INITIAL DEVELOPMENT AND VALIDATION OF THE PHILLIPS DISSOCIATION SCALE (PDS) OF THE MMPI

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ABSTRACT

This paper examined whether certain previously-identified MMPI critical items and whether MMPI post-traumatic stress scales could significantly differentiate dissociative patients from non-dissociative patients. Defying the common belief that the MMPI has little to offer by way of diagnosing dissociative patients, the results of this study suggest that certain critical items and the PTSD scales could indeed detect differences. However, the primary focus of this investigation was to report on the derivation, reliability and validity of an MMPI scale of dissociation (Phillips Dissociation Scale - PDS). The 20 item scale, which was constructed for use in all the MMPIs (MMPI, MMPI-2, and MMPI-A) was tested with a dissociative group and a general psychiatry group. Results show the PDS to be internally reliable. The PDS was also found to differentially diagnose dissociative disorders at a statistically and clinically significant level.

INTRODUCTION

The Minnesota Multiphasic Personality Inventory (MMPI) is one of the most widely used objective psychological tests largely because it efficiently provides the psychologist with an assessment of a variety of clinical symptoms. With the recent increase in suspected cases of dissociative disorders, researchers have explored the utility of this mainstay of psychological evaluation in the assessment of dissociative phenomenology, the screening for dissociative disorders, and the overall evaluation of dissociative patients.

With respect to the general evaluation of dissociative patients, some psychologists have used the MMPI not solely for the detection of dissociation, but for the elucidation of various aspects of dissociative patients' non-dissociative functioning (Phillips, 1992). These clinicians have found the MMPI useful in describing both axis I and axis II disorders as well as dissociative patients' degree of depression, anxiety, anger, defense mechanisms, and interpersonal styles and issues. Also it has helped to clarify additional aspects of the polysymptomatic pictures, including eating disorders, drug and alcohol abuse, antisocial behaviors and sexual disorders, prognostic indications and ego strength, mania, hallucinations and delusions, and psychosomatic issues.

But some have found the MMPI difficult to administer to dissociative patients. Loewenstein (1991) reported many of the true-or-false questions may induce traumatic responses in Multiple Personality Disorder (MPD) patients. He dropped the MMPI from the testing protocol after patients complained bitterly about taking it. Other clinicians have found little difficulty administering the MMPI if patients' concerns are addressed, if they are encouraged to answer the questionnaire based on their feelings on the average and if they are assured that other dissociative patients are able to satisfactorily complete the questionnaire (Phillips, 1992).

When dissociative patients were thought to be rare, case studies of MPD patients' MMPIs were about the only method available to MMPI investigators. Brandsma and colleagues (Brandsma & Ludwig, 1974; Ludwig, Brandsma, Wilbur, Bendfeldt & Jameson, 1972) administered MMPIs to a male patient with three alternate personalities. All four profiles were similar on five scales (K, Hs, Pt, D and Ma). The differences between the remaining scaled scores were generally consistent with interview and observational data. The most notable differences were between the primary personality and the three alters. The alters' profiles appeared more alike than unlike. The discharge profile of the integrated person suggested that the new identity was psychiatrically "sicker" than any of the others. Larmore, Ludwig and Cain (1977) found that shared scale elevations for the primary personality and three alters occurred only on the F, Hy, and Sc scales. These scales are entirely different than those found to be abnormal by Brandsma and his colleagues. Wagner and Heise (1974) and Danesino and colleagues (Danesino, Daniels & McLaughlin, 1979) found that scale differences between the primary and alternate personalities occurred on scales sensitive to emotional states of depression (D), anxiety (Pt) and mania (Ma) and to social interaction patterns of masculine-feminine interests (Mf), suspiciousness of the motives of others (Pa) and social isolation (Si). Confer and Ables (1983) found that the greatest volatility between personalities pre and post integration occurred with the Mf, scale which reflected strongly different attitudes and interests of the different alters.

The reasons for conducting these case studies were to provide some objective measure of the existence of alter personalities as well as to provide some understanding of the relationship of the personalities to each other. For those purposes, these research efforts were hampered by the extent to which role playing could produce similar results and by

the difficulty determining whether different alters did in fact solely contribute to their respective MMPIs. Interest in case studies of MMPI profiles waned as the number of cases increased.

