

FACTOR ANALYTIC  
INVESTIGATION OF  
THE WAIS-R AMONG  
PATIENTS WITH  
DISSOCIATIVE  
PSYCHOPATHOLOGY

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**ABSTRACT**

*The factor structure of the Wechsler Adult Intelligence Scale-Revised (WAIS-R) was examined among 133 participants diagnosed with a dissociative disorder. The results of two and three factor orthogonal solutions with varimax rotation were obtained. The two and three factor solutions were consistent with traditional factor analytic studies with Verbal Comprehension and Perceptual Organization in the two factor solution, and Verbal Comprehension, Perceptual Organization, and Freedom from Distractibility in the three-factor solution. This is the only factor analytic investigation using the WAIS-R to study a dissociative population.*

Factor analytic investigations of the Wechsler series of intelligence tests have always been popular avenues of clinical psychometric research (Kaufman, 1990). There have been many factor analytic investigations of the WAIS-R (Wechsler, 1981); however, the history of such factor analyses followed a familiar pattern. Initially many factor analyses were conducted on the standardization sample data employing both common and obscure statistical models for extracting interpretable factors (e.g., Leckliter, Matàrazzo, & Silverstein, 1986; Naglieri & Kaufman, 1983). While there are critics of the standard tripartite model (e.g., Blaha & Wallbrown, 1982; O'Grady, 1983), Kaufman's (1990) textbook seems to have conferred validation of the three factor model in routine clinical practice.

The second predictable step in factor analytic research was the extrapolation of factor analytic studies to the psychiatric populations intentionally excluded from the standardization sample (e.g., Atkinson & Cyr, 1984; Beck, Horwitz, Seidenberg, Parker, & Frank, 1985; Piedmont, Skolove, & Fleming, 1992). Finally neurological and neuropsychiatric samples (e.g., Bornstein, Drake, & Pakalnis, 1988; Burgess, Flint, & Adshad, 1992; Ryan & Schneider, 1986) were evaluated for the generalizability of the standard factors because the WAIS-R is the most frequently used test in neuropsychological assessment (Butler, Retzlaff, & Vanderploeg, 1991). Thus far there has not been a factor analytic study conducted on data from dissociative patients, a unique and clinically complex group.

Research generally supports the standard tripartite division of the 11 WAIS-R subtests into three factors for all adolescent and adult populations for whom the WAIS-R is validated. Verbal Comprehension and Perceptual Organization are essentially more homogeneous analogues of verbal IQ (VIQ) and performance IQ (PIQ). The construct validity of Freedom from Distractibility remains undetermined, though it is generally believed to be a non-intellective neuropsychological measure of sustained concentration. WAIS-R factor analyses with specific clinical groups remain important. The anticipated WAIS-III will include simple computation of the alternate multifactorial composite scores in addition to the traditional summary scores, with a "third factor" tentatively labeled Attention/ Working Memory (Tulsky, Zhu, & Prifitera, 1996).

Little is known about the intellectual functioning of persons with dissociative identity disorder or dissociative disorder NOS. There are few well designed studies in this population using the WAIS-R and those have limited sample size (Armstrong & Lowenstein, 1990; Coones & Sterne, 1986). Our large-scale study (Rossini, Schwartz, & Braun, 1996) reported that dissociative patients manifest average intellectual repertoires on both the WAIS-R standard deviation quotients and on the age-normed factor scores with no indication of syndrome-specific intellectual impairment. This study will be the first to examine the factor structure of the WAIS-R on dissociative inpatients following the technical guidelines of Floyd and Widaman (1995).

## METHODS

The participants were 133 patients (123 females, 10 males); 131 were Caucasian, one Hispanic, and one of mixed race. The participants were primarily patients admitted to the Dissociative Disorders Program (DDP) at a suburban tertiary care community hospital. A minority of the participants were admitted to other inpatient psychiatric units at the same facility or were outpatients treated by physicians from the DDP. The principal Axis-I diagnosis for the entire sample was one of the dissociative disorders, though concurrent characterological and affective disorder symptoms are common in this inpatient group. Participants ranged in age from 20 to 60 and had a mean age of 36.0 (SD=7.4) years. They had a mean education of 14.9 (SD=2.6) years, and 44.3% had at least a college degree or some graduate education.

