Examination of the Pathological Dissociation Taxon in Depersonalization Disorder

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Abstract: In recent years, the pathologic dissociation taxon developed by Waller, Putnam, and Carlson (*Psychological Methods* 1:300–321, 1996) from a Dissociative Identity Disorder (DID) sample has been increasingly used in studies of dissociation in general. However, the taxon's convergence with dissociative diagnoses other than DID, as well as the taxon's central premise that pathologic dissociation is a categorical rather than a dimensional construct, remain areas of exploration. This report examines the applicability of the pathologic dissociation taxon to Depersonalization Disorder (DPD). The Dissociative Experiences Scale was administered to 100 consecutively recruited DPD subjects diagnosed by semistructured clinical interview and by the SCID-D. Taxon membership probability was calculated using the recommended SAS scoring program. Approximately 2/3 of subjects ($N = 64$) had a very high probability ($> .80$) of belonging to the taxon, while 1/3 of subjects had a very low probability ($<.10$) of belonging to the taxon. A taxon cutoff score of 13 yielded an 81% sensitivity in detecting the presence of DPD. The modest convergence between taxonic membership and clinical dissociative disorder diagnosis suggests that the taxon may have important limitations in its use, at least when applied to DPD in its current form. As previously, we continue to recommend a low taxon cutoff score (13) for the sensitive detection of depersonalization disorder. The inference that pathologic dissociation is a unitary and categorical entity is also discussed.

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Some dissociative experiences, such as absorption, occur widely in the normal population. However, other dissociative experiences such as amnesia, depersonalization, derealization, and identity alteration are much less common in the general population and are typically viewed as indicative of psychopathology. Thus, there has been increasing interest and attention given over the past several years to the question of whether dissociation is a dimensional or typological construct. The issue of whether dissociation is a unitary or heterogeneous construct is also of great current interest. Until recently, the prevalent assumption in the field was that dissociation existed on a continuum. However, a sophisticated taxometric analysis of the Dissociative Experiences Scale (DES), the most widely used research scale measuring dissociation (Bernstein and Putnam 1986; Carlson and Putnam 1993), empirically validated the distinction between two types of dissociation (Waller et al., 1996). Nonpathological dissociation appeared to be a trait manifested across a dimensional continuum, whereas pathologic dissociation emerged as a distinct taxonic category to which an individual either belongs or not. The probability of belonging to the dissociative taxon can be calculated via an individual's scores on eight designated pathologic dissociation items of the DES (Waller et al., 1996). The taxon has since become increasingly used in the research and clinical literature, sometimes even in place of the total DES score, as a more accurate measure of pathologic dissociation (Irwin, 1999; Tampke and Irwin, 1999; Waldo and Merritt, 2000; Simeon et al., 2001; Waller et al., 2001).

However, since the taxon's initial conception there has been very limited examination of its validity against clinical diagnoses of the various dissociative disorders. Initially, the taxon was statistically derived from a mixed sample of Dissociative Identity Disorder (DID) and normal subjects (Waller et al., 1996). We are only aware of one publication examining the validity of the taxon against clinical diagnoses of dissociative disorders (Ross et al., 2002). In this report, the taxon showed good validity against clinical and structured interview diagnoses of dissociative identity disorder and dissociative disorder NOS but no validity for the diagnoses of depersonalization disorder and dissociative amnesia.

In this report, we examine the relationship between taxonic classification and clinical diagnosis in a large group of subjects with Depersonalization Disorder (DPD), one of the major dissociative disorders (Simeon et al., 1997). Individuals in this series, by definition, carry only depersonaliza-

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tion disorder as their dissociative diagnosis, so that an individual presenting with additional dissociative features leading to diagnoses such as dissociative amnesia, dissociative disorder NOS, or dissociative identity disorder, is excluded. Individuals suffering from depersonalization disorder by definition suffer from pathologic dissociation, *i.e.*, dissociation that is chronic, distressing, or maladaptive, although their dissociative symptoms are limited to one primary domain, that of perceptual alterations. If the pathologic dissociation taxon is indeed a reliable measure of overall pathologic dissociation and not simply of DID-like dissociation such as that of the subjects in the original report (Waller et al., 1996), the taxon should be capable of sensitively detecting all the various forms with which pathologic dissociation can present. Therefore, the current study's hypothesis is that subjects clinically diagnosed with DPD should be pathologic taxon members.