With the growing numbers of identified MPD patients, attention turned to examinations of groups of dissociative patients' MMPI profiles. A number of authors examined the ways in which MMPI profiles differ between dissociative samples and non-dissociative samples as well as how their profiles appear on the average. The intent was to provide psychologists with objective data for differential diagnoses. Solomon and Solomon (1982; Solomon, 1983) pointed out it is a misconception that multiple personality patients have a particularly elevated hysteria scale relative to the other MMPI scales. Bjornson, Reagor and Caston (1988) found that MPD patients, as compared to other diagnostic groups, scored higher on scales F, Pa, Sc and Ma. They endorsed more obvious content on scales Pa-O and Ma-O and more subtle content on Pa-S. Scale Sc2 was also elevated.

Bliss (1984; 1986) reported a relatively consistent profile for 15 female MPD patients on the MMPI. The average patient had marked elevations on the F and Sc scales. There were also elevations on scales Hs, D, Pd, Pa, and Pt. The mean profile was as follows: L-46, F-85, K-45, Hs-79, D-86, Hy-77, Pd-85, Mf-38, Pa-83, Pt-84, Sc-100, Ma-69, Si-71. These findings are consistent with the clinical observations of some of a multitude of symptoms in patients diagnosed with a dissociative disorder. Bliss suggested the reason for the high elevations of the F and Sc scales is understandable when the items that comprise those scales are examined. First, thirteen items are common to both scales. The F scale contains a predominance of statements related to psychotic symptoms (hallucinations, delusions, paranoid ideas), depression, family discord, sociopathy, dissociations, and other hypnotic phenomenon – all commonly found in these patients. In turn, the Sc scale has many items pertaining to social isolation, depression, family discord, bad thoughts and urges as well as a preponderance of items of a dissociative or hypnotic nature – again typical of these patients. Furthermore, according to Bliss, the elevated scores on many of the other scales are consistent with a multiplicity of symptoms characteristic of these patients. Bliss believed that the singularly high F and Sc scores coupled with other elevations may be alerting but not definitive.

Coons' (1984) ten multiple personality patients produced an average MMPI with an 8-4-7 profile (L-47, F-84, K-50, Hs-64, D-76, Hy-68, Pd-85, Mf-47, Pa-74, Pt-79, Sc-87, Ma-62, Si-69). He noted that numerous colleagues remarked how similar this average profile and the individual profiles which comprise it are to borderline personality MMPI profiles.

Fink and Golinkoff (1990) found more identifiable differences between MPD and Schizophrenics' MMPI profiles than between MPD and Borderline Personality Disorder (BPD) MMPI profiles. The only difference between MPD and BPD profiles was a somewhat more elevated HS Scale in the MPD sample. Fink and Golinkoff found that the MPD patients had greater overall elevations than the schizophrenics on all 13 validity and clinical scales except scale Mf.

In an attempt to objectify the identification of dissociative patients via the MMPI, Coons and colleagues (Coons & Fine, 1988; 1990; Coons & Sterne, 1986) identified signs of dissociative profiles which they suggest distinguishes them from non-dissociative profiles. The most frequent high-point pair was F and Sc for MPD patients. The mean number of scales elevated over 70 was six. Only infrequently was scale Hy elevated over 70. The following cutoffs were used to identify MPD patients: F $\geq$80; Hs $\geq$70; D $\geq$70; Pd $\geq$80; Mf="low;" Sc $\geq$80; Pa $\geq$70; Pt $\geq$70; Ego Strength $\geq$45; and Family Discord $\geq$65. At least three clinical scales need to be greater than 70. The presence of at least one critical item pertaining to sex needs to be present. Three out of five obvious-subtle scale pairs need to have obvious scales greater than subtle scales. There were 10 to 15 Grayson Critical Items endorsed. One of the most important MMPI criteria was a positive response on either critical item #156 OR #251 (items 168 and 229 on the MMPI-2). Both of these items indicate the presence of amnesia and identity alteration.

Further research is needed to determine the utility and predictability of their criteria in distinguishing dissociative patients from a host of other psychiatric populations. While the descriptive identification of MMPI profiles is useful, Coons and colleagues' approach begins to take this research to the next step. That is: How well can certain hypothesized criteria of the MMPI identify whether a patient has a Dissociative Disorder or the degree to which an individual has clinical dissociative symptoms?