All participants were administered the complete Wechsler Adult Intelligence Scale-Revised according to standardized instructions. All patients were evaluated by at least one psychiatrist (B.G.B.) and usually at least one other psychiatrist or psychologist experienced in the diagnosis and treatment of dissociative disorders. Patients receiving a dissociative diagnosis met *DSM-III-R* criteria (American Psychiatric Association, 1987). These diagnostic decisions were based on clinical interview and results of psychological testing, both objective and projective. There were 61 subjects meeting Multiple Personality Disorder (MPD) criteria. Upon review all 61 met the more contemporary *DSM-IV* (American Psychiatric Association, 1994) criteria of Dissociative Identity Disorder (DID). The remaining 72 were Dissociative Disorder Not Otherwise Specified (DDNOS).

## RESULTS AND DISCUSSION

The mean full scale intelligence for the sample (N=133) was (M=98.17, SD=14.29) with VIQ being (M=101.83, SD=14.31) and PIQ being (M=94.17, SD=14.40).

To investigate the factor structure of the WAIS-R for dissociative inpatients, the correlation matrix of the participants' scaled scores on all WAIS-R subtests was factor-analyzed using a principle components factoring method followed by a varimax rotation of the factor solution using the SPSS/PC+ program (Norusis, 1992). To determine the number of WAIS-R factors underlying the subtest structure in a dissociative sample, several standard factor analytic criteria were used: an examination of the eigenvalues for all factors, the scree plot, the percentage of variance accounted for and the explainability/interpretability of the factors. Following the varimax rotation, factor loadings of greater than .50 were needed for the assignment of subtests to factors. The Kaiser-Meyer-Olkin measure of sampling adequacy was .89. Table 1 presents the eigenvalues and accounted variance for all analyses.

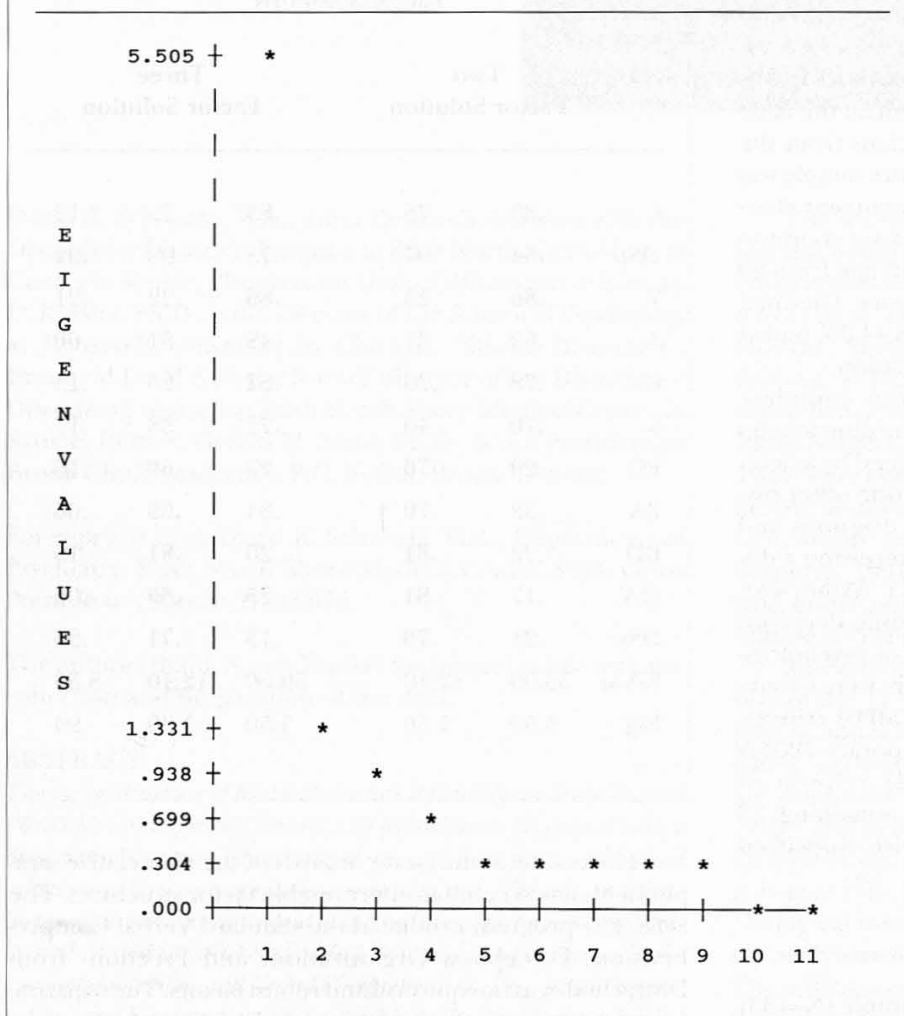
TABLE 1  
(N=132) Factor Loadings for Two and Three  
Factor Solutions

