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Investigating the Construct Validity of the Dissociative Taxon: Stability Analyses of Normal and Pathological Dissociation

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Abstract

Previous research has suggested the existence of a pathological dissociative taxon. However, relatively little is known about this taxon. This study examined the two-month retest stability of this taxon—together with other measures of dissociation and the Big Five—in a sample of 465 undergraduates. Contrary to expectation, taxon scores were only modestly stable and were substantially less stable than the other measures, including continuous indicators of dissociation. Furthermore, most individuals who were identified as taxon members at one assessment were classified as non-members at the other. These results challenge the existence of a pathological dissociative taxon. More generally, these data demonstrate that statistically-identified taxa need to be explicated through the normal process of construct validation.

Investigating the Construct Validity of the Dissociative Taxon:

Stability Analyses of Normal and Pathological Dissociation

Should psychopathology be conceptualized as a series of discrete, qualitative "all or none" categories or, alternatively, as a set of continuous, quantitative dimensions? After decades of largely fruitless debate, researchers recently have used sophisticated taxometric analyses to resolve this longstanding controversy. The central premise of taxometrics is that a discontinuous category or "taxon"—that is, a natural, nonarbitrary type—can be distinguished from an underlying continuum by examining the covariations among a series of indicators (for a basic introduction to taxometrics, see Waller, Putnam, & Carlson, 1996). A large number of psychopathological conditions now have been investigated using taxometric methods. These analyses have identified taxa related to schizotypy (Blanchard, Gangestad, Brown, & Horan, 2000; Korfine & Lenzenweger, 1995; Lenzenweger & Korfine, 1992; Tyrka, Cannon, Haslam, & Mednick, 1995), pathological dissociation (Waller et al., 1996; Waller & Ross, 1997), psychopathy (Harris, Rice, & Quinsey, 1994; Skilling, Harris, Rice, & Quinsey, 2002), and bulimia (Gleaves, Lowe, Snow, Green, & Murphy-Eberenz, 2000). In contrast, analyses of worry and posttraumatic stress have supported the presence of continuous dimensions (A. M. Ruscio, Borkovec, & Ruscio, 2001; A. M. Ruscio, Ruscio, & Keane, 2002). Finally, analyses of depression have yielded mixed results (e.g., Haslam & Beck, 1994; J. Ruscio & Ruscio, 2000).

Although taxometrics has emerged as a very useful statistical technique for identifying latent discontinuities, it simply represents the necessary first step in establishing the existence of clinically-significant taxa. That is, although these methods can be used to establish that a discontinuity exists, by themselves they do not reveal the underlying nature and significance of this category. Widiger (2001), for instance, has emphasized that statistically-identified taxa may not necessarily reflect natural diagnostic

categories and need to be subjected to further scrutiny. Similarly, Waldman and Lilienfeld (2001) argue that these taxa "possess a provisional status" (p. 523) until their meaning can be explicated through the normal process of construct validation.

Indeed, some statistically-identified taxa have not fared well when subjected to further scrutiny. Most notably, Golden and Meehl (1979) used taxometric analyses to identify seven MMPI items (e.g., "I have been disappointed in love") that appeared to define a schizoid taxon. Subsequent analyses, however, indicated that these items actually were nonspecific indicators of psychopathology and failed to distinguish schizophrenic from depressed patients (Miller, Streiner, &Kahgee, 1982; Nichols & Jones, 1985). Moreover, taxon scores were somewhat unstable over time, and failed to converge well with established measures of psychosis proneness (Chapman, Chapman, & Miller, 1982; Nichols & Jones, 1985). These disappointing results led to the general conclusion that these items failed to provide a valid measure of the schizoid taxon.

Accordingly, the goal of this paper is to clarify the nature and construct validity of the dissociative taxon, which is one of the few taxa that has been empirically replicated. Waller et al. (1996) first detected this taxon in a mixed sample comprised of (a) 228 patients with diagnosed dissociative identity disorder and (b) 228 normal controls. Waller et al. analyzed responses to the 28-item Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986), which is the most widely used self-report measure of dissociation. These analyses identified eight DES items that clearly reflected pathological manifestations of dissociation (as opposed to more normal forms, such as absorption) and that appeared to be strong markers of an underlying taxon. Waller et al. (1996) therefore summed these items into a subscale, the DES-T, which can be used to assess the taxon. The DES-T subsequently has been used in a large number of studies (e.g., McNally, Clancy, & Schacter, 2001; Moulds & Bryant, 2002; Waldo & Merritt, 2000).

Waller and Ross (1997) further investigated the DES-T items in a very large community sample and again found evidence of a pathological dissociative taxon. In addition, they created a scoring program that calculates precise Bayesian taxon membership probabilities (ranging from 0 to 1.00) for each respondent (this program is presented in an appendix; see Waller & Ross, 1997, p. 510). They further advised that "This program (or similar programs) should be used to score the DES-T because taxon membership probabilities are only moderately related to DES-T total scores." (p. 505) Finally, using a probability cutoff of .90 or greater to classify individuals as taxon members, they estimated that 3.3% of the general population belongs to the pathological dissociative taxon.