Separate from the above research efforts are clinical impressions that have developed in the use of the MMPI. One of these is particularly noteworthy. A number of clinicians report using the Post-Traumatic Stress Disorder (PTSD) scales of the MMPI, the PK (Keane, Malloy, & Fairbank, 1984) and PS scales (Schlenger & Kulka, 1986), as indicators of dissociation. Since dissociative disorders are thought to be severe reactions to trauma it is believed that the related PTSD symptoms would be detected by these scales. However, research data is needed to support or refute this assumption.

Taken together the following conclusions can be made. First, the MMPI has not yet been shown to be useful in distinguishing dissociative patients from borderlines (Fink & Golinkoff, 1990). Many of the MMPI indicators of dissociative patients may only be measuring polysymptomatic psychopathology instead of dissociation per se. There are two possible exceptions. One is the critical items noted by Coons and colleagues. MMPI items 156 and 251 measure some amnestic phenomenon and identity alteration. A second promising index is either of the PTSD scales. However, both the critical items and the PTSD scales need research to test the degree to which they measure dissociation and to determine if they can assist in differential diagnosis.

Given some of the initial problems in establishing the efficacy of the MMPI in the detection of dissociation, the question of why pursue further research in attempting to uncover indices of dissociation in the MMPI is raised. The primary advantage of using the MMPI in the measurement of dissociation is similar to the matter of screening tests for medical diseases. The lower the expense and the higher the

TABLE 1
Phillips Dissociation Scale (PDS)

Item Numbers			F = False T = True	Items
MMPI-2	MMPI	MMPI-A		
23	22	21	T	At times I have fits of laughing and crying that I can not control.
24	27	22	T	Evil spirits possess me at times.
48	40	45	T	Most anytime I would rather sit and daydream than (to)[a] do anything else.
60	48	433	T	When I am with people, I am bothered by hearing very strange things.
72	50	250	T	My soul sometimes leaves my body.
159	174	152	F	I have never had a fainting spell.
165	178	158	F	My memory seems to be alright.
168	156	161	T	I have had periods in which I carried on activities without knowing later what I had been doing.
182	194	175	T	I have had attacks in which I could not control my movements or speech but in which I knew what was going on around me.
198	184	439	T	I <u>often</u> (commonly) hear voices without knowing where they come from.
229	251	214	T	I have had blank spells in which my activities were interrupted and I did not know what was going on around me.
247	273	231	T	I have numbness in one or more <u>places on</u> (regions of) my skin.
295	330	275	F	I have never been paralyzed or had any unusual weakness of any of my muscles.
296	332	276	T	Sometimes my voice leaves me or changes even though I have no cold.
308	342	288	T	I forget right away what people say to me.
311	345	291	T	I often feel as if things are not real.
319	350	299	T	I hear strange things when I am alone.
336	275	315	T	Someone has control over my mind.
355	291	332	T	At one or more times in my life I felt that someone was making me do things by hypnotizing me.
361	293	337	T	Someone has been trying to influence my mind.

[a]*Parenthetical words are used in MMPI items but are not included in MMPI-2 or MMPI-A items. Underlined phrases were added to MMPI-2 and MMPI-A items.*

convenience, the greater likelihood a particular clinical test will be used to regularly screen a condition. Since the MMPI is already used worldwide by psychologists, a measure of dissociation constructed from MMPI items would be more economical and convenient to use than a separate, specialized clinical test. There may be no reason to suspect dissociative pathology. Thus, a separate dissociative test may not even be administered and dissociative conditions could be overlooked. Whereas each time the MMPI is administered the psychologist would have a measure of dissociation. As a result, dissociative phenomenon could be systematically assessed in routine psychological evaluations.

A second benefit has to do with the issue of factitious patient responses. Currently-used dissociation scales are blatant and self-evident in their measurement of dissociative phenomena. Their intent is immediately recognizable by their content. Consequently, responses can be easily slanted to convey a desired impression (Gilbertson, Torem, Cohen, Newman, Radojicic, & Patel, 1992). The MMPI, on the other hand, measures indicators of many different syndromes and characteristics. Its items reflect this diversity. Thus, it is more difficult for a patient to discover the focus of the assessment. This may reduce the likelihood of manipulative response patterns. For patients who are prone to suggestion, who wish to fake MPD, or who wish to avoid having their dissociation detected, a test which clearly intends to measure only dissociation will unnecessarily alert the patient to the subject of scrutiny. This may result in a distorted protocol. Using a scale within the total MMPI may dilute this tendency by not so clearly giving away its aim. The MMPI also provides validity measures which can alert the psychologist to respondents with exaggerating or suppressing response patterns.