METHODS

Subjects for this study were 100 consecutively recruited individuals diagnosed with DSM-III-R or IV depersonalization disorder who participated in various DPD-related research protocols at our institution. All subjects gave written informed consent for the particular study in which they participated. Initial diagnosis was established by a semistructured clinical interview developed and used by the investigators that elicits a detailed clinical history of dissociative symptoms, inquiring about onset, course, severity, precipitants, triggers, and differential medical and psychiatric diagnoses. The Structured Clinical Interview for Dissociative Disorders SCID-D, an extremely thorough and detailed interview of dissociative symptoms and disorders (Steinberg, 1994) was then administered. It includes general screening questions with follow-up questions for positive responses and contains a total of 277 items. It has been found to have a 96% interrater reliability for dissociative diagnoses. It has been also shown to have good construct validity. All subjects diagnosed with DPD by the two interview procedures by definition met DSM clinical criteria for the disorder. They suffered from persistent or recurrent depersonalization associated with significant distress and/or dysfunction that did not occur simply in the context of another psychiatric or medical condition, including another dissociative disorder. As per SCID-D guidelines, subjects with elevated amnesia or identity alteration scores do not receive a depersonalization disorder diagnosis.

All subjects were administered the Dissociative Experiences Scale, which has been used in hundreds of studies to date. Ninety-seven subjects received the original version of the DES (Bernstein and Putnam. 1986) while the last three received the updated version (Carlson and Putnam, 1993). The DES is a 28-item self-report scale, each item scored from 0 to 100. It has been found to be internally consistent, reliable over time, and has good discriminant and convergent validity. Total score is the mean of all 28 items. In addition, mean scores were calculated for the three subscales of absorption, amnesia, and depersonalization/derealization, based on item content previously derived by factor analysis specifically in a DPD sample (Simeon et al., 1998). We use these subscales descriptively as an approximation of symptomatology severity for each of these domains and do not mean to imply that they represent undisputed underlying population "factors."

Waller et al. (1996) outlined eight DES items (3, 5, 7, 8, 12, 13, 22, 27) that are used to calculate the probability that an individual belongs to the pathologic dissociation taxon, using an SAS statistical program described by Waller and Ross (1997) and made available on the International Society for the Study of Dissociation web site by Darryl Perry (www.issd.org/DES_Taxon.xls). The program yields a Bayesian probability statistic, ranging from 0 to 1, that a subject belongs to the taxon. Two probability cutoffs were used in this report, a .50 probability level and a .90 probability level that were used in the original two reports (Waller et al., 1996; Waller and Ross, 1997). Thus, the total sample was classified into three groups: Group 1, consisting of subjects with highest probability of belonging to the taxon ($>$.90); Group 2, with medium probability (.50–.90); and Group 3, with the lowest probability ($<$.50).

One-way analyses of variance were used to compare the three groups on continuous demographic, clinical, and DES score variables. Chi square tests were used for categorical comparisons. All statistics are two-tailed using a .05 probability level.

RESULTS

The 100 DPD subjects, 46 female and 54 male, had a mean age of 33.5 $\pm$ 10.0 years, with mean age of onset of the disorder at 15.9 $\pm$ 7.2 years. All met current criteria for the disorder at the time of their assessment. A total of 44 subjects belonged to Group 1, 24 subjects to Group 2, and 32 subjects to Group 3. Figure 1a presents in graph form the taxonic probability distribution for the entire series. It is apparent that this distribution is dichotomous, with approximately 2/3 of subjects ($N = 64$) having a very high ($>$ .80) probability and 1/3 of subjects ($N = 32$) having a very low probability ($<$ .10) of belonging to the pathologic dissociation taxon. Figure 1b presents in graph form the distribution of the mean DES-Taxon scores for the 100 subjects. This distribution is clearly more continuous.

We compared the three groups with respect to demographic and clinical characteristics to determine whether any of these variables affected the likelihood of belonging to the pathologic dissociation taxon. There were no significant differences among groups in age ($F = 0.72$, $df = 2, 97$, $p = 0.49$); gender ($\chi^2 = 0.66$, $df = 2$, $p = 0.72$); or characteristics of the illness such as age of onset ($F = 1.19$, $df = 2, 97$, $p = 0.31$), duration ($F = 1.19$, $df = 2, 97$, $p = 0.69$), type of onset