Although these results are intriguing, we still know relatively little about the nature of this dissociative taxon. Consequently, the primary goal of this paper is to examine the temporal stability of the DES-T. Specifically, I report two-month stability correlations in a large undergraduate student sample. This study is the first to examine the retest reliability of membership in this dissociative taxon. There are two reasons to believe that membership in the dissociative taxon should be highly stable and show little change over a two-month interval. First, the DES was explicitly constructed to be a stable trait measure. Carlson and Putnam (1992) state that "the DES was designed as a trait measure of dissociation…We expect, then, stable scores over shorter periods of time…" (p. 3)

Second, a prominent contemporary model of dissociative pathology emphasizes the etiological role of childhood traumas (e.g., Waller et al., 1996; Waller & Ross, 1997; for a dissenting view, however, see Lilienfeld et al., 1999). Waller and Ross (1997), for example, note that "a dominant model in the dissociation literature posits that dissociative pathology stems from traumatic childhood events (such as sexual, physical, or extreme emotional abuse) that occur frequently within the home" (p. 507). They provided suggestive support for this model by establishing that approximately 45% of the variance

in DES-T scores could be attributed to shared environmental influences. Given that childhood traumas are temporally distal events whose effects should remain largely unchanged over a two-month period, it seems reasonable to expect that measures of dissociative pathology would be strongly stable over time.

A secondary goal of this study is to investigate the stability of dissociative experiences more generally. Several studies already have reported impressive stabilities for DES scores over retest intervals ranging from two weeks to one year (for reviews, see Carlson & Putnam, 1992; van IJzendoorn & Schuengel, 1996). This evidence is limited, however, in that the sample sizes are quite small, ranging from only 26 to 83 participants. Moreover, stability correlations only are available on overall DES scores. In contrast, the current study examines the stability of DES total and subscale scores in a sample of 465 undergraduates.

Finally, in order to be able to interpret these stability data more precisely, the respondents were assessed on two additional instruments. First, they completed a second dissociation measure—the Dissociative Processes Scale, or DPS (Harrison & Watson, 1992)—that was explicitly designed to assess normal-range individual differences in dissociative tendencies, rather than pathological forms of dissociation. The inclusion of this measure permits a more thorough comparison of the stability of normal versus pathological forms of dissociation. Second, the participants were assessed on a measure of the prominent five-factor or "Big Five" model of personality . This model consists of five broad dimensions—neuroticism, extraversion, openness, agreeableness and conscientiousness—that consistently have emerged in factor analyses of both self- and peer-related personality (John & Srivastava, 1999). These traits have been widely studied and their stability has been thoroughly investigated (e.g., Roberts and DelVecchio, 2000). Consequently, they provide another benchmark for evaluating the stability of pathological dissociation.

Method

Participants and Procedure

The participants were 465 undergraduate students (100 men, 365 women) enrolled in various psychology courses at the University of Iowa. They participated either (a) in partial fulfillment of a course research requirement, (b) for extra course credit, or (c) for monetary compensation. The respondents completed the Time 1 battery near the beginning of an academic semester and subsequently were retested on the same measures approximately two months later (*M* retest interval = 59.1 days).

Measures

DES. The Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986) is a widely used 28-item questionnaire that was designed to measure dissociative tendencies in both nonclinical and clinical samples. Respondents are presented with a variety of experiences and asked to estimate "what percentage of the time this happens to you". We used the standard response format for the DES (see Carlson & Putnam, 1992), in which ratings are made on an 11-point scale (0%, 10%, 20%, etc.); it should be noted that Waller and Ross (1997) employed a modified 21-point scale (0%, 5%, 10%, etc.) in their study. Coefficient alphas for the DES total score were .91 at Time 1 and .94 and Time 2.

In addition, factor analyses of the DES have led to the development of three subscales (Carlson & Putnam, 1992): Amnesia (8 items; e.g., "Some people have the experience of finding themselves in a place and having no idea how they got there"), Depersonalization and Derealization ("Depersonalization") (6 items; e.g., "Some people have the experience of feeling that other people, objects, and the world around them are not real"), and Absorption and Imaginative Involvement ("Absorption") (9 items; e.g., "Some people find that when they are watching television or a movie they become so absorbed in the story that they are unaware of other events happening around them"). Of these, Amnesia and Depersonalization represent more pathological forms of dissociation,

whereas Absorption largely taps normal-range dissociative tendencies (Waller et al., 1996; Waller & Ross, 1997). Coefficient alphas for these subscales ranged from .77 to .84 at Time 1, and from .86 to .89 at Time 2.

