaries for MPD and Undergraduate (Non-MPD) Samples Using the DES

Predicted Group		**Non-MPD**	**MPD**
Actual Group	**Percent Correct**		
Non-MPD	100%	170	0
MPD	86.7%	2	13
TOTAL:	98.92%		

Note: Jackknifed analysis led to identical classification.

Discriminating Different Samples

To determine how well each instrument could discriminate between the various samples, each instrument was first subjected to a principle components analysis and resulting factor scores were then entered into a discriminant function analysis. For the principle components analyses, the complete sample was used to ensure adequate variability. The factors were rotated using an orthogonal rotation; items with factor loadings of greater than .60 were used to name factors.

To first ensure that the data were suitable for factor analyses, we examined Kaiser's measure of sampling adequacy (MSA) (Kaiser, 1974). Values of less than .50 should be regarded as unacceptable and values of greater than .90 as "marvelous" (Kaiser, 1974). The overall MSA for the analysis with the DES was .94, and each MSA for individual items was above .80, suggesting that the data were clearly suitable for a factor analysis. For the QED, the overall MSA was .79, which is acceptable. However, the MSAs for three individual items were quite low. Items 19, 24, and 16, whose MSAs were .48, .54, and .49 respectively, were deleted from further analyses. The MSAs for the remaining items of the QED were all above .70 and after deleting the three items, the overall MSA increased to .83, suggesting that the data were clearly suitable for a factor analysis.

For the principle components analysis from the DES, four factors had eigen values of greater than one. A scree test also supported a four factor solution which accounted for 67.3% of the total variance. The solution was then subjected to an orthogonal rotation. The first factor was comprised mainly of items 3, 4, 5, 8, 9, 11, 25, and 26 and appeared related to "amnesia" (e.g, disremembered behavior, inability to remember important life events). Items 7, 12, 13, 27, and 28 had the highest loadings on factor two, which appeared to measure "depersonalization and derealization." Items 21, 22, 23, and 24 all loaded highly on the third factor. While this factor was somewhat more difficult to name, it clearly related to "common dissociative experiences" (e.g., normal forgetfulness, talking to oneself, acting differently in different situations). The fourth factor appeared to measure "absorption" and was comprised mainly of items 17 and 18.

TABLE 5a
Classification Summaries for MPD and ED Samples
Using the QED

Predicted Group		ED	MPD
Actual Group	**Percent Correct**		
ED	80%	12	3
MPD	100%	0	15
TOTAL:	90%		

Note: Jackknifed analysis led to misclassification of an additional two subjects (83.3% accuracy).

TABLE 5b
Classification Summaries for MPD and ED Samples Using the DES

Predicted Group		ED	MPD
Actual Group	**Percent Correct**		
ED	100%	15	0
MPD	100%	0	15
TOTAL:	100%		

Note: Jackknifed analysis led to misclassification of one subject (96.7% accuracy).

On the principle components analysis of the QED, seven factors had eight values of greater than one. However, based on a screen test, we choose a five factor solution that accounted for 50.1% of the total variance. The first factor was comprised of items 1, 4, 5, and 6 and appeared to measure "depersonalization and derealization." Two items (9 and 17) loaded highly on factor two. Items 8 and 16 had moderate loadings (.54) on factor two. These items all related to difficulties remembering and communicating with others, and the factor was titled "memory and communication deficits." Factor three was made up of two items (23 and 25) related to "hypnotizability." Factor four was comprised of three items related to one's mind going blank (3, 18, 20) and was titled "mental blocking." The fifth factor was comprised of items 15 and 21 and appeared to measure "daydreaming."

Discriminant function analyses were then performed to determine how well the instruments could discriminate between relevant subject samples. To obtain less biased estimates of the classification functions, we also performed the "jackknife" procedure (Lauchenbruch, 1967) using the BMDP statistical program. The jackknife procedure yields classification results that would be similar to those obtained on a cross-validation sample (Stevens, 1986).

MPD Versus Undergraduate Subjects

The discriminant function using the QED was highly significant, Wilks' Lambda = .54, Chi-square (5, N=185) = 109.00, $p < .0001$. Standardized discriminant function coefficients are presented in Table 3. Based on the function, 170 (92%) of the 185 subjects were correctly classified (See Table 4a). This agreement was significantly better than chance, Huberty z = 4.0, $p < .0001$, and yielded a Kappa coefficient of .60. The jackknife procedure produced nearly identical results (91.4% accurate classification); one additional subject was misclassified.