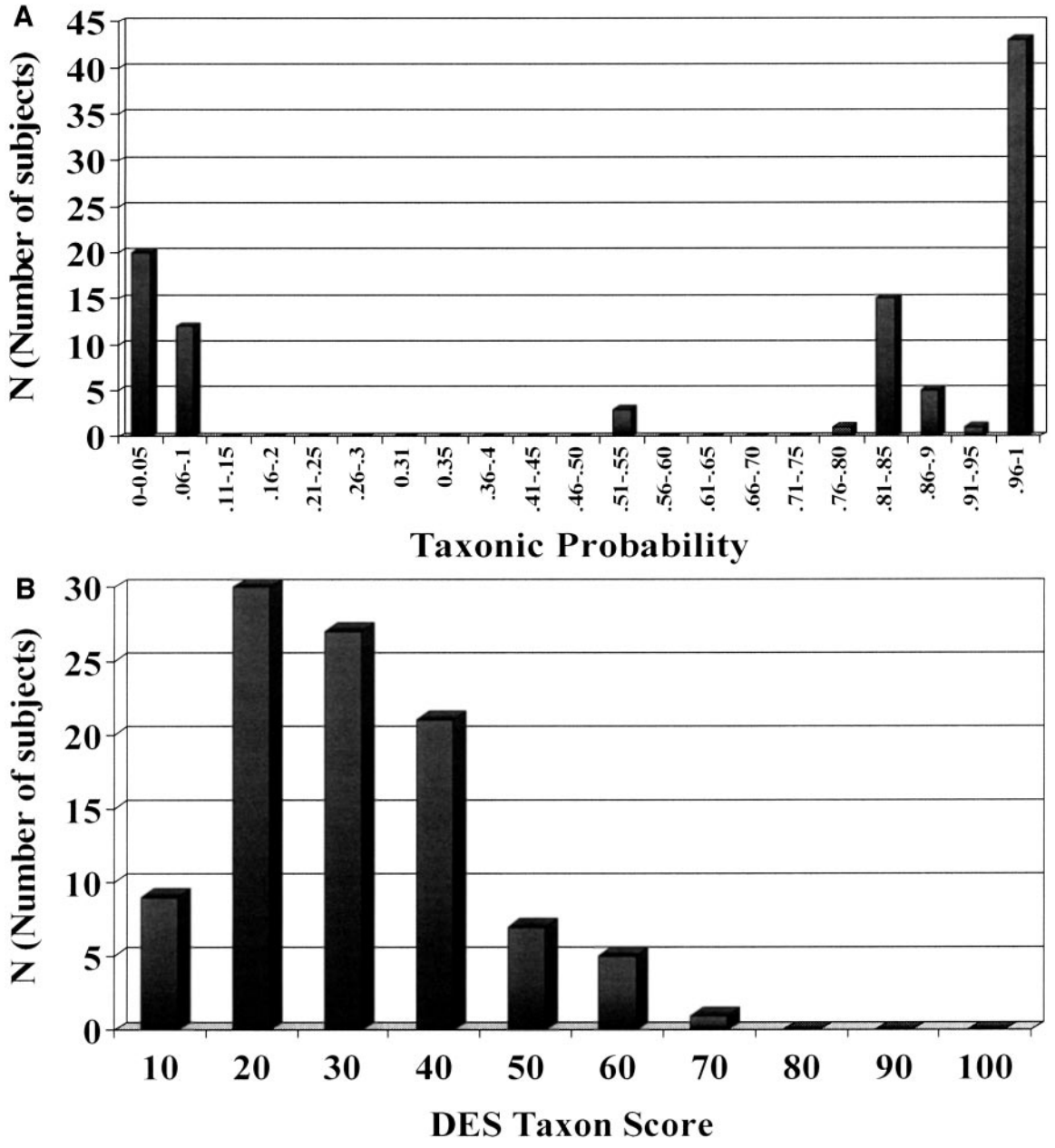

FIGURE 1. Frequency distribution of the probability of belonging to the pathologic dissociation taxon (Fig. 1A) and frequency distribution of DES-taxon scores (Fig. 1B) in 100 consecutive recruited subjects diagnosed clinically and by structured interview with depersonalization disorder

(acute versus insidious; $\chi^2 = 3.95$, $df = 2$, $p = 0.14$), or course (episodic versus continuous versus mixed; $\chi^2 = 5.60$, $df = 4$, $p = 0.23$).

We also compared the DES profile of the three groups to understand its relationship to the likelihood of belonging to the pathologic taxon. Table 1 presents DES scores for the entire sample and for each of the three groups for the eight items comprising the taxon; total taxon score; total DES score; and scores on the three subscales of absorption, amnesia, and depersonalization/derealization. An overview of the table reveals a very consistent pattern whereby all scores tended to be highest in Group 1, intermediate in Group 2, and lowest in Group 3. With the exception of taxon item eight, these differences were all statistically significant (Table 1).