Finally, I constructed four indexes of pathological dissociation based on the 8-item DES-T subscale created by Waller et al. (1996). First, I simply summed these items into an overall score ("DES-T Scale"). Second, using the SAS scoring program developed by Waller and Ross (1997, p. 510), I computed precise Bayesian taxon membership probabilities (ranging from 0 to 1.00) for each respondent ("DES-T Probabilities"); as noted previously, Waller and Ross (1997) recommend that these probabilities be employed to assign taxon membership. In computing these probabilities, I used the original estimates of (a) the taxon base rate, (b) indicator sensitivity, and (c) indicator specificity provided by Waller and Ross (1997). Next, I used two different cutoffs to create dichotomous measures of taxon membership versus nonmembership. The first cutoff was more liberal: Participants with probability estimates of .50 or greater were assigned to the taxon class ("DES-T-50"). This .50 cutoff commonly is used to assign taxon membership (see Waller et al., 1996). The second cutoff was more stringent, such that only participants with probability estimates of .90 or greater were assigned to the taxon ("DES-T-90"); this was the criterion used by Waller and Ross (1997).

DPS. The Dissociative Processes Scale (DPS; Harrison & Watson, 1992) consists of 33 items that were selected on the basis of a series of factor analyses; respondents rate the extent to which they agree or disagree with each statement on a 5-point scale (ranging from *strongly disagree* to *strongly agree*). The DPS total score had coefficient alphas of .93 at Time 1 and .94 at Time 2.

The DPS also includes three factor-analytically derived subscales that roughly parallel those of the DES. The 14-item Obliviousness subscale assesses the tendency to engage in mindless and automatic behaviors, and to enter into naturally-occurring trance

states (e.g., "I will sometimes walk into a room, and not remember why I went in there").

The 6-item Detachment subscale measures feelings of depersonalization and derealization

(e.g., "Sometimes when I am looking in the mirror I feel like I am seeing someone else").

Finally, the Imagination subscale (7 items) assesses individual differences in absorption,

imaginativeness, and fantasizing (e.g., "If I want to, I can imagine some things so vividly

that they hold my attention like a good movie or book does"). Coefficient alphas for

these subscales ranged from .85 to .86 at Time 1 and from .86 to .89 at Time 2.

Big Five Inventory. The Big Five traits were assessed using the 44-item Big Five

Inventory (BFI; John & Srivastava, 1999). The BFI contains 8-item scales for

Neuroticism and Extraversion, 9-item scales for Agreeableness and Conscientiousness,

and a 10-item measure of Openness. Participants responded to each item on a 5-point

scale ranging from *very uncharacteristic of myself* to *very characteristic of myself.* The

BFI scales had alpha reliabilities ranging from .77 to .89 at Time 1, and from .79 to .89 at

Time 2.

<center>Results</center>

Preliminary Analyses

  Taxon distribution and prevalence. Before turning to the crucial evidence regarding

stability, I report a series of analyses to determine whether the current data (a) replicate

the results of earlier studies and (b) provide conditions that are conducive to taxometric

analyses. First, I examined the distribution and prevalence of the dissociative taxon in

this undergraduate sample. Waller and Ross (1997, Figure 4) reported that the DES-T

taxon membership probabilities overwhelmingly fell near the extremes (i.e., 0 and 1) of

the distribution. Replicating these results, the large majority of the current participants

showed an extremely low probability of taxon membership. At Time 1, 401 participants

(86.2%) obtained DES-T Probabilities values less than .01, and 447 participants (96.2%)

had probabilities below .10. Similarly, at Time 2, 409 respondents (88.0%) had

probabilities below .01, and 438 (94.2%) had values less than .10. It is noteworthy, moreover, that virtually no one produced mid-range probabilities. Specifically, only 2 participants (0.4%) and 3 participants (0.6%) had values between .10 and .499 at Times 1 and 2, respectively. These probability data therefore provide evidence consistent with the existence of a low base-rate dissociative taxon in this student sample.

In terms of prevalence, using the more liberal .50 cutoff, 15 participants (3.2%) and 24 participants (5.2%) could be classified as taxon members at Times 1 and 2, respectively. Applying the more stringent .90 criterion, there were 8 (1.7%) and 14 (3.0%) taxon members at Times 1 and 2, respectively. As discussed previously, using this same .90 cutoff, Waller and Ross (1997) obtained an estimated prevalence of 3.3% in a large community sample; thus, the taxon base rate was slightly lower in these college students. These results can be contrasted with those obtained using general dissociation measures (e.g., DES total scores), which typically yield higher mean levels for late adolescents and young adults than for older adults (Sanders, McRoberts, & Tollefson, 1989; Waller et al., 1996). These divergent findings underscore the importance of distinguishing between pathological and non-pathological forms of dissociation.

Indicator validities. Second, I examined whether the DES-T items showed adequate validity in the current sample (for a general discussion of the effects of indicator validity on taxometric analyses, see Meehl & Yonce, 1994, 1996). The validity of an indicator represents its power to differentiate taxon members from nonmembers; it can be calculated by (a) computing the difference between the mean item scores of taxon members versus nonmembers and (b) dividing this difference by the standard deviation of the item in the overall sample. Indicator validities of 2.00 *SD* or greater are considered to be excellent (Gleaves et al., 2000; Meehl & Yonce, 1994, 1996). However, validities as low as 1.50 or even 1.00 may be adequate for taxometric analyses (see Gleaves et al., 2000; Meehl & Yonce, 1996).