	Two Factor Solution		Three Factor Solution		
I	<b>.80</b>	.28	<b>.85</b>	.25	.12
DSp	<b>.54</b>	.07	.15	.09	<b>.91</b>
V	<b>.86</b>	.25	<b>.86</b>	.22	.21
A	<b>.69</b>	.31	.48	.31	<b>.60</b>
C	<b>.78</b>	.26	<b>.82</b>	.23	.13
S	<b>.70</b>	.40	<b>.71</b>	.38	.17
PC	.29	<b>.70</b>	.27	<b>.69</b>	.16
PA	.32	<b>.70</b>	.34	<b>.69</b>	.06
BD	.22	<b>.81</b>	.20	<b>.81</b>	.15
OA	.17	<b>.81</b>	.25	<b>.80</b>	-.06
DSy	.21	<b>.70</b>	.13	<b>.71</b>	.26
%Var	50.00	12.10	50.00	12.10	8.50
Eig	5.50	1.30	5.50	1.30	.94

The results of the factor analysis of the dissociative sample yielded two familiar interpretable factor structures. The SPSS/PC+ program produced the standard Verbal Comprehension, Perceptual Organization, and Freedom from Distractibility as unequivocal and robust factors. The tripartite factor structure is the recommended one among dissociative inpatients. It provides robust, homogeneous factors well known in clinical practice. The first factor (Verbal Comprehension) was composed in descending order of magnitude of: Vocabulary (.86), Information (.85), Comprehension (.82), Similarities (.71). The second factor of Block Design (.81), Object Assembly (.80), and Digit Symbol (.71). The third factor was the usual non-intellective factor, Freedom from Distractibility, composed of Digit Span (.91) and Arithmetic (.60). The robust first factor had an eigenvalue of 5.5 and accounted for 50.0% of the variance in the scores. The second factor with an eigenvalue of 1.3 accounted for 12.1% of the score variance and the final factor had an eigenvalue of .94 accounting for 8.5% of the score variation. Kaufman (1990) concluded that there is no logical or empirical support for interpreting more than three WAIS-R factors.

When the method of determining the number of factors was limited solely to the traditional rule of an eigenval-

FIGURE 1  
Scree Plot of WAIS-R Factor Solution



ue of greater than 1.0, the SPSS/PC+ default condition, the WAIS-R subtests of dissociative patients compose a two factor structure identical in subtest composition to the standard structure of the WAIS-R Verbal and Performance scales. The first factor, VIQ has an eigenvalue of 5.5 with 50.0% of the variance. The second factor, PIQ, has an eigenvalue of 1.3 with 12.1% of the variance accounted for in the model (see Table 1).

This is the only known factor analytic investigation using the WAIS-R on psychiatric patients manifesting dissociative psychopathology. These results are consistent with the large body of WAIS-R factor analytic analyses among psychiatric and neuropsychiatric patients (Atkinson & Cyr, 1984; Bornstein et al., 1988; Beck et al., 1985). The familiar tripartite factor structure is inferred valid in terms of statistical fit and interpretive utility.

Our data indicate that the psychometric controversy

about the number and exact subtest composition of WAIS-R factors among psychiatric patients is also an issue among patients with primarily dissociative psychopathology. The identification of a consistent Freedom from Distractibility factor among dissociative patients adds support to our previous finding that distractibility deficits occur in a significant minority of dissociative identity disordered patients warranting additional neuropsychological assessment (Rossini, et al., 1996). This study fills a notable gap in the WAIS-R factor analytic literature as dissociative patients are increasingly seen for evaluation and treatment. ■

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