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Factor Structure and Correlates of the Dissociative Experiences Scale in a Large Offender Sample

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The authors examined the psychometric properties, factor structure, and construct validity of the Dissociative Experiences Scale (DES) in a large offender sample (N = 1,515). Although the DES is widely used with community and clinical samples, minimal work has examined offender samples. Participants were administered self-report and interview measures, and a subsample was followed longitudinally to determine criminal and violent recidivism. The DES exhibited good psychometric properties, but an identified three-factor structure was of questionable replicability. Moreover, the DES factors displayed no evidence of differential correlates. DES total scores were correlated with trauma-related variables even after controlling for negative affectivity. Total scores were related to measures of antisocial behavior and aggression but did not predict recidivism. These findings support the reliability and construct validity of the DES in offenders but raise questions regarding the clinical utility of the DES factor scores above and beyond that of the total score.

Keywords: *dissociation; Dissociative Experiences Scale; offenders; Procrustes rotation; dissociation and abuse; dissociation and aggression*

In contemporary psychiatric nosology, *dissociation* is defined as "a disturbance or alteration in the normally integrative functions of identity, memory, or consciousness" (American Psychiatric Association, 2000, p. 519). A widely used measure of dissociative symptoms is the Dissociative Experiences Scale (DES; E. M. Bernstein & Putnam, 1986). The DES is a 28-item self-report measure that assesses a variety of dissociative symptoms and has been researched extensively. A review and meta-analysis by Van Ijzendoorn and Schuengel (1996) indicated that the DES exhibited excellent reliability and temporal stability and had good validity in relation to dissociative pathology, trauma history, and symptoms of trauma-related disorders such as posttraumatic stress disorder. Factor analyses, however, have been inconsistent, with investigators variously reporting evidence for one-factor (I. H. Bernstein, Ellason, Ross, & Vanderlinden, 2001), three-factor (Ross, Joshi, & Currie, 1991; Schwartz & Frischholz, 1991; Stockdale, Gridley, Balogh, & Holtgraves, 2002), and even four- and seven-factor models (Ray, 1996). Findings frequently support a three-factor model comprising the dimensions of absorption,

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amnesia, and depersonalization-derealization (e.g., Ray, 1996; Ross et al., 1991).

Although the DES has been used in a variety of clinical, community, and student samples (e.g., Ross, Joshi, & Currie, 1990; Van Ijzendoorn & Schuengel, 1996), there is a dearth of studies on the DES in offender samples. A recent Internet search identified 746 references citing the original E. M. Bernstein and Putnam (1986) article[1]; however, we located relatively few studies in peer-review journals that used the DES with offenders. Most studies (e.g., Barker-Collo & Moskowitz, 2005; Cima, Merckelbach, Klein, Shellbach-Matties, & Kremer, 2001; Dwyer, Rosser, & Sawyer, 1992; Mitchell, 2006; Spitzer et al., 2003) reported on small samples (*Ns* < 90), and only three (Dwyer et al., 1992; Mitchell, 2006; Snow, Beckman, & Brack, 1996) used samples drawn from offender populations in the United States. These studies reported primarily descriptive DES information and only minimally on the DES's psychometric properties, factor structure, or construct validity. Spitzer et al. (2003) found no differences in mean DES scores when their sample was disaggregated according to offense type (violent vs. sexual vs. other type of offense), although the small sample size may have limited their capacity to detect small to moderate effects. Other work, not using the DES, has identified an association between dissociation and sexual offending (Dietrich, 2003). Cima et al. (2001) found no significant association between DES scores and early abuse history, a finding inconsistent with previous results from community-based and clinical samples (Van Ijzendoorn & Schuengel, 1996). Snow and colleagues (1996) reported psychometric information on the DES, but the results were not comprehensive (e.g., no reliability information was reported).

Research on dissociation, as assessed by the DES, in offender samples is important for a number of reasons. First, the small sample sizes and limited scope of previous work leave unanswered questions concerning the reliability and factor structure of the DES. Although the DES has exhibited acceptable reliability in community and clinical samples, the inconsistency in the factor structure raises questions about the applicability of previously identified structures to samples with high levels of antisocial behavior and violence, such as offender samples. Second, the validity of the DES is not well established in offender samples. A number of variables may affect the external validity of the DES in offender samples, including gender, trauma-related disorders, antisocial behavior, and violence and aggression.

Previous studies have consistently revealed few or no gender differences in dissociative experiences assessed by instruments such as the DES (Ray, 1996; Spitzer et al., 2003). Yet epidemiological work has demonstrated markedly higher prevalence of dissociative disorders in women than men (American Psychiatric Association, 2000; Putnam, 1989). Researchers have speculated that this inconsistency may be because of the fact that many men with significant dissociative pathology are likely to be found in correctional, as opposed to clinical or community, settings (Putnam & Loewenstein, 2000), but to date, this hypothesis has not been investigated.