Given these potential advantages of using the MMPI to screen dissociative conditions, it was decided to continue in the effort to establish and validate some MMPI criteria of dissociation. To that aim, this study examined the utility of the PTSD scales in assessing dissociation and evaluated critical items which seem to measure dissociation. The main purpose of this study, however, was the construction and validation of a dissociation scale (Phillips Dissociation Scale — PDS) of items selected from the MMPI.

METHOD

Scale Derivation, Description and Scoring

The PDS items were selected by the author based upon the current clinical and theoretical understanding of dissociation. Any of the MMPI items which, based on its face validity, gauged some core aspect of dissociation was chosen. Items which assessed symptoms associated with a dissociative diagnosis but which did not measure dissociation per se were excluded.

Another guiding principle of item selection was choosing items which could be used interchangeably with all the MMPIs (MMPI, MMPI-2 and MMPI-A [adolescent]). Items were picked which exist in the same or substantially the same wording on the MMPI as they do on the MMPI-2 and MMPI-A. Of the final items selected, only three are worded differently on one version versus the others. These differences are minor and insubstantial (See Table 1).

The scale has 20 items to which the respondent answers true or false. Three items are keyed false. The total score is a tally of the number of items endorsed in the keyed direction (See Table 1). Thus, scores can range between 0 and 20.

All PDS item numbers differ from one MMPI version compared to the others (See Table 1). Thus, item placement varies depending on the form. The items are scattered throughout the MMPIs. The MMPI/PDS includes items numbered 22 through 293 (The MMPI has 566 items.). The MMPI-2/PDS has items numbered 23 through 361 (The MMPI-2 includes 567 items.). The MMPI-A/PDS has items from number 21 through 439 (The MMPI-A has 478 items.). Another difference pertains to the non-PDS items which surround the PDS. Since these items vary between the MMPIs, the context of the PDS within versions is dissimilar. Whether this affects scores and whether norms for the MMPI-2/PDS can be used for the MMPI/PDS (and so on) are questions that will become answerable only by the aggregate data from future studies.

The areas of dissociation assessed by the PDS are noted below. After each identified category are the MMPI-2 item numbers associated with each class of symptoms. Since some items are listed in more than one category the total number of items listed below exceeds 20. Identity alteration is questioned by six items (23, 168, 182, 229, 296, 355). Five items measure conversion symptoms (159, 182, 247, 295, 296). The *DSM-IV* (American Psychiatric Association, 1994) does not list conversion disorder as a dissociative disorder. However, it is listed in the *ICD-10* (World Health Organization, 1992) as several syndromes: dissociative disorders of movement and sensation, dissociative motor disorders, dissociative convulsions, and dissociative anaesthesia and sensory loss. There are four items assessing amnesia (165, 168, 229, 308). Passive influence phenomena are addressed by three items (361, 355, 336). Hearing voices is a core symptom of MPD which is evaluated by three items (60, 198, 319). One item assesses absorption in fantasy and trance phenomena (48). One item gauges derealization (311). Another item measures depersonalization (72). The sense that one is possessed is addressed by one item (24).

Sample Characteristics

There are two samples in this study. Both were selected from private practice patients primarily those of the author's. Patients were classified as dissociative or non-dissociative on the basis of *DSM-III-R* criteria for dissociative disorders. While no specific measure of socioeconomic status was taken, it is estimated that most of the patients in both samples were in the middle to upper-middle social classes.

The Dissociative Disordered (DD) sample consisted of 20 patients who were diagnosed as either MPD or Dissociative Disorder Not-Otherwise-Specified (DDNOS). The average age was 37. One was male. All were Caucasian. At the time the test was administered 60% were outpatients. Thirty-five percent were employed. Half were married.