The discriminant function from the analysis with the DES was also significant; Wilks' Lambda = .23, Chi-square (4, N=185) = 265.51, $p < .0001$. One hundred eighty-three (99%) of the subjects were correctly classified (See Table 4b). Two of the MPD subjects were classified as non-MPD. These data yielded a Kappa of .93, and were significantly better than chance, Huberty z = 5.16, $p < .0001$. The jackknife procedure led to identical findings.

MPD Versus Eating-Disordered Patients

Using the QED to discriminate the two clinical groups, the function was highly significant, Wilks' Lambda = .36, Chi-square (5, N=200) = 26.34, $p < .0001$. Standardized discriminant functions are presented Table 3 and the classification results are presented in Table 5a. As can be seen, 27 out of 30 (90%) of the subjects were accurately classified. The classification was significantly better than chance, Huberty z = 4.38, $p < .0001$, and yielded a Kappa of .80. All of the MPD patients were classified as such and three of the eating disordered patients

were incorrectly classified. When the jackknife procedure was performed, two additional subjects were misclassified, yielding an overall accuracy of 83.3%.

For the DES, the function was significant, Wilks' Lambda = .17, Chi-square (4, N = 30) = 45.6, $p < .0001$. Standardized canonical discriminant function coefficients are presented in Table 3 and the classification results are presented in Table 5b. Based on the function, 100% of the cases were correctly classified (Kappa = 1.0; Huberty z = 5.48, $p < .0001$). The jackknife procedure led to a misclassification of one subject.

DISCUSSION

Internal consistency was found to be excellent for the DES in clinical, non-clinical, and combined samples. For the QED, internal consistency was adequate for clinical and combined samples, but slightly less than adequate for the non-clinical sample. The estimates for the DES were comparable or higher than what have been previously reported in the literature (see Carlson & Putnam, 1993). The estimate for the QED in the non-clinical sample was identical to that reported by Riley (1988). Part of the difference in reliability of the two instruments most likely had to do with their format. True/false items (as in the QED) simply allow for less variability which leads to decreased inter-item correlations.

The two instruments demonstrated moderately high convergent validity in both clinical and non-clinical samples. This finding supports the construct validity of both instruments. The difference in the validity coefficients in clinical and non-clinical samples was not significantly different. *This finding suggests that the instruments do not demonstrate differential validity in clinical and non-clinical samples.* However, the comparison of correlations did approach statistical significance, and may have been significant with a larger sample size. Thus, although the findings generally support the use of either instrument with clinical or non-clinical samples, more caution should be used when interpreting data from non-clinical samples. Furthermore, the higher internal consistency of the DES would suggest that it may be preferable to the QED in non-clinical samples.

The results of the principle components analysis of the DES were similar to previous studies. Factors identified as depersonalization/derealization, amnesia, and absorption appear to be reliably found (see Carlson & Putnam, 1993). However, we also found an additional factor which appeared to measure more common dissociative-like experiences.

To our knowledge, this was the first reported factor analysis of the QED. This analysis, when compared with that for the DES appeared to suggest that the two dissociation scales may tap both overlapping and separate aspects of dissociation. Both did appear to clearly measure depersonalization and derealization. One factor of the QED appeared to more specifically measure hypnotizability, which is similar but not identical to absorption as measured on the DES. The DES appeared to more clearly measure amnesia, while the QED appeared to contain a "mental blocking" factor.

The discriminant function analyses using the principle components suggested that dissociation scales appeared to measure normal and pathological dissociative experiences. For the most part, the same variables that discriminated MPD subjects from undergraduates also discriminated MPD subjects from eating-disorder patients. For the DES, the amnesia factor had the highest canonical discriminant function coefficient. Depersonalization and derealization also added to the function. The absorption factor did not add to the function, suggesting it to be a more common feature of non-clinical dissociation. For the QED, depersonalization and derealization contributed most significantly to the discriminant function. The common experience of daydreaming did not add significantly to the function.

Both instruments were able to discriminate between dissociative and non-dissociative samples quite well. The DES was somewhat more accurate, being able to classify the MPD and undergraduates with 99% accuracy, and the MPD and eating-disordered patients with 100% accuracy. In both of these analyses, all of the non-dissociative subjects were accurately classified. Even when the jackknife procedure was used to obtain an unbiased estimate of the classification function, the results were quite impressive. The results appeared to particularly stable for the analyses using the DES, since the jackknife procedure led to identical results in one analysis and disagreement on only one subject in the second analysis.