There is also evidence that dissociation is linked to trauma and trauma-related disorders, such as borderline personality disorder and posttraumatic stress disorder (American Psychiatric Association, 2000; Herman, 1997; Spiegel & Cardena, 1991). However, previous work with offenders has been inconsistent in regard to the relationship between trauma and dissociation. Some studies have reported a positive association between trauma and dissociation (Dietrich, 2003; Mitchell, 2006), whereas others have not (Cima et al., 2001). It is possible that the dissociation/trauma relationship does not generalize to offender samples. The link between dissociation and trauma is not without controversy, and a number of methodological factors may confound previously reported relationships (Lilienfeld et al., 1999; Merckelbach & Muris, 2001). For example, the correlations between dissociation and trauma scores may be because of a bias to endorse pathological symptoms and aversive experiences of many kinds, perhaps stemming from a broad higher-order dimension of negative affectivity (Van Ijzendoorn & Schuengel, 1996). Thus, it is important to investigate the nature of the dissociation/trauma relationship in offenders and to ascertain whether this relationship, if present, is potentially explained by negative affectivity.

The uncertainty about dissociative symptoms in offenders, males in particular, is also important because of emerging concerns that dissociation may be a risk factor for aggressive and violent behavior. Studies with both inpatient (Quimby & Putnam, 1994, as cited in Kaplan et al., 1998) and outpatient (Kaplan et al., 1998) psychiatric samples have revealed a positive association between DES scores and indices of aggressive behavior. DES scores have also been associated with antisocial behavior in offenders (e.g., Dietrich, 2003; Poythress, Skeem, & Lilienfeld, 2006). Drawing on the theoretical and empirical literature, Moskowitz (2004a, 2004b)

hypothesized that dissociation is linked to the perpetration of violence in offenders. He posited that dissociative processes could create amnesia and perceptual alterations (e.g., depersonalization/derealization) that promote violence under certain conditions. To date, however, major approaches to risk appraisal (Monahan et al., 2001; Quinsey, Harris, Rice, & Cormier, 1998; Webster, Douglas, Eaves, & Hart, 1997) have largely ignored the potential role of dissociation in violence and aggression. Thus, investigation of the possible role of dissociation in aggression is warranted. The goals of the current study were therefore to examine the psychometric properties, including reliability, gender differences, factor structure, and validity of the DES in an offender sample.

Method

Participants

Participants were enrolled in a large, National Institute of Mental Health–funded study of antisocial personality disorder in offenders (see Poythress et al., 2006). The initial sample comprised 1,741 offenders serving sentences in state prisons in Florida, Nevada, Utah, or Oregon or who were court-ordered to residential drug treatment at sites in Florida, Texas, Utah, Nevada, or Oregon. However, only 1,551 participants had complete data for the analyses reported here. Participation was limited to English-speaking individuals ages 20 and older. The sample was 82.5% male, and 58% identified themselves as Caucasian/White, 35% as African American, and 7% as Hispanic. The mean age of participants was 30.5 (SD = 6.6).

Prospective participants also completed a preliminary IQ screen and were allowed to participate if they obtained an estimated IQ ≥ 70. Participants (n = 3) who obtained an estimated IQ < 70 were excluded. Thirty-one percent of the sample did not complete high school, 42% had completed high school or had obtained a general educational development (GED) diploma, and the remainder had some college education or had completed college. Individuals receiving psychotropic medication for active psychotic symptoms were excluded.

Measures

Participants completed an extensive research protocol related to the primary objectives of the larger study. We describe here only the measures used in our evaluation of the DES.

Quick Test (QT; Ammons & Ammons, 1962). The QT is a screening measure of intellectual functioning. The participant is shown a card that displays four pictures; the test administrator reads aloud, sequentially, words that represent items or concepts, each of which is present in only one of the four pictures. The participant then indicates the picture in which he or she believes the item or concept is portrayed. The current sample obtained an average QT score of 94.5 (SD = 9.9).

The QT is an excellent predictor of IQ scores in the normal range (Traub & Spruill, 1982) and provides a good estimate of WAIS-R IQ scores in both genders and for Caucasians and African Americans (Craig & Olson, 1988). It also satisfactorily estimates intelligence scores in offender populations (DeCato & Husband, 1984; Doss, Head, Blackburn, & Robertson, 1986; Simon, 1995).

Basic Reading Inventory (BRI; Johns, 1997). The BRI is an individually administered test of reading comprehension that has been used with children and adults. Only a portion of the BRI was used in the current study. Participants were required to silently read a three-paragraph ninth grade–level passage and then complete a 10-item comprehension test that was administered orally by the interviewer. The interrater agreement for the determination of reading levels based on the BRI has been acceptable (overall agreement 89%) in previous research (Johns & L'Allier, 2003). This instrument was administered only to those participants who were suspected of having reading difficulties (see Procedures).