We then more closely examined the DES profile of Group 3, *i.e.*, the group deemed by taxometric analysis not to

TABLE 1. Dissociative Experiences Scale Scores in 100 Depersonalization Disorder Subjects

	Entire Sample			Group 1 (*N* = 44)			Group 2 (*N* = 24)			Group 3 (*N* = 32)			ANOVA (df = 2,97)	
DES variable	**Mean**	**SD**	**range**	**Mean**	**SD**	**range**	**Mean**	**SD**	**range**	**Mean**	**SD**	**range**	**F**	***P***
Taxon items (paraphrased)														
3. not knowing how got somewhere	9.5	16.7	0–93	16.9	21.1	0–93	4.8	11.6	0–55	2.8	5.4	0–23	9.16	<.001
5. finding new things in belongings	4.2	9.5	0–64	7.9	12.8	0–64	0.6	1.3	0–5	1.8	4.9	0–27	6.78	.002
7. standing next to self/like looking at other	27.9	32.3	0–100	47.8	32.5	0–100	19.3	29.8	0–100	7.1	11.5	0–43	22.92	<.001
8. don't recognize friends or family	7.0	15.5	0–61	10.6	19.6	0–61	4.5	11.0	0–45	4.0	10.7	0–58	2.13	.125
12. surroundings seem unreal	67.6	29.4	0–100	78.2	18.6	32–100	75.3	26.5	0–100	47.1	33.5	0–100	14.56	<.001
13. body does not belong to one	50.9	33.8	0–100	68.9	23.7	11–100	56.0	35.6	0–100	22.1	24.3	0–83	28.09	<.001
22. act differently/feel like different people	29.0	32.9	0–100	42.3	35.2	0–100	21.6	29.6	0–100	16.2	24.9	0–83	7.50	.001
27. hear voices inside one's head	8.3	21.4	0–95	16.6	29.5	0–95	0.7	1.9	0–9	2.7	9.0	0–44	6.58	.002
Taxon score	25.5	13.0	4–61	36.1	10.9	14–61	22.8	5.3	11–32	13.0	5.4	4–25	74.23	<.001
Total score	25.5	15.2	5–69	35.9	15.7	9–69	21.5	8.2	8–41	14.1	6.6	5–33	33.41	<.001
Absorption score	25.7	19.5	1–78	36.9	22.0	3–78	19.6	12.5	2–46	15.0	10.2	1–41	17.76	<.001
Amnesia score	12.1	13.6	0–58	18.4	16.0	0–58	9.9	9.9	0–33	5.1	7.0	0–34	11.25	<.001
Depersonalization/ derealization score	47.7	20.4	7–93	63.1	16.7	22–93	46.6	10.4	26–63	27.4	10.3	7–51	64.55	<.001

suffer from pathologic dissociation. Examination of the group's DES scores in Table 1 reveals that on average these subjects had distinctly elevated scores on at least two taxon items, item 12 (derealization, score of 47) and item 13 (depersonalization, score 22), but did not particularly endorse item 7 (depersonalization). The remaining five taxon items, more characteristic of amnesia and identity confusion/alteration, would not be expected to be notably elevated in DPD. Simply put, an individual who scores moderately in frequency of depersonalization/derealization experiences and endorses two such symptoms without other notably elevated scores on the DES will not be deemed by taxometric analysis to have pathologic dissociation.

We present two case reports from Group 3 in an attempt to bring to life their clinical presentations and the discrepancy in taxonic classification, as well as a third hypothetical DPD case examining more closely the relationship between DES taxon item scores and taxon membership probability.

Case 1.

Ms. A was a 36-year-old successfully employed single woman who described feeling as if she could not grasp reality, looking at surroundings and not feeling in touch with them, detached, a stranger to her own being, going through the motions of living. Onset was insidious around age 17; later cleared in her late 20s to early 30s; and returned in the past year continuously, triggered by severe stress related to a sister's illness and hospitalizations. She stated that the dissociation was in part a blessing because it prevented her from feeling but also markedly interfered with her relationships, work, and capacity to enjoy life. Ms. A endorsed taxon items 7 (score of 43), 12 (score of 40), and marginally 13 (score of 8). In addition, she had elevated scores on two depersonalization/derealization items that are not part of the taxon: a score of 19 on nontaxon item 16 (finding a familiar place strange and unfamiliar) and a score of 42 on nontaxon item 28 (looking at world through a fog). Her depersonalization/derealization factor score was notably elevated at 33, with a modest DES total score of 13. Probability of belonging to the pathologic dissociation taxon was calculated at .02, yet

she clearly carried a clinical diagnosis of depersonalization disorder.