Table 1 reports the validities of the individual DES-T items, computed separately at Times 1 and 2; in these analyses, the more liberal cutoff of .50 was used to assign taxon membership. It is noteworthy that all eight DES-T items had average validities greater than 1.50 *SD* across the two assessments; moreover, the average indicator validity was in the excellent range at both Time 1 ($M = 2.17$) and Time 2 ($M = 2.49$). These results establish that the taxon indicators showed good to excellent validity in the current sample.

Nuisance correlations. Finally, taxometric methods assume that taxon indicators will be significantly correlated when the taxon members and nonmembers are intermixed in a single overall sample, but will be negligibly correlated when the taxon and complement classes are analyzed separately (e.g., Fraley & Waller, 1998; Meehl & Yonce, 1994, 1996). The correlations observed within these separate classes are referred to as *nuisance correlations.* Nuisance correlations of .35 and lower do not create serious problems for most taxometric procedures (Meehl & Yonce, 1994, 1996).

Table 2 presents relevant data for the eight DES-T items at each assessment. The table shows the mean correlation between each item and the other seven DES-T indicators computed in (a) the overall sample, (b) the complement class [i.e., the taxon nonmembers], and (c) the taxon class; as in the Table 1 results, a cutoff of .50 was used to assign taxon membership. Two aspects of these data are noteworthy. First, the nuisance correlations generally are acceptably low. For instance, the mean nuisance correlation within the taxon class was .18 and .29 at Times 1 and 2, respectively. Thus, nuisance correlations do not represent a substantial problem in these data. Second, despite the fact that the complement class represents 96.8% and 94.8% of the overall sample at Times 1 and 2, respectively, the correlations were substantially lower within the former (mean $r = $ .20 and .22, respectively) than in the latter (mean $r = $ .31 and .45, respectively). Put differently, the elimination of a few respondents led to a substantial reduction in the

correlations among the DES-T items. These results are consistent with the assumption underlying taxometric analyses, and they suggest that the current sample provided conditions favorable to such analyses.

Stability Analyses

　　Mean level stability. I turn now to the issue of *mean level stability*, that is, whether or not the average scores of the respondents changed systematically from Time 1 to Time 2. Table 3 presents descriptive statistics for all of the continuous variables at each assessment. Given that these were undergraduate students who simply were assessed over the course of a regular academic semester, one would not expect to see any dramatic changes over the two-month study period. The bulk of the Table 3 data are consistent with this expectation. For instance, all of the Big Five scales had virtually identical means at the two assessments. Similarly, none of the basic DES scales (i.e., the total score and the three standard subscales) showed a significant mean-level shift over time.

　　There were two exceptions, however. First, scores on the DES-T scale showed a small but significant *increase* between Time 1 ($M = 5.55$) and Time 2 ($M = 6.33$). Second, three of the four DPS scales displayed small but significant *decreases* over the course of the study period. For our present purposes, however, the key point is that there is no evidence of a strong, consistent change in dissociation levels between Time 1 and Time 2.

　　Stability correlations. I now consider the central issue of *rank order stability*, that is, whether the respondents maintained their relative position within the group. The final column of Table 3 reports stability correlations for all of the assessed variables. Several aspects of these data are noteworthy. First, as would be expected, the Big Five traits were quite stable over this two-month interval, with retest correlations ranging from .79 to .89 (mean $r = .83$; in this and in all subsequent analyses, Fisher's r-to-z transformation was used to compute average correlations). Clearly, general personality traits exhibit little

change over this relatively short time interval. Second, the DPS scales showed a level of stability comparable to that displayed by the Big Five. The four DPS scales had retest correlations ranging from .76 to .81, with a mean value of .79. Even the DPS Detachment scale—which correlates very strongly with schizotypy (Watson, 2001) and assesses a particularly pathological form of dissociation—produced a stability coefficient of .76. These data are important, because they establish that measures of dissociative experiences—even those tapping relatively pathological forms of dissociation—can show strong stability across a two-month interval.

Viewed in this context, the DES data are ambiguous. On the one hand, all four basic DES scales produced strong and highly significant retest correlations (rs ranged from .62 to .69, with a mean value of .66). On the other hand, they clearly were much less stable than the BFI and DPS scales. In fact, the stability correlations for all four DES scales were significantly lower than those obtained for all five BFI scales (zs ranged from 3.33 to 10.28; all ps < .01, two-tailed) and all four DPS scales (zs ranged from 2.39 to 6.06; all ps < .05, two-tailed). Thus, for whatever reason, the DES scales are less stable than measures of other traits, including alternative measures of dissociation. These differential stabilities are particularly striking given the relatively strong level of convergence between the two dissociation inventories, both in previous studies (Watson, 2001) and in the current sample. For instance, the DES and DPS total scores correlated .56 and .54 at Times 1 and 2, respectively.