DES. The DES is a 28-item measure of dissociative symptoms. The original version was scored by having respondents place a slash mark on a 100-mm line (visual analogue scale) to indicate the percentage of time that they had experienced each symptom. In this study, we used the DES-II, on which respondents circle a number on an 11-point scale from 0% to 100% in 10-point increments to indicate the frequency of their experiences (Carlson & Putnam, 1993). As previously noted, satisfactory reliability indices have been reported in a variety of samples. The DES internal consistency in the current sample was good (α = .93) and the mean interitem correlation (r_{ii} = .34) was within an acceptable range.

Personality Assessment Inventory (PAI; Morey, 1991, 2007). The PAI is a widely used 344-item self-report personality and psychopathology inventory. It includes 22 nonoverlapping scales that assess symptoms associated with 11 primary *DSM-IV* diagnoses

(e.g., Anxiety-Related Disorders [ARD], Depression [DEP]), 5 treatment scales (e.g., Suicidal Ideation [SUI]), 2 interpersonal scales (i.e., Dominance [DOM] and Warmth [WRM]), and 4 validity scales (e.g., Inconsistency [ICN], Infrequency [INF]). Two scales related to trauma, Borderline Features (BOR) and Traumatic Stress (ARD-T), and two scales related to aggression, Antisocial Features (ANT) and Aggression (AGG), were examined here. Additionally, the ICN and INF scales were used to identify potentially invalid profiles. Previous work provides strong support for the reliability and validity of the PAI in both clinical and offender samples (Edens, Cruise, & Buffington-Vollum, 2001; Morey, 1996; Morey & Quigley, 2002). Coefficient alpha values for the relevant pathology scales, calculated using a subset of the current sample (n = 1,103 to 1,159), were as follows: ARD-T α = .86, BOR α = .88, ANT α = .85, and AGG α = .91.

Child Abuse and Trauma Scale (CATS; Sanders & Becker-Lausen, 1995; Sanders & Giolas, 1991). The CATS is a 38-item measure that covers five areas of child abuse and trauma: physical abuse or punishment, psychological abuse, sexual abuse, neglect, and negative home environment. The CATS provides a total score as well as subscales for the areas of Neglect, Punishment, and Sexual Abuse. A 5-point scale is used to rate the frequency with which certain types of events occurred in the respondent's youth (e.g., "Did your parents ridicule you?"). Coefficient alpha values, calculated with the full sample, were as follows: CATS total score α = .95, Neglect α = .91, Punishment α = .68, and Sexual Abuse α = .80. The CATS has been used in studies investigating relationships among childhood abusive experiences, personality features, dissociative symptoms, and victimization (e.g., Becker-Lausen, Sanders, & Chinsky, 1995; Ruiz, Pincus, & Ray, 1999).

Assessment of antisocial personality disorder (ASPD). The ASPD module of the Structured Clinical Interview for *DSM-IV* Axis II Personality Disorders (SCID-II; First, Gibbon, Spitzer, Williams, & Benjamin, 1996) was administered to assess symptoms of ASPD. This interview-based measure closely tracks *DSM-IV* criteria and yields dimensional and categorical (diagnostic) scores for both ASPD and conduct disorder, which is a precursor of ASPD in *DSM-IV*. This measure has exhibited moderate to high levels of agreement with the ASPD scales of the Personality Diagnostic Questionnaire-Revised (Kappa[κ] = .42) and the Personality Disorders Examination (κ = .64) in a sample of psychiatric patients (based on *DSM-III-R* criteria; Hyler, Skodol, Kellman, Oldham, & Rosnick, 1990). In the present study, the interrater reliability was high for ASPD diagnoses (κ = .74, n = 50) and for total symptom count (ICC_1 = .86, n = 46). The analyses in the current study used only the adult symptom ratings.

Indices of criminal recidivism. To examine associations between DES scores and objective indicators of criminal behavior, we obtained criminal records of participants who were released to the community after protocol completion. Identifying information for all participants from drug treatment programs and for those prison inmates recruited into the study near the end (within 6 months) of their sentence was used to search criminal records, both state and federal, coordinated by the Federal Bureau of Investigation (n = 1,051).[2] For this report, we examined the prevalence of any arrest and any arrest for a violent offense within a 1-year period following release.

Procedure

Before the study, research assistants were trained in informed consent procedures and in the administration of all measures. Training on the administration of the ASPD module of the SCID-II interview included a review of written materials that described the structure and content of the measure, a 1-hour didactic presentation and discussion of administration and scoring issues, and supervised instruction during two protocol practice administration cases at each research site.