Case 2.

Ms. B was a 42-year-old married and full-time employed woman who recalled having her first dissociative experiences around the age of 12. She described feeling detached from her body with unattached head and arms, being in a dream-like state or fog, not fully engaged in anything as if a part of her was missing, visually feeling as if things stood out, a loss of familiarity with surroundings. In the past 3 years her symptoms had become much more pronounced secondary to marital stress, financial difficulties, and especially highly publicized false allegations about a scandal at her work setting. She stated that the dissociation was very distressing, left her feeling very different from other people, and made it very difficult for her to focus at work. Ms. B endorsed taxon items 12 (score of 15) and 13 (score of 58). In addition, she had a score of 83 of nontaxon item 28 (looking at world through a fog). Her depersonalization/derealization factor score was moderately elevated at 31, with a modest DES total score of 10. Probability of belonging to the pathologic dissociation taxon was calculated at .02, yet clinically she was symptomatic of depersonalization disorder.

Hypothetical Case 3.

Mr. C suffered from chronic depersonalization disorder. In completing the DES, if he endorses all three taxon items indicative of depersonalization/derealization (7, 12, 13) with a score of 45 or more, he will have a .99 probability of belonging to the taxon. With scores ranging from 38 to 44, probability will be .55, whereas at scores of 37 or less probability will decline to .02. In a different scenario, if Mr. C endorses only two depersonalization/derealization items of the DES taxon, *e.g.*, 12 and 13, a score ranging from 45 to 100 will yield a fixed probability of .82 of belonging to the taxon, whereas a one-point decline in scores to 44 or below will reduce his probability to .02. In other words, it appears that at least in the scenario where only few taxonic items are diagnostically applicable to a dissociative subject, a very small decline in DES scores results in a dramatic shift of the probability of belonging to the pathologic dissociation taxon.

DISCUSSION

The pathologic dissociation taxon has become an increasingly popular tool in dissociation research since its inception in 1996. Its brevity offers a quick estimate of pathologic dissociation, and the taxon may be a more reliable indicator of dissociative psychopathology than the total Dissociative Experiences Scale score. However, the accuracy with which the proposed taxometric procedure can classify subjects into those who do or do not have pathologic dissociation by other criteria, including DSM diagnoses and structured interviews, has been minimally investigated. Reasonable concordance with the various dissociative disorder diagnoses is crucial if the taxon is to become an increasingly used measure of overall pathologic dissociation, especially when used in studies that do not also conduct independent diagnostic assessments. The current study strongly suggests that if the taxon in its current form is used in studies interested in capturing the whole spectrum of dissociative psychopathology, a notable proportion of subjects may go undetected. Similar findings were reported by Ross et al. (2002) for the diagnoses of depersonalization disorder and dissociative amnesia, leading the authors to question whether these diagnoses are reliable and valid rather than questioning the validity of the tools used to measure them. In the present large series of subjects reliably diagnosed with depersonalization disorder, only 2/3 were found likely to suffer from pathologic dissociation using the taxon. In the remaining 1/3, however, the condition was not "picked up" by the taxometric approach. What might explain this discrepancy?

The taxon was initially generated from a mixed Dissociative Identity Disorder (N = 228) and normal control (N = 228) sample (Waller et al., 1996). Therefore its eight items, not surprisingly, represent a wide range of pathologic dissociative experiences as found in DID, including perceptual, memory, and identity alterations. Other dissociative-spectrum diagnoses, such as PTSD and Dissociative Disorders NOS, were not included in the initial derivation of the proposed taxometric procedure but rather were presented in the second part of the study with descriptive statistics that indirectly supported the taxon concept. Specifically, in these diagnoses DES-Taxon score approached total DES score (just as was found in our DPD sample; Table 1), whereas in nondissociative disorder diagnoses DES-Taxon scores were markedly lower than total DES scores. It was not reported, however, what proportion of subjects with these various diagnoses were found to be taxon members. Even for the DID group to which the original taxometric analysis was applied, it appears that a significant proportion of subjects were not classified as taxon members at the .5 probability level (about 30%, although the exact percentage cannot be inferred from the data provided), leading the investigators to suggest that these subjects were possibly misdiagnosed. It remains, however, an unresolved matter whether subjects were misdiagnosed or taxonic classification may not be highly reliable, pending replication of the findings with a reliably diagnosed sample.