What about the DES-T? Given that almost all of the DES-T items are drawn from either the Amnesia or Depersonalization subscales, one would expect it to display a very similar level of stability. Consistent with this expectation, the DES-T Scale score produced a retest correlation of .62. As with the regular DES scales, although this value is strong and highly significant, it also is substantially lower than those obtained with the BFI and DPS; in fact, paralleling the earlier results, the stability correlation for the DES-

T Scale was significantly lower than those for all five BFI scales (zs ranged from 5.15 to 10.38; all ps < .01, two-tailed) and all four DPS scales (zs ranged from 4.21 to 6.16; all ps < .01, two-tailed). This correlation is surprisingly low and is inconsistent with the notion of a highly stable taxon.

Even more surprising, however, are the very low retest correlations for the three taxon measures constructed from the scoring program created by Waller and Ross (1997). The earlier results for the DES-T Scale indicated that the items comprising the pathological dissociative taxon reflect experiences that are only moderately stable over a two-month interval. These probability-based coefficients demonstrate that the Waller and Ross scoring procedure reduces this stability dramatically. Specifically, the continuous DES-T Probabilities score yielded a stability correlation of only .34, whereas the two dichotomous indicators of taxon membership produced coefficients of only .29 (DES-T-50) and .27 (DES-T-90). These stability coefficients obviously are significantly lower than that obtained with the DES-T Scale (zs ranged from 6.17 to 7.42; all ps < .01, two-tailed) and with all of the other measures included in this study.

Consistency of taxon membership. Although these correlational results are striking, they do not provide evidence regarding the consistency of taxon membership at the individual level. How many respondents consistently were classified as taxon members at both Times 1 and 2? Table 4 reports these data, using both the .50 and .90 cutoffs. Looking first at the .50 criterion, the upper half of Table 4 indicates that 33 individuals (7.1% of the sample) were identified as taxon members at either Time 1 or Time 2. Of these, only six (18.1%) were consistently classified as taxon members at both assessments. Put differently, most of the individuals who were classified as taxon members at one assessment were identified as nonmembers at the other. The data based on the .90 cutoff are quite similar. The bottom half of Table 4 reveals that 19 individuals

(4.1% of the sample) could be classified as taxon members at either Time 1 or Time 2; of these, only three (15.8%) met the criterion for taxon membership at both assessments.

Discussion

Basic Characteristics of the Sample

The primary goal of this study was to examine the construct validity of the dissociative taxon by examining its short-term temporal stability. These analyses yielded several key findings. First, the large majority of the participants had very low (i.e., less than .01) probabilities of taxon membership, and virtually no respondents had ambiguous, mid-range values (i.e., in the .100 to .499 range); overall, depending on the time of assessment and the criterion used, the taxon base rate varied from approximately 2% to 5% in this undergraduate sample. Thus, the current data are quite consistent with those reported earlier based on a mixed patient/control sample (Waller et al., 1996) and on a general adult community sample (Waller & Ross, 1997). The replicability of these results is quite encouraging and suggests that the findings of the current study should generalize well to other samples reflecting different types of participants.

In a related vein, the eight DES-T taxon indicators all displayed adequate to excellent validities, with mean values ranging from 1.65 *SD* to 3.26 *SD* across the two assessments (see Table 1). In addition, nuisance correlations generally were low and did not represent a substantial problem in these data. Overall, therefore, the current sample (a) broadly replicated the results of previous research and (b) provided conditions conducive to taxometric analyses.

Stability Analyses

Basic stability findings. The stability analyses yielded several important findings. First, given that our sample consisted of college students who were not undergoing any major life transitions, one would expect to see little evidence of mean level change over a two-month period. This expectation basically was confirmed, and it is particularly

noteworthy that these respondents did not show a strong, consistent shift in dissociation levels between Time 1 and Time 2.

In light of these data, one would further expect to see strong rank-order stability across the study period. Consistent with this expectation, the BFI and DPS scales displayed very strong retest coefficients that ranged from .76 to .89; in fact, these nine scales produced a median stability correlation of .81 across this two-month interval. As noted earlier, the DPS data indicate that dissociative experiences—even those reflecting depersonalization and derealization (i.e., DPS Detachment)—are not inherently unstable.

Viewed in this context, the DES-based results are quite surprising. All of the DES-based measures—including the DES-T, which was constructed to assess the pathological dissociative taxon—showed substantially lower retest correlations that ranged between .62 and .69. In contrast to the BFI and DPS, these DES scales yielded a median retest correlation of only .63. These results indicate that the putative dissociative taxon is based on indicators that show short-term instability in a student sample. More generally, the current data suggest that any taxonic measures based on the DES item pool are likely to display substantial instability over time.

Furthermore, the scoring program developed by Waller and Ross (1997)—which was designed to calculate Bayesian membership probabilities—clearly magnifies the instability of these dissociative phenomena. All three indexes derived from this scoring program were highly unstable, with retest correlations ranging from only .27 (DES-T-90) to .34 (DES-T Probabilities). Two of these indexes (DES-T-50 and DES-T-90) are inherently dichotomous, whereas the third is scored continuously (DES-T Probabilities). As noted earlier, however, these DES-T taxon membership probabilities were markedly bimodal and overwhelmingly fell near the extremes (i.e., 0 and 1) of the distribution. Thus, for all intents and purposes, the DES-T Probabilities score also represents a dichotomous measure. Consequently, these results offer further evidence that the

artificial dichotomization of continuous measures creates substantial reliability and validity problems (Cohen, 1983; Fraley & Waller, 1998; Widiger, 1992). I will return to this point shortly.