Potentially eligible participants were randomly selected from lists of individuals who met basic inclusion criteria for the study (i.e., age, race, English fluency). Enrollment interviews were conducted in a quiet private room, and informed consent was obtained using procedures approved by a university institutional review board. After informed consent was obtained, the IQ screening test was completed and the participants (n = 3) who scored below 70 were excused from the study. Participants were allowed to complete the self-report questionnaires if they (a) had either a GED or had completed the 10th grade in regular curriculum classes (i.e., not in special education classes) and (b) demonstrated adequate reading ability on the first few items of the PAI. Almost the entire sample exhibited reading ability sufficient to complete the self-report instruments under standard conditions. Those participants who did not meet these criteria were administered the BRI. Participants who demonstrated a

9th-grade reading level on the BRI completed the self-report instruments. The PAI was administered as a paper-and-pencil measure; the DES and CATS items were entered into a software program, and participants completed these items using a laptop computer. Research interviewers administered the self-report instruments orally to the small number of participants (less than 1% of the entire sample) who demonstrated insufficient reading abilities. The ASPD module of the SCID-II was administered as a clinical interview. The larger protocol, which took on average 4.5 hours to complete, was administered in two sessions. Twenty dollars was deposited into the agency account of all participants, except at one agency that did not permit participant payments.

Results

Protocol Validity Checks

Before the main analyses, the PAI ICN and PAI INF scales were used to identify invalid profiles. Participants were excluded from analyses if they obtained ICN or INF *T* scores equal to or greater than 80. Research has demonstrated that ICN and INF scores at these levels are sensitive and specific indicators of atypical response patterns (Clark, Gironda, & Young, 2003; Morey, 1996). These cut scores are higher than those initially recommended by Morey (1991), but we elected to use this conservative approach to minimize the exclusion of false positive cases. Thirty-six participants were removed because of elevated scores on one or both of these scales, resulting in a final sample of $N = 1{,}515$.

Descriptive Statistics

The mean DES total score was 18.6 ($SD = 13.6$). Nineteen percent of the sample obtained a DES total score at or more than 30, a score found to be indicative of dissociative pathology (Carlson & Putnam, 1993). The mean skew value for the DES items was 1.8 ($SD = .98$), with three items displaying extreme skew (skew ≥ 3): Item 4 (4.7), Item 11 (3.4), and Item 13 (3.4). Women ($M = 20.8$, $SD = 14.6$) scored significantly higher than men ($M = 18.1$, $SD = 13.4$) on the DES total score, $t(1{,}500) = 2.84$, $p = .005$, although this difference was small in magnitude (Cohen's $d = .20$).

Factor Structure

The sample was partitioned before conducting the factor analysis. The total sample was divided into three samples: two random samples of men (Male-1, $n = 618$; Male-2, $n = 651$) and a female sample ($n = 246$). A principal-axis factor analysis (PFA) with oblique (promax) rotation was conducted on the DES items using the Male-1 sample.[3] The PFA was conducted on a matrix of polychoric correlations. Polychoric correlations estimate the underlying normal distributions in variables with abnormal distributions and are frequently used in place of Pearson correlations with skewed data (see Krueger, McGue, & Iacono, 2001). Multiple criteria (parallel analysis, scree plot, eigenvalues > 1) suggested a two- to four-factor solution. Examination of the pattern, salience, and theoretical coherence of the item loadings suggested a three-factor model. We compared the current results with previously reported factor structures, and the pattern of item loadings appeared similar to the amnesia, depersonalization/ derealization, and absorption factors reported by others (e.g., Ross et al., 1991; Stockdale et al., 2002). This three-factor structure accounted for 56% of the variance, with the first six eigenvalues being 12.65, 1.83, 1.25, 1.11, 1.02, and .87, respectively. Correlations among the factors were $r = .62$ (absorption with depersonalization), $r = .66$ (absorption with amnesia), and $r = .68$ (depersonalization with amnesia). Table 1 presents the factor loadings.

The invariance of the three-factor structure identified in the Male-1 sample was evaluated in the Male-2 sample using confirmatory factor analysis (CFA). A three-factor model comprising correlated factors was specified. The primary factor loadings from Male-1 were used to specify the factor to which items were assigned. No cross-loadings were specified in the initial model to approximate simple structure. We excluded the items (Items 6, 7, and 8) that exhibited the worst differentiation between primary and secondary loadings within each factor.[4] CFA using maximum likelihood estimation[5] was calculated (using AMOS version 7; Arbuckle, 2006) to determine the fit of the three-factor model in the Male-2 sample. Acceptable fitting models should exhibit the following results across indices: comparative fit index (CFI) ≥ .90, parsimony adjusted CFI (PCFI) ≥ .70, standardized root mean square residual (SRMR) < .08, and root mean square error of approximation (RMSEA) < .10 (Byrne, 2001, 2005). Results indicated a marginal fit for our trimmed model, with all fit indices except CFI meeting criteria: CFI = .883, PCFI = .795, SRMR = .055, and RMSEA = .067 (90% confidence interval [CI] = .063 to .071). Similarly, poor results were obtained