The general psychiatry (GP) sample consisted of 20

TABLE 2
Comparisons of PDS Scores Between the DD and GP Samples

Sample	X	sd	Range	t-Score
DD Sample	11.1	4.6	4-19	7.99 ($p<0.001$, $df = 38$)
GP Sample	2.2	2.0	0-6	

patients who had diagnoses other than dissociation. The average age was 35. Seventy percent were female. All were Caucasian. Forty percent were outpatients. The percent employed was 79%. Sixty-four percent were married. The *DSM-III-R* axis I diagnoses of these patients are followed by numbers in brackets indicating the frequency of each diagnosis: Mood Disorders (Major depression [4], Dysthymia [2], Bipolar Disorder [1] and Cyclothymia [1]), Psychoactive Substance Use Disorders (Alcohol Abuse/Dependence [6], Cannabis Abuse/Dependence [2] and Cocaine Abuse [1]), Anxiety Disorders (General Anxiety Disorder [2] and Post-Traumatic Stress Disorder [2]), Sexual Disorders (Pedophilia [2] and Transvestic Fetishism [1]), Eating Disorders (Anorexia [1], Bulimia [3] and Eating Disorder NOS [3]), Adjustment Disorders [2], Schizoaffective Disorder [1], Intermittent Explosive Disorder [1] and Somatization Disorder [1].

Procedure

The MMPI-2 was administered to patients either separately or as part of a battery of psychological tests. Most were administered as part of routine clinical assessments. Some were administered during the course of treatment with the instruction they would be informed of the rationale for the administration of the test after they had completed it.

RESULTS

The average MMPI-2 profile of the DD group was as follows: L-46, -98, K-40, Hs-75, D-78, Hy-74, Pd-79, Mf-51, Pa-81, Pt-84, Sc-96, Ma-62, Si-70. The average MMPI-2 profile of the GP group was: L-48, F-60, K-50, Hs-57, D-64, Hy-63, Pd-65, Mf-51, Pa-64, Pt-63, Sc-62, Ma-54, Si-52.

Several measures of internal consistency of the scale were evaluated. The split-half reliability coefficient was 0.95. The average inter-item correlation was 0.38. The range of correlation coefficients between the total PDS score and individual items was from 0.41 to 0.80.

Various factor analytic strategies revealed four factors. They include amnesia/identity alteration, conversion symptoms, hearing voices and trance/depersonalization. The items which loaded highest on the amnesia/identity alteration factor were 168, 165 and 229. The highest loading items on the conversion factor were 159 and 295. Items 198 and 319 loaded highest on a factor of hearing voices. Several items defined the factor trance/depersonalization. They include 24, 48, 311, 336 and 361.

Statistical analyses (See Table 2) revealed the DD sample (avg=11.1; sd=4.6) had a significantly higher mean ($t= 7.99$, $p<0.001$, $df=38$) than the GP sample (avg=2.2; sd=2.0). The range of scores for the DD sample was from 4 to 19. On the other hand, the range of scores for the GP sample was from 0 to 6.

To determine what scores are pathological, an examination of various cutoff scores was undertaken to decide the most efficient cutoff. A cutoff score of 4 yielded 0% false negatives but 25% false positives. Thus, none of the DD sample was incorrectly identified but a fourth of the GP sample was identified as dissociative. The total percent of subjects identified into their correct sample was 85%. Using a cutoff score of 5 yielded a 5% false-negative rate and a 15% false-positive rate. The percent correctly identified was 90%. A cutoff of 6 produced 15% false negatives and 10% false positives. The percent correctly identified was 88%. Using a cutoff of seven yielded a false-negative rate of 25% and a false-positive rate of 0%. The percent correctly identified was 88%.

To provide norms for PDS scores, standardized T-scores (with a mean of 50 and a standard deviation of 10) were calculated from the GP sample. The following list provides scores from 0 to 20 along with the respective standardized T-scores: 0-39, 1-44, 2-49, 3-54, 4-59, 5-64, 6-69, 7-74, 8-79, 9-84, 10-89, 11-94, 12-99, 13-104, 14-109, 15-114, 16-119, 17-124, 18-129, 19-134, 20-139.

To determine convergent validity, correlations were calculated with various MMPI-2 scales and subscales. Except for the PDS, all analyses of MMPI-2 scales were based on their T-scores. The following scales were most highly correlated with the PDS: Sc6, Sc5, BIZ, Sc, F, PS and PK. In terms of divergent validity, the scales most unrelated with the PDS were: R, Mal, TRIN, Pa-S, VRIN, L, Mf and MACR.