The undergraduate controls in this study scored higher on the QED than did those from the Dunn et al. (1993) investigation, making discrimination more difficult. Dunn et al. (1993) were actually able to discriminate control and MPD patients with 100% accuracy using QED total scores. There are several possible explanations for differences found with the current sample. First, we cannot rule out the possibility that the current undergraduate sample may have included subjects with dissociative disorders. There were several subjects with very high DES scores. It was not within the limits of this investigation to evaluate these subjects using structured interviews. Future research should attempt to do so. The second explanation for the differences between these results and those of Dunn et al. (1993) was that the current control subjects are much younger than those described by Dunn et al. (1993). Within this non-clinical sample, age was significantly negatively correlated with both of the dissociation scales, suggesting that younger subjects reported more dissociative symptoms. It is also possible that some of undergraduate students may have been careless in their response styles. Unfortunately, invalid tests cannot be detected on these instruments.

A few additional limitations of this study should be briefly addressed. The MPD patients were not diagnosed using validated structured interviews such as the Dissociative Disorders

Interview Schedule (Ross et al. 1989) or the Structured Clinical Interview for *DSM-IV* Dissociative Disorders (Steinberg, Cicchetti, Buchanan, Hall, & Rounsaville, 1993). Given this limitation, the results should be interpreted with caution. We also did not administer instruments measuring other constructs, which would have allowed for examination of discriminant validity as well as convergent validity. However, in a previous investigation, Gleaves and Eberenz (in press) administered two dissociation scales (DES and the Trauma Symptom Checklist-40; Elliot & Briere, 1992) along with instruments measuring several other psychiatric symptoms. The dissociation scales were found to have good convergent *and* discriminant validity, similar to that of the instruments measuring other psychiatric symptoms.

As noted, there were also differences in the ages of the three samples. These differences could have possibly affected the results of the discriminant function analyses. However, since dissociative symptoms were found to be negatively correlated with age, the age differences would have actually led to an underestimate of group differences. In fact, supplementary analyses demonstrated that when age was used as a covariate, adjusted mean differences between the dissociative and non-dissociative groups actually increased. Further information regarding these analyses can be obtained by contacting the first author.

These data question previous findings regarding the elevated dissociative symptomatology among eating-disordered subjects (e.g., Demitrack, Putnam, Brewerton, Brandt, & Gold, 1990). The eating disorder subjects in this study did not score higher than the undergraduates on the DES, although there were significant differences on the QED. It is possible, as suggested by Greenes, Fava, Cioffi, & Herzog (1993) that earlier findings of an association between eating disorder and dissociative symptoms may have been confounded by other variables (e.g., depression). Elevated scores on dissociation scales among eating-disorder patients may also be an artifact of a comorbid dissociative disorder. Future research might attempt to examine this latter possibility by comparing eating-disordered subjects with and without comorbid dissociative disorders to non-clinical control subjects and non-eating-disordered patients that do have dissociative disorders.

These results add to the body of literature supporting the validity of the diagnosis of Dissociative Identity Disorder. Robins and Guze (1970) have described five types of evidence which can be used to establish the validity of a psychiatric disorder. These include clinical description, laboratory studies, delimitation from other disorders, follow-up study, and family study. The results of the current study offer support in two of these areas: laboratory studies and delimitation from other disorders. Robins and Guze (1970) noted that psychological tests, when shown to be reliable, qualify as laboratory tests. Thus, the development of sound objective instruments that can measure the core psychopathology of DID, clearly supports the validity of the disorder. The finding that patients with DID could clearly be discriminated (using objective means) from those suffering from another type of mental disorder also supports the validity of the DID diagnosis.

In conclusion, these results provide support for the continued use of the DES and QED in measuring dissociation for research or clinical purposes. The DES appears to have some superiority over the QED in terms of higher reliability among non-clinical samples and somewhat better ability to discriminate between dissociative and non-dissociative samples. The QED, however, is briefer and these data, along with those presented by Dunn et al. (1993) suggest that it may be adequate for screening purposes. Use of both instruments together may also be warranted since these data suggest that the two may each tap somewhat unique dissociative phenomena. The results of this study also contribute to the growing body of literature that supports the validity of the dissociative disorder diagnoses. ■

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