Table 1
Dissociative Experiences Scale (DES) Factor Loadings Derived From Oblique (Male-1) and Procrustes Targeted (Male-2, Female) Rotation

	Male-1[a]			Male-2[b]			Female[c]		
DES Items	Abs	Dep	Amn	Abs	Dep	Amn	Abs	Dep	Amn
14. Past memory reexperiencing	*.73*	.02	–.06	*.64*	.04	.03	*.70*	.11	–.07
23. Puzzling alteration of abilities	*.62*	–.13	.10	*.66*	–.21	.02	*.81*	–.32	.17
22. Situational identity/behavior alteration	*.59*	.36	–.10	*.55*	.27	.05	*.61*	–.05	.27
21. Vocal self-dialogue while alone	*.56*	.12	.01	*.54*	–.01	.08	*.47*	–.24	.38
17. Absorption in movies, TV, and so on	*.54*	–.13	.23	*.65*	–.01	.03	*.73*	.08	.02
19. Ability to ignore pain	*.54*	–.05	–.06	*.52*	.01	–.02	*.51*	.02	–.03
16. Unfamiliarity for a familiar location	*.48*	.19	.15	*.41*	.19	.24	*.37*	.30	.23
20. Trance episodes/staring into space	*.46*	.02	.27	*.55*	–.05	.24	*.64*	–.12	.31
15. Uncertainty about the reality of an event	*.45*	.08	.31	*.36*	.17	.30	*.46*	.12	.24
18. Reality confusion for fantasy or daydream	*.42*	.08	.28	*.70*	.25	–.04	*.45*	.21	.18
10. False accusation by others of lying	*.38*	–.04	.29	*.43*	.04	.23	*.43*	–.03	.39
6. Unexplained friendliness from strangers	*.34*	.02	.34	.30	.02	.32	.22	.03	*.41*
13. Depersonalization for one's surroundings	.27	*.92*	–.26	.28	*.73*	.02	.27	*.93*	–.34
11. Failure to recognize self in mirror	–.05	*.81*	–.01	.02	*.83*	.16	.11	*.87*	–.20
12. Derealization for one's surroundings	.07	*.75*	–.03	.13	*.81*	.04	.20	*.68*	.04
4. Amnesia for clothing/apparel change	–.36	*.73*	.45	–.46	*.86*	.48	–.47	*.66*	.44
3. Discovery of amnesic travel	–.25	*.56*	.49	–.32	*.64*	.52	–.37	*.29*	.73
28. Unclear/foggy visual sense of the world	.18	*.52*	.20	.26	*.54*	.19	.35	*.48*	.10
27. Auditory voices inside one's head	.20	*.37*	.22	.30	*.46*	.07	.37	*.35*	.15
7. Out-of-body experience	.33	*.37*	.16	.14	*.59*	.16	.01	*.61*	.11
25. Amnesia for one's own behavior	.18	–.08	*.75*	.13	–.18	*.73*	.32	.10	*.50*
26. Failure to recognize own art, writing	.25	–.02	*.60*	.11	–.03	*.62*	.34	.25	*.31*
5. Discovery of amnesic item acquisition	.07	.12	*.59*	.03	.21	*.48*	–.24	.22	*.60*
24. Uncertainty of task completion, intention	.33	–.07	*.59*	.37	–.30	*.60*	.50	–.16	*.49*
1. Amnesia while driving/traveling	–.19	.33	*.46*	–.11	.47	*.27*	–.17	.02	*.63*
2. Memory loss of conversations	.09	–.01	*.45*	.21	.11	*.31*	.06	–.20	*.64*
9. Amnesia for important life events	.07	.16	*.43*	–.02	.35	*.35*	.24	.10	*.32*
8. Inability to recognize friends/family	.09	.29	*.37*	.02	.47	*.36*	.08	.47	*.22*
Congruence Coefficients				.97	.96	.94	.95	.89	.90

Note: Primary loadings are italicized for Male-1. Designated primary loadings are italicized for the Male-2 and Female samples. Abs = Absorption; Dep = Depersonalization; and Amn = Amnesia.
a. $n = 618$.
b. $n = 651$.
c. $n = 246$.

with the female sample: CFI = .808, PCFI = .727, SRMR = .072, and RMSEA = .108 (90% CI = .101 to .115). Examination of the modification indices and the standardized residual covariance matrix did not suggest areas of specific misspecification.