In assessing the discriminate validity of the PDS, correlations were determined between the sample the patient was assigned (0 = General Psychiatry Sample, 1 = Dissociative Sample) and various MMPI-2 scales including the PDS. Out of 86 comparisons, the PDS correlated higher with the sample assignment ($r = 0.79$) than any other scales except scales Sc3, Sc5 and Sc6. While only two of Sc3's ten items (20%) are also PDS items, four of Sc5's 11 items (36%) are and ten of Sc6's 20 items (50%) are shared with the PDS. All of these scales achieved correlations as high as the PDS. The PTSD scales also had high correlations (PK $r = 0.76$; PS $r = 0.77$). Sc had a correlation of 0.74. Twelve of Sc's 78 items (15%) are shared with the PDS. Scale F achieved a correlation of 0.70.

Items which correlated highest with the sample assignment were: 229 (T), 311 (T), 308 (T), and 168 (T). Their respective coefficients were: 0.74, 0.70, 0.67 and 0.64.

TABLE 3
Dissociative Disorder Sample's MMPI-2 Validity Scales and Profile Characteristics

Validity Scales and Profile Indices	Average (Raw Scores)	SD	Range	Correlation With PDS
L (Lie) scale	29	1.9	0-8	-0.16
F (Infrequency) scale	18.0	8.4	3-31	0.67b
K (Defensiveness) scale	11.0	3.5	4-20	-0.20
F - K Dissimulation Index	7.0	9.9	-17-24	0.63b
? (Cannot Say Score)	2.7	5.9	0-22	0.03
Percent True	51.1	7.9	35-63	0.62b
Percent False	48.5	8.0	37-65	-0.61b
Profile Elevation	77.0[a]	11.5	53-95	0.72b
FB scale	16.5	8.7	2-28	0.56b
True Response Inconsistency (TRIN)	9.1	2.0	6-15	0.14
Variable Response Inconsistency (VRIN)	5.9	2.2	2-10	-0.34

[a] *These figures are based on the average of the T scores on eight of the clinical scales (Hs, D, Hy, Pd, Pa, Pt, Sc and Ma).*

[b] $p < 0.01$

TABLE 4
Interpretive Cutoff Scores for MMPI-2 Validity Indices

Scale or Index	-2 sd[a]	-1 sd	1 sd	2 sd
L (Lie) scale	0	1	5	7
K (Defensiveness) scale	4	8	15	18
? (Cannot say score)	-	-	9	15
True Response Inconsistency	5	7	11	13
Variable Response Inconsistency	2	4	8	10

[a] *Cutoff scores at one and two standard deviations, above and below the means (See Table 3), are reported in this table for each measure not significantly correlated with the PDS.*

Demographic influences upon PDS scores were also examined. Age was correlated with the PDS positively and weakly (r = 0.17). Outpatient status was unrelated to the PDS (r = -0.02). Sex (r = 0.32), employment (r = -0.43) and marital status (r = -0.26) had moderate-to-low associations with the PDS.

Table 3 shows the statistics for the DD sample's MMPI-2 validity scales. The F and FB scales were significantly correlated with the PDS (r = 0.69; r = 0.46 respectively). Nine of F's 64 items (13%) and 11 of FB's 33 items (33%) are included in the PDS. The mean T-scores (F = 98.5; FB = 102.4) on these two scales were quite high for the DD group. The F-K index, percent true, percent false and profile elevation were all also correlated with the PDS. However, other validity scales had small, non-significant correlations with the PDS. Their means (L = 46.1; K = 39.9; TRIN = 59.6; VRIN = 53.0) while close to 50 which is the mean for the standardization sample of each scale were still somewhat different than the standard ones. Thus, special norms were calculated from the DD sample for these four validity scales to assist in the detection of distorted response sets with dissociative protocols.

From the above data, T-score cutoffs were generated (See Table 4), by calculating raw scores between two standard deviations above and below the means for each scale, to aid in the interpretation of the MMPI-2 validity scales with dissociative patients. A high score is indicated when the raw score on the validity measure is at or above two standard deviations above the mean. Conversely, a low score is indicated when the raw score is at or below two standard deviations below the mean. The following interpretations of these scales were extracted from Butcher (1989) and Greene (1980). High L scores suggest respondents are attempting to create unrealistic, favorable views of their adjustment; low scores reflect attempts to invent an extremely pathological picture of themselves. High K scores suggest an uncooperative attitude and an unwillingness or reluctance to disclose personal information; low scores suggest an overstatement of the clinical picture. High TRIN scores suggest an inclination to give true answers indiscriminately or acquiescence; low scores indicate a tendency to give false answers indiscriminately. High VRIN scores indicate an undistinguished approach; the lower the scores the more consistent the answers were throughout the questionnaire.