On the other hand, simple dissociative disorders that share only a portion of DID symptoms, such as not only DPD but also dissociative amnesia, dissociative fugue, and dissociative trance, would only be expected to have elevated scores on limited taxon items, rendering them even less likely to be deemed taxon members. This study in essence demonstrates that in DPD, if the limited taxon items that are applicable have moderately rather than markedly elevated

scores (as in Group 3), taxometric analysis will classify such subjects as nontaxon members. It would, therefore, be very worthwhile to replicate the taxometric classification by Waller et al. (1996) in a mixed sample of subjects reliably diagnosed with a variety of dissociative disorders, as well as subjects reliably diagnosed with nondissociative disorders. If a single taxon does not successfully capture most people suffering from a variety of pathologic dissociative conditions, this could suggest that we are dealing with more than one underlying pathologic construct, and this would be important to know.

On another note, Waller et al. (1996) also raised the question of whether pathologic dissociation is truly a categorical construct, or whether it may be latently dimensional but dimensionality was not detected by taxometric analysis due to limited variance in item scores in the two extreme samples used, DID and normal controls. They dismissed this possibility by descriptively presenting evidence that there was "considerable intraitem variation on the DES-T for taxon members." An even more compelling test, however, of the categorical construct is to apply the proposed taxometric analysis to a group of individuals whose mean taxon score falls roughly in the middle between the normal and DID groups used in the original study and then test whether a dichotomous or more continuous distribution is generated. Indeed, our DPD sample had a mean taxon score of about 25, right in the middle of Waller et al.'s (1996) two groups with average taxon scores around 1 and 46. A dichotomous distribution was again obtained, generating a histogram quite similar to the one presented by Waller et al. (1996; Fig. 3). However, hypothetical Case C clearly illustrates that there exists only an extremely narrow range of DES scores that could lead to more midrange taxonic probabilities, at least in the scenario where only few items can be diagnostically endorsed, suggesting that the statistical procedure by which the pathologic dissociation taxon has been operationalized strongly pushes all subjects toward one of two extreme probability ends. On the other hand, the distribution of raw scores on the DES-Taxon is clearly more continuous (Fig. 1b), suggesting that the latent construct of pathologic dissociation could be dimensional. It remains therefore, in our opinion, an unresolved issue whether pathologic dissociation is indeed a categorical construct. In other words, it is not clear if the proposed taxonic measure is somehow biased toward generating dichotomous classifications or reflects a "real" such underlying construct in the population.

A final point of interest is the determination of taxon score cutoff points that are sensitive and at the same time discriminated enough in detecting the various dissociative disorders. Use of the mean taxon score rather than the taxometric procedure is commonly done by researchers and clinicians alike, as it is more simple and straightforward despite the initial cautioning against this approach by Waller et al. (1996). In a prior report, we found that in a series of 50 subjects with DPD (the first half of the 100 included in the current report), a cutoff taxon score of 13 detected 80% of subjects diagnosed with the disorder clinically and by SCID-D (Simeon et al., 1998). The current finding is reassuringly close with a cutoff score of 13 detecting 81% of subjects. A cutoff score of 15, as recommended by Ogawa et al. (1997), would detect 73% of subjects, while a cutoff score of 35 as initially recommended by Waller and Ross (1997) would only detect a 28% minority. More recently, Ross et al. (2002) proposed a cutoff score of 20, stating that this cutoff score yielded better agreement rate with diagnoses than scores of 5, 10, or 30, but again this was in reference to DID and DD NOS. A cutoff of 20 is too low for DPD, detecting only 61% of the current sample. It appears, therefore, that if we continue to employ this single taxon as currently defined, different cutoff scores would be needed for the sensitive detection of the whole spectrum of dissociative disorders, lower cutoffs for the "simple" dissociative disorders and higher for the "complex" dissociative disorders.

CONCLUSIONS

In summary, the pathologic dissociation taxon has been a very useful additional measure in the dissociation field, undoubtedly honing in on more pathologic dissociative experiences than the overall DES. However, we still need to learn more about its concordance with all the various diagnoses of dissociative disorders. We also need to further investigate the inference that the taxon, as currently operationally defined, represents with accuracy an underlying construct of pathologic dissociation that is categorical and unidimensional. Such studies would be very welcome before the taxon becomes firmly established as the authoritative brief self-report measure of pathologic dissociation in the research literature.

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