In light of marginal fit, we evaluated an alternative one-factor model. The magnitude of the first eigenvalue in the PFA, as well as the correlations between the extracted factors, pointed to a plausible one-factor model. Another CFA was conducted to evaluate the fit of a one-factor model in the Male-2 sample. The results revealed a poor fitting model: CFI = .792, PCFI = .726, SRMR = .064, and RMSEA = .089 (90% CI = .085 to .093). Comparison of Akaike information criterion (AIC) values for the three-factor model (AIC = 1221.409) and one-factor model (AIC = 1789.021) in the Male-2 sample revealed that the three-factor model had superior fit.

Some have suggested that CFA is overly stringent when applied to instruments with complex factor structures (McCrae, Zonderman, Costa, Bond, & Paunonen, 1996; Piedmont, 1998). The method of Procrustes targeted rotation has been recommended as an alternative to CFA in these cases. In light of this recommendation, we evaluated the factor invariance of the three-factor model using factor analysis with Procrustes rotation using the statistical formulas provided by Piedmont (1998, pp. 227–228). The loadings

from the PFA with the Male-1 sample were used as the target matrix, and the loadings from the other samples were compared with this matrix. Results, both factor loadings and congruence coefficients, from the Procrustes analyses for the Male-2 and the female samples are presented in Table 1. All congruence coefficients were statistically significant when compared with recommended significance levels, and five of six were more than .90 (McCrae et al., 1996).

External Correlates

Ultimately, the clinical utility of a factor structure should be demonstrated by means of relationships with external criteria. Genuinely different dimensions extracted from factor analysis should exhibit differential and meaningful relationships with external criteria. DES subscales were created using the highest loading in the initial PFA to designate subscale membership (see Table 1). Again, the items (6, 7, and 8) with the worst differentiation between primary and secondary loadings within each factor were omitted. Reliability and mean interitem correlations (calculated using the full sample) for these subscales were as follows: absorption ($\alpha = .88$; $r_{ii} = .40$), depersonalization ($\alpha = .82$, $r_{ii} = .41$), and amnesia ($\alpha = .88$, $r_{ii} = .38$).

Associations between variables and DES subscales were evaluated in the total sample. Zero-order and partial correlations were calculated between DES subscale scores and trauma-related variables (Table 2) and aggression-related variables (Table 3). The DES subscales exhibited a similar pattern (i.e., direction and magnitude) of zero-order correlations with the CATS and the PAI scales assessing traumatic stress and borderline features. Controlling for shared variance among the DES subscales revealed some different relationship patterns, but the magnitudes of these differences were small and their patterns were not theoretically meaningful. A similar pattern of correlations emerged in the relationship between the DES subscales and aggression-related variables (i.e., ANT, AGG, and SCID ASPD).

Correlations between the DES total score and the external variables were also calculated (Tables 2 and 3). The DES total score exhibited associations of small to moderate magnitude with theoretically related variables. DES total scores were significantly and positively correlated with self-reported childhood abuse, traumatic stress, and symptoms of borderline personality disorder. DES total scores were also related to self-report aggression-related variables and to the SCID measure of adult ASPD symptoms.

Table 2
Relationship Between the Dissociative Experiences Scale (DES) and Trauma-Related Variables

	r	*pr*
CATS total score		
DES absorption	.18***	.05*[a]
DES depersonalization	.18***	.07**[a]
DES amnesia	.18***	.04[a]
DES total score	.19***	.06*[b]
CATS neglect		
DES absorption	.16***	.05[a]
DES depersonalization	.15***	.04[a]
DES amnesia	.16***	.05[a]
DES total score	.17***	.03*[b]
CATS punishment		
DES absorption	.13***	.04[a]
DES depersonalization	.15***	.09**[a]
DES amnesia	.12***	–.01[a]
DES total score	.14***	.04[b]
CATS sexual abuse		
DES absorption	.18***	.06*[a]
DES depersonalization	.21***	.12***[a]
DES amnesia	.16***	–.01[a]
DES total score	.20***	.11***[b]
PAI traumatic stress		
DES absorption	.39***	.17***[a]
DES depersonalization	.34***	.10***[a]
DES amnesia	.36***	.06*[a]
DES total score	.41***	.21***[b]
PAI borderline features		
DES absorption	.40***	.14***[a]
DES depersonalization	.33***	.04[a]
DES amnesia	.41***	.16***[a]
DES total score	.43***	.22***[b]

Note: N = 1,499 to 1,515. CATS = Child Abuse and Trauma Scale; PAI = Personality Assessment Inventory.
*$p < .05$. **$p < .01$. ***$p < .001$.
a. Partial correlations controlling for other DES subscales.
b. Partial correlation controlling for negative affectivity.