DISCUSSION

The sample of dissociative patients in this study is similar to dissociative samples in other studies in that the mean MMPI-2 DD profile was quite similar to those reported elsewhere in the literature (Bliss, 1986; Coons, 1984). The mean MMPI-2 GP profile was quite dissimilar to other samples of MPD patients. Thus, the DD group in this study has external verification that it is a valid criterion group of dissociative patients.

While the data suggest that females tend to score higher on the PDS than males, this is misleading. More males were included in the GP sample. Thus, males had more weight in the non-dissociative sample and females had more weight in the dissociative sample. Obviously, there were not enough males to make within group comparisons. The finding that employment and marital status are negatively related to the PDS may reflect the toll these disorders take on dissociative patients' overall functioning. The non-significant correlation between age and the PDS suggests age may be unrelated to dissociative symptoms.

The PDS was found to have good internal consistency in that all the items contributed positively to the overall score. Four factors were identified: amnesia/identity alteration, hearing voices, conversion symptoms and trance/depersonalization. These factors reflect key dissociative symptoms.

The present study shows that the PDS is able to reliably distinguish dissociative from non-dissociative psychiatric patients. This represents the first MMPI index to have predicted and found a specific, significant difference. While further study is needed, the potency of the discrimination appears to be clinically useful.

In addition to distinguishing between the dissociative and non-dissociative groups, the PDS also was found to have good convergent validity. It correlated highly with F, Sc, its subscales and related scales. This is consistent with past research which usually finds high elevations on scales F and Sc. The bizarre sensory experiences of dissociation are included in the schizophrenia scales and scale F. Furthermore, there is significant overlap between the PDS and these scales. The PDS also correlates highly with the PTSD scales. These scales were expected to be correlated with the PDS since MPD is thought to have a significant PTSD component. Divergent validity was also demonstrated. That is, the PDS did not correlate highly with scales unrelated to dissociation.

The PDS scale was able to differentially diagnose as well or better than any of the other multitude of MMPI scales tested. However, subscales of Sc (Sc3, Sc5 and Sc6) were also good at distinguishing dissociative from non-dissociative patients. While these subscales have never been highlighted in the literature as particularly useful in diagnosing dissociative patients, the finding is not surprising. There is significant item overlap between these scales and the PDS. Scale Sc3 measures cognitive confusion. Sc5 measures defective inhibition and the items it has in common with the PDS include items measuring amnesia and identity alteration (e.g., MMPI-2 item 168, "I have had periods in which I carried on activities without knowing later what I had been doing."). Scale Sc6 measures bizarre sensory experiences and the items in common with the PDS include all four of the common items in Sc5 as well as items about derealization, amnesia and conversion symptoms.

The PTSD scales (PK and PS) were found to be useful in diagnosing dissociative patients. This confirms previous clinical impressions. These scales were not as potent as the PDS but in the absence of the PDS, elevated PS or PK scales should raise the psychologist's index of suspicion of the presence of a dissociative disorder. However, these scales may not be assessing dissociation as such but rather the accompanying post-traumatic stress symptoms that are associated with many dissociative patients. Furthermore, these scales would be unable to determine whether PTSD patients have clinical dissocia-

tive symptoms.

With respect to dissociative critical items, four were found to be highly associated with a dissociative diagnosis. Patients who answer true to MMPI-2 items 168, 229, 308 or 311 are at risk for a dissociative disorder. This confirms Coons and colleagues' (Coons & Fine, 1988, 1990; Coons & Sterne, 1986) finding that items 168 and 229 are important indicators of MPD. These four items are all included in the PDS. None of these items individually are as predictive as the entire PDS.

In determining whether individuals taking the MMPI are dissociative on the basis of their scores on the PDS, various cutoff scores were studied to discover which criteria would best discriminate between non-dissociative and dissociative samples. Based on the data in this study, a cutoff score of four eliminates false negatives while a cutoff of seven eliminates false positives. Thus, if the clinician or investigator wishes to avoid missing any cases of dissociation, using a cutoff score of four would be more appropriate than a higher cutoff. On the other hand, if the need is to avoid mislabeling any cases as dissociative a cutoff of seven would be most appropriate. To balance these two concerns a cutoff of five or six is indicated.