Implications of the findings. How should these stability findings be interpreted, and what implications do they have for the pathological dissociative taxon? One possible interpretation is that my initial assumption of temporal stability was incorrect. I argued that membership in the dissociative taxon would be highly stable because (a) the DES was explicitly designed to be a trait measure and (b) a prominent contemporary model emphasizes the etiological importance of traumatic childhood events. It is noteworthy, however, that even the continuously-scored DES-T Scale showed marked instability over a two-month interval.   This raises the possibility that these taxonic measures validly assess an inherently unstable construct. Put differently, they may be valid indicators of a pathological syndrome that reflects transient responses to ongoing life experiences.

Thus, these pathological dissociative experiences may be substantially influenced by ongoing stressors and other important life events. In this regard, dissociative symptoms have been linked to both posttraumatic stress disorder and acute stress disorder, and appear to be particularly prominent in the latter (e.g., Bryant, Moulds, & Guthrie, 2000; Moulds & Bryant, 2002). Indeed, to meet criteria for acute stress disorder in *DSM-IV*, one must experience at least three of five dissociative symptoms; these symptoms include numbing and detachment, depersonalization, derealization, and dissociative amnesia (American Psychiatric Association, 1994, p. 432-433). Consequently, it may be that the pathological dissociative experiences assessed in the DES-T actually reflect acute, short-term reactions to recent stressors.

However, although this explanation is quite compatible with the unimpressive short-term stability of the continuously-scored DES-T scale, it fails to account for the markedly lower stabilities that were obtained using the Bayesian probabilities scoring

program developed by Waller and Ross (1997). As noted earlier, these lowered stabilities

are consistent with a larger body of evidence indicating that the artificial dichotomization

of continuous measures leads to substantial losses in reliability and validity (Cohen,

1983; Fraley & Waller, 1998; Widiger, 1992). Moreover, these reduced stabilities raise

very serious concerns about the ultimate existence of a pathological dissociative taxon.

In this regard, Fraley and Waller (1998) emphasize that spurious dichotomization will

produce substantial reductions in stability. Thus, they state that "*When a taxonic model is

inappropriate, categorization will substantially underestimate true continuity.*" (p. 102;

emphasis in original)

This statement describes the current situation quite well. Because categorization

obviously leads to a substantial underestimation of the true level of stability, the most

parsimonious interpretation of these data is that the taxonic model is inappropriate, and

that there is no dissociative taxon. That is, it seems reasonable to conclude that the DES-

T items actually reflect a (a) moderately stable and (b) continuously-distributed construct;

if so, then previous taxometric analyses of these items have created an arbitrary and

unnecessary category, and have failed "to carve nature at its joints".

Having said that, however, I also must acknowledge one significant limitation of the

current study, namely that it is based entirely on a nonclinical sample. The nature of this

sample is not inherently problematic, in that taxometric analyses can be conducted—and,

indeed, frequently have been conducted—in nonclinical samples. Nevertheless, the fact

remains that substantially higher stabilities might be obtained in clinical samples. For

instance, the DES-T—scored either continuously or dichotomously—might be much

more stable in samples comprised of individuals reporting clinically-significant levels of

dissociative pathology. Thus, simply on the basis of the current results, it would be

premature to conclude that a pathological dissociative taxon does not exist.

Still, the current data strongly suggest that the DES-T fails to provide a valid measure of this dissociative taxon in nonclinical samples. These results raise significant concerns about the validity of the DES-T in such samples. More generally, the results of this study strongly support recent assertions (e.g., Waldman & Lilienfeld, 2001; Widiger, 2001) that statistically-identified taxa should be viewed as provisional entities that then must be subjected to the normal process of construct validation. As the current findings demonstrate, without extensive reliability and validity evidence, one cannot hope to understand the nature of the identified class. Given the growing popularity of taxometric methods, these construct validation studies are badly needed.

References

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.

Bernstein, E. M., & Putnam, F. W. (1986). Development, reliability, and validity of a dissociation scale. *The Journal of Nervous and Mental Disease, 174,* 727-735.

Blanchard, J. J., Gangestad, S. W., Brown, S. A., & Horan, W. P. (2000). Hedonic capacity and schizotypy revisited: A taxometric analysis of social anhedonia. *Journal of Abnormal Psychology, 109,* 87-95.

Bryant, R. A., Moulds, M. L., & Guthrie, R. M. (2000). Acute Stress Disorder Scale: A self-report measure of acute stress disorder. *Psychological Assessment, 12,* 61-68.

Carlson, E. B., & Putnam, F. W. (1992). *Manual for the Dissociative Experiences Scale.* Unpublished manuscript, Department of Psychology, Beloit College, Beloit, WI.

Chapman, L. J., Chapman, J. P., & Miller, E. N.   (1982). Reliabilities and intercorrelations of eight measures of proneness to psychosis. *Journal of Consulting and Clinical Psychology, 50,* 187-195.