Partial correlations were calculated to examine the role of negative affectivity in the DES total score correlates. Negative affectivity was operationalized using the PAI clinical scales as well as the PAI Aggression, Suicidal Ideation, and Stress scales. Principal components analyses were performed, and the first component score, obtained using the multiple regression method, was saved for each participant. We expected that this component would be heavily saturated with negative affectivity and would represent a good operationalization of this construct. Two principal components analyses

Table 3
Relationship Between the Dissociative Experiences Scale (DES) and Aggression-Related Variables

	r	*pr*
PAI antisocial features		
DES absorption	.28***	.13***[a]
DES depersonalization	.22***	.03[a]
DES amnesia	.26***	.06*[a]
DES total score	.28***	.18***[b]
PAI aggression		
DES absorption	.28***	.14***[a]
DES depersonalization	.21***	.03[a]
DES amnesia	.25***	.05*[a]
DES total score	.29***	.17***[b]
SCID ASPD		
DES absorption	.16***	.06*[a]
DES depersonalization	.12***	.01[a]
DES amnesia	.16***	.05[a]
DES total score	.17***	.10***[b]

Note: N = 1,499 to 1,515. PAI = Personality Assessment Inventory; SCID ASPD = Structured Clinical Interview for *DSM-IV* Disorders Antisocial Personality Disorder adult symptom count.
*$p < .05$. **$p < .01$. ***$p < .001$.
a. Partial correlations controlling for other DES subscales.
b. Partial correlation controlling for negative affectivity.

were conducted, with the first excluding the trauma-related PAI scales (i.e., ARD-T and BOR) and the second excluding aggression-related scales (i.e., ANT and AGG). This procedure was used so that the negative affectivity variable would not include variables examined with the partial correlations. As is evident in Tables 2 and 3, controlling for negative affectivity reduced the magnitudes of the correlations, although the relationships of the DES with childhood abuse variables (except punishment), traumatic stress, borderline features, self-reported and interview-based antisocial features, and self-reported aggression remained statistically significant.

Point-biserial correlations (r_{pb}) were used to evaluate the relationships between dissociation and recidivism (n = 1,051). Results were nonsignificant for the analyses of the DES total score and criminal recidivism (r_{pb} = .02, *ns*) and violent recidivism (r_{pb} = .05, *ns*). Two receiver operator curve analyses were also calculated to determine if the DES total score could predict criminal recidivism or violent recidivism after 1 year. Area under the curve (*AUC*) results were nonsignificant for both criminal (*AUC* = .516, standard error = .018, *ns*) and violent (*AUC* = .565, standard error = .042, *ns*) recidivism.

Discussion

This study examined the psychometric properties and factor structure of the DES in a large offender sample. The high level of internal consistency previously reported for the DES appears to generalize to offenders. The mean DES total score for our sample (M = 18.15) is somewhat lower than means previously reported in mixed-gender offender samples or in an all-male sample (M = 23.1; Mitchell, 2006). Approximately one fifth of our sample scored more than the DES cutoff for dissociative pathology (total score ≥ 30), suggesting that a sizeable minority of participants may suffer from clinically significant dissociative symptoms. However, this is somewhat lower than the proportions reported by Snow and colleagues (1996; 24% for male offender, 27.5% for female offenders) and Mitchell (30.3%). One possible explanation for the differences between our findings and those previously reported is that previous investigators apparently did not use self-report validity scales to exclude potentially invalid protocols for analysis. Interestingly, women obtained higher DES scores than men, a finding inconsistent with previous results using nonoffender participants (Ray, 1996; Spitzer et al., 2003). However, this finding is in line with the differences between men and women in the rates of diagnosed dissociative disorders (American Psychiatric Association, 2000). Female offenders did obtain higher DES scores in the study by Snow et al., but the difference was not statistically significant.

Results for the factor structure are more equivocal than most previous results. A three-factor solution was extracted and was somewhat similar to the absorption, amnesia, and depersonalization factors previously reported (e.g., Ross et al., 1991). Nevertheless, evidence for this factor structure was marginal using CFA, and there was no specific source of model misspecification. Acceptable replication was exhibited when Procrustes rotation was employed, dovetailing with suggestions that Procrustes rotation may be more appropriate than CFA when examining the factor replicability of instruments with complex structures (McCrae et al., 1996; Piedmont, 1998). Nevertheless, the DES subscales exhibited few differential correlates with external criteria. Although some minor differences emerged, the pattern of these differences did not appear theoretically meaningful. For example, it has been suggested that absorption is less pathological than depersonalization and amnesia (Waller, Putnam, & Carlson, 1996). However, the

results did not exhibit a correlational pattern consistent with this conceptualization. The high overlap between the identified DES factors (*r*'s range = .62 to .68) and an absence of differential validity suggests that a multidimensional conceptualization has minimal clinical utility with offenders, at least insofar as the external correlates examined here are concerned. Indeed, the marked inconsistency across DES factor analytic results in other samples raises questions concerning the validity of the DES subscales in all samples (e.g., I. H. Bernstein et al., 2001; Ray, 1996).