Another means of determining when a certain PDS score is pathological is with the use of standardized scores. In psychometric applications, scores of psychological questionnaires are frequently converted to standardized scores, such as T-scores, for comparability. Typically, scores which fall approximately two standard deviations above or below the mean are considered significantly different than the average person's scores. Usually, these norms are derived from a sample of normal individuals to compare each score with that of the population as a whole. At the present time, PDS scores from normal individuals are unavailable. Consequently, to provide a temporary comparison group, standardized scores were generated using data from the non-dissociative general psychiatry group. Scores from this group should be comparable to that of the population as a whole since dissociative disorders were systematically screened out of this group. Thus, the incidence of pathological dissociation in this sample (which in its extreme forms are rare in the general population) ought to be quite low. The mean (2.2) and standard deviation (2.0) of the GP sample should be roughly equivalent to the general population. Obviously, this assumption will need to be tested, but until more suitable standardized norms are available, it seems a reasonable supposition. It should be noted that other psychiatric samples will include some dissociative disorders. Thus, scores from such samples will be higher than a general psychiatry group in which dissociative disorders were screened out.

Using the two-standard-deviation criteria for determining when PDS scores are pathognomonic produced the following results. A score of six had a T-score of 69 (just below a score of two standard deviations or 70) and a score of seven had a T-score of 74. A cutoff of six or seven, based on standardized T-scores, is consistent with the cutoffs previously recommended based on the above examination of false-positive/false-negative PDS classifications of dissociative disorders.

Since several MMPI-2 validity indices (F, F-K, FB, percent true, percent false and profile elevation) were significantly correlated with the PDS, they should not be used as measures of simulation or dissimulation without caution. On the other hand, four scales (L, K, TRIN and VRIN) were not correlated with the PDS and may assist the clinician in assessing patients' response sets.

Without data to prove that offering the PDS items alone is a valid procedure, the PDS should not be given outside the entire MMPI. Since the data collected are based on a full MMPI administration, there is no evidence that the PDS will produce the same results if given apart from the entire questionnaire. It is a matter for future research to see if its usefulness is maintained when administered separate from the rest of the MMPI. Giving the PDS on its own would put the user at a disadvantage since response sets could not be evaluated via the validity scales.

It should also be noted that at this point the PDS should only be used for research purposes. No clinical diagnosis should be made on the basis of the PDS score alone. More studies will need to be conducted before applying the scale to clinical decision making.

With any new measure, its reliability and validity cannot be completely established through one research paper. Rather, a series of investigations is needed to establish the scope and limits of an index across a host of patients and circumstances. Through this aggregation of data, researchers can gradually refine their understanding of a scale and clinicians can progressively gain or lose confidence in it. To these ends, additional studies are needed. Test-retest reliability data and standardization on a sample of normals are required. Further, since the PDS correlates highly with the schizophrenia scales and the PTSD scales, and since dissociative MMPI profiles resemble borderline MMPI profiles, studies which examine whether the PDS can discriminate between schizophrenics, borderlines and PTSD patients with and without dissociative disorders will be the most difficult test of the scale's ability to differentially diagnose dissociative disorders from other psychiatric conditions. The PDS also needs to be tested against a variety of other psychiatric and demographic samples to firmly establish its utility in general clinical practice. Additionally, comparisons need to be made with other dissociative indices such as the Dissociative Experiences Scale (DES) (Bernstein & Putnam, 1986) and the Structured Clinical Interview for *DSM-IV* Dissociative Disorders (Steinberg, 1993). Finally, investigations which compare the PDS across the various MMPIs are needed to test its inter-form reliability.

With the need for converging, validating evidence for the PDS in mind, one follow-up study has already been completed. Phillips and Gleaves (1994) had hospitalized patients with Eating Disorders complete the Dissociative Experiences Scale (DES) (Bernstein & Putnam, 1986), the dissociation subscale of the Trauma Symptom Checklist-40 (TSC-40) (Elliot & Briere, 1992) and the MMPI-2 as part of an admission battery. Comparison of the PDS and the DES found a correlation of 0.66. Since the DES has been widely shown to be an index of dissociation, this positive correlation is further evi-

dence that the PDS measures what it intends to measure, dissociation. Similarly, the TSC-40 dissociation subscale was also correlated with the PDS (r = 0.68). Together, these results lend more credence to the construct validity of the PDS. ■

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