Cohen, J. (1983). The cost of dichotomization. *Applied Psychological Measurement, 7,* 249-253.

Fraley, R. C., & Waller, N. G. (1998). Adult attachment patterns: A test of the typological model. In J. A. Simpson & W. S. Rholes (Eds.), *Attachment theory and close relationships* (pp. 77-114). New York: Guilford Press.

Gleaves, D. H., Lowe, M. R., Snow, A. C., Green, B. A., & Murphy-Eberenz, K. P. (2000). Continuity and discontinuity models of bulimia nervosa: A taxometric investigation. *Journal of Abnormal Psychology, 109,* 56-68.

Golden, R. R., & Meehl, P. E. (1979). Detection of the schizoid taxon with MMPI indicators. *Journal of Abnormal Psychology, 88,* 217-233.

Harris, G. T., Rice, M. E., & Quinsey, V. L. (1994). Psychopathy as a taxon: Evidence
    that psychopaths are a discrete class. *Journal of Consulting and Clinical Psychology,
    62,* 387-397.

Harrison, J. A., & Watson, D. (1992). *The Dissociative Processes Scale.* Unpublished
    manuscript, Department of Psychology, University of Iowa, Iowa City.

Haslam, N., & Beck, A. T. (1994). Subtyping major depression: A taxometric analysis.
    Journal of Abnormal Psychology, 103, 686-692.

John, O. P., & Srivastava, S. (1999). The Big Five trait taxonomy: History,
    measurement, and theoretical perspectives. In L. A Pervin & O. P. John (Eds.),
    Handbook of personality (2nd. Ed.) (pp. 102-138). New York: Guilford.

Korfine, L., & Lenzenweger, M. F. (1995). The taxonicity of schizotypy: A replication.
    Journal of Abnormal Psychology, 104, 26-31.

Lenzenweger, M. F., & Korfine, L. (1992). Confirming the latent structure and base rate
    of schizotypy: A taxometric analysis. *Journal of Abnormal Psychology, 101,* 567-
    571.

Lilienfeld, S. O., Lynn, S. J., Kirsch, I., Chaves, J. F., Sarbin, T. R., Ganaway, G. K., &
    Powell, R. A. (1999). Dissociative identity disorder and the sociocognitve model:
    Recalling the lessons of the past. *Psychological Bulletin, 125,* 507-523.

McNally, R. J., Clancy, S. A., & Schacter, D. L. (2001). Directed forgetting of trauma
    cues in adults reporting repressed or recovered memories of childhood sexual abuse.
    Journal of Abnormal Psychology, 110, 151-156.

Meehl, P. E., & Yonce, L. Y. (1994). Taxometric analysis: I. Detecting taxonicity with
    two quantitative indicators using means above and below a sliding cut (MAMBAC
    procedure) [Monograph]. *Psychological Reports, 74* (Suppl. 1-V74), 1059-1274.

Meehl, P. E., & Yonce, L. Y. (1996). Taxometric analysis: II. Detecting taxonicity
    using covariance of two quantitative indicators in successive intervals of a third

indicator (MAXCOV procedure) [Monograph]. *Psychological Reports, 78* (Suppl. 1-V78), 1091-1227.

Miller, H. R., Streiner, D. L., & Kahgee, S. L. (1982). Use of the Golden-Meehl indicators in the detection of schizoid-taxon membership. *Journal of Abnormal Psychology, 91,* 55-60.

Moulds, M. L., & Bryant, R. A. (2002). Directed forgetting in acute stress disorder. *Journal of Abnormal Psychology, 111,* 175-179.

Nichols, D. S., & Jones, R. E., Jr. (1985). Identifying schizoid-taxon membership with the Golden-Meehl MMPI items. *Journal of Abnormal Psychology, 94,* 191-194.

Roberts, B. W., & DelVecchio, W. F. (2002). The rank-order consistency of personality traits from childhood to old age: A quantitative review of longitudinal studies. *Psychological Bulletin, 126,* 3-25.

Ruscio, A. M., Borkovec, T. D., & Ruscio, J. (2001). A taxometric investigation of the latent structure of worry. *Journal of Abnormal Psychology, 110,* 413-422.

Ruscio, A. M., Ruscio, J., & Keane, T. M. (2002). The latent structure of posttraumatic stress disorder: A taxometric investigation of reactions to extreme stress. *Journal of Abnormal Psychology, 111,* 290-301.

Ruscio, J., & Ruscio, A. M. (2000). Informing the continuity controversy: A taxometric analysis of depression. *Journal of Abnormal Psychology, 109,* 473-487.

Sanders, B., McRoberts, G., & Tollefson, C. (1989). Childhood stress and dissociation in a college population. *Dissociation, 2,* 17-23.

Skilling, T. A., Harris, G . T., Rice, M. E., & Quinsey, V. L. (2002). Identifying persistently antisocial offenders using the Hare Psychopathy Checklist and *DSM* personality disorder criteria. *Psychological Assessment, 14,* 27-38.