The DES total score exhibited significant relationships with trauma-related variables. The DES was significantly correlated with traumatic stress and childhood sexual abuse but not with less severe neglect or punishment, somewhat consistent with findings reported by Dietrich (2003) using a different measure of dissociation. DES scores were also related significantly to symptoms of borderline personality disorder, a disorder frequently assumed to be associated with trauma. Although the magnitude of these relationships decreased when negative affectivity was controlled for, the relationships remained significant. The associations between trauma and dissociation are consistent with previous research using nonoffender samples (Carlson & Putnam, 1993; Van Ijzendoorn & Schuengel, 1996) and offender samples (Mitchell, 2006), and this study extends that work by demonstrating that the relationship is not solely the result of shared negative affectivity. The current findings are inconsistent with results revealing a lack of association between abuse history and the DES reported by Cima and colleagues (2001). However, Cima et al. recruited a small sample that may have resulted in sampling error.

The relationship between the DES and aggression-related variables was inconsistent across indicators. DES scores were correlated with symptoms of antisocial personality disorder and aggression, and a similar relationship was evident across different assessment techniques (self-report and interview). However, DES total scores were not predictive of objective indicators of criminal or violent recidivism assessed at a 1-year follow-up. Previous work and theoretical writings suggest a relationship between dissociation and aggression (Kaplan et al., 1998; Moskowitz, 2004a, 2004b), and dissociation scores have been found to predict sexual, but not general, offending (Dietrich, 2003). The current results do not support this link and are in line with other research finding no differences in dissociative pathology among violent, nonviolent, and sex offenders (Spitzer et al., 2003). The reason for the discrepancy in correlational results between the assessment results and objective indicators of aggression/antisocial behavior is unclear, but could be because of the low sensitivity of our recidivism measure that only assessed crimes that were detected, successfully prosecuted, and recorded.

Our study was marked by limitations that should be addressed in future investigations. First, the exclusion criteria for the study precluded the participation of offenders receiving psychotropic medication for active symptoms of psychosis. Thus, this sample probably included fewer offenders with psychotic symptoms or disorders than would be found in the general inmate population. Second, although a number of our participants scored more than the suggested DES cutoff for dissociative psychopathology, we did not assess *DSM-IV-TR* dissociative disorders. As a consequence, the prevalence and correlates of dissociative disorders in our sample are unknown. Third, because we did not obtain objective corroboration of abuse and neglect, the possibility remains open that the associations between the DES and abuse are attributable to response biases other than those because of shared negative affectivity (e.g., Cima et al., 2001; Merckelbach & Muris, 2001; Sanders & Giolas, 1991). Last, we excluded offenders with limited intellectual abilities, and those with limited reading abilities received a nonstandard administration of the PAI. Although very few offenders (i.e., less than 1%) fell within these categories, these procedures may limit the external validity of our findings.

With these caveats in mind, the study is an important step in the examination of dissociative symptomatology in offenders. The results suggest that the DES is a reliable and valid instrument for the assessment of dissociative pathology in offender samples. Nevertheless, the inconsistency in the DES's factor structure, the relatively high correlations among its factors, and the failure of these factors to differentially correlate in meaningful ways with criterion measures raise doubts about the clinical utility of the DES factor scores above and beyond that of the total score.

Notes

1. EBSCO Host Research Databases.

2. The criminal records searches conducted for this study were coordinated through the Hillsborough County (Florida) State Attorney's Office. An experienced staff member of the State Attorney's Office searched criminal records databases maintained by federal and state (all 50 states and Puerto Rico) law enforcement agencies. Although these databases are routinely used for law

enforcement and criminal justice purposes, it is possible, though unlikely, that some offenses may not have been recorded.

3. Previous DES factor structures have generally been ascertained using Varimax rotations that provide orthogonal solutions. We elected to use oblique rotation in light of the substantial correlations between DES factors that have been reported previously. In subsidiary principal-axis factor analyses using Varimax rotation, the results were highly similar with 27 of 28 DES items exhibiting similar primary loadings across the two rotation methods.

4. We limited the items that were excluded to maintain acceptable length and content validity of the subscales. We recognize that Item 3 within the depersonalization factor is similar to the other excluded items with respect to the differentiation between primary and secondary loadings. Subsidiary analyses were calculated to evaluate the impact of removing Item 3. Internal consistency reliability of the Depersonalization subscale was lowered to $\alpha = .79$ and all confirmatory factor analysis fit indices exhibited worse fit when compared with DES models that included Item 3. Additional information regarding these analyses can be obtained from the first author.

5. Although multivariate normality is an assumption underlying the use of maximum likelihood, some evidence suggests that the procedure is fairly robust against nonnormality (see Kline, 1998). Additionally, estimation procedures that do not require multivariate normality, such as asymptotically distribution-free estimation, have restrictions that preclude their use here.

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