Tyrka, A. R., Cannon, T. D., Haslam, N., & Mednick, S. A. (1995). The latent structure of schizotypy: I. Premorbid indicators of a taxon of individuals at risk for schizophrenia-spectrum disorders. *Journal of Abnormal Psychology, 104,* 173-183.

van IJzendoorn, M. H., & Schuengel, C. (1996). The measurement of dissociation in normal and clinical populations: Meta-analytic validation of the Dissociative Experiences Scale (DES). *Clinical Psychology Review, 16,* 365-382.

Waldo, T. G., & Merritt, R. D. (2000). Fantasy proneness, dissociation, and *DSM-IV* Axis II symptomatology. *Journal of Abnormal Psychology, 109,* 555-558.

Waldman, I. D., & Lilienfeld, S. O. (2001). Applications of taxometric methods to problems of comorbidity: Perspectives and challenges. *Clinical Psychology-Science & Practice, 8,* 520-527.

Waller, N. G., Putnam, F. W., & Carlson, E. B. (1996). Types of dissociation and dissociative types: A taxometric analysis of dissociative experiences. *Psychological Methods, 1,* 300-321.

Waller, N. G., & Ross, C. A. (1997). The prevalence and biometric structure of pathological dissociation in the general population: Taxometric and behavior genetic findings. *Journal of Abnormal Psychology, 106,* 499-510.

Watson, D. (2001). Dissociations of the night: Individual differences in sleep-related experiences and their relation to dissociation and schizotypy. *Journal of Abnormal Psychology, 110,* 526-535.

Widiger, T. A. (1992). Categorical versus dimensional classification: Implications from and for research. *Journal of Personality Disorders, 6,* 287-300.

Widiger, T. A. (2001). What can be learned from taxometric analyses? *Clinical Psychology-Science & Practice, 8,* 528-533.

Author Note

Table 1

Validities of the DES-T Taxon Indicators

DES Item	Time 1	Time 2	Mean
3	1.36	2.59	1.98
5	1.40	2.31	1.86
7	2.87	3.11	2.99
8	1.61	2.32	1.97
12	3.10	2.86	2.98
13	2.98	3.54	3.26
22	2.42	1.51	1.97
27	1.65	1.64	1.65
Mean	2.17	2.49	

Note. Taxon members were defined as those individuals with DES-T Probabilities scores of .50 or greater.

Table 2

Average Correlations Among the DES-T Taxon Indicators

	Time 1			Time 2		
	Overall	Taxon	Taxon	Overall	Taxon	Taxon
DES Item	Sample	Nonmembers	Members	Sample	Nonmembers	Members
3	.28	.18	.29	.47	.22	.31
5	.29	.20	.25	.41	.18	.16
7	.36	.19	.31	.51	.24	.28
8	.31	.16	.37	.41	.18	.21
12	.34	.25	-.06	.51	.26	.34
13	.32	.18	.13	.52	.25	.23
22	.35	.23	.20	.38	.23	.41
27	.24	.19	-.05	.40	.20	.40
Mean	.31	.20	.18	.45	.22	.29

Note. Taxon members were defined as those individuals with DES-T Probabilities scores of .50 or greater.

Table 3

Mean Scores and Two-Month Stability Correlations for the Big Five and Dissociation Measures

Measure	Time 1 Mean	Time 2 Mean	Stability Correlation
Big Five Inventory			
Neuroticism	23.86 (6.2)	23.91 (6.4)	.83
Extraversion	26.66 (6.6)	26.74 (6.5)	.89
Openness	35.29 (6.4)	35.20 (6.4)	.81
Agreeableness	34.59 (5.5)	34.43 (5.6)	.79
Conscientiousness	33.45 (5.1)	33.43 (5.3)	.79
Dissociative Processes Scale			
Total Score	87.05 (20.0)**	85.56 (20.1)**	.81
Obliviousness	38.99 (9.2)	38.58 (9.3)	.76
Detachment	11.14 (4.6)**	10.76 (4.5)**	.77
Imagination	21.22 (5.5)*	20.89 (5.5)*	.81
Dissociative Experiences Scale			
Total Score	12.51 (9.0)	12.82 (10.5)	.69
Amnesia	6.18 (8.0)	6.80 (9.5)	.62
Depersonalization	4.01 (7.2)	4.48 (9.0)	.63
Absorption	20.17 (13.5)	20.22 (14.7)	.68
Taxon Indicators			
DES Taxon Scale	5.55 (7.5)*	6.33 (9.0)*	.62
DES-T Probabilities	0.03 (0.2)	0.05 (0.2)	.34
DES-T-50	--	--	.29
DES-T-90	--	--	.27

Note. $N = 465$. Standard deviations are shown in parentheses. All correlations are significant at $p < .01$, two-tailed.

*Means differ at $p < .05$, two-tailed.   **Means differ at $p < .01$, two-tailed.

Table 4

Summary of Dissociative Taxon Membership Status at Times 1 and 2

	Time 2 Status	
Time 1 Status	Nonmember	Member
Using .50 Cutoff		
Nonmember	432	18
Member	9	6
Using .90 Cutoff		
Nonmember	446	11
Member	5	3