

LONGITUDINAL STABILITY OF THE PRIMARY AND SECONDARY DIMENSIONS OF THE 16PF-E¹

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ABSTRACT

Thirty-two clients completed three standard personality inventories at the time of acceptance for rehabilitation services and again six years later. Stability coefficients for the 16 primary scales and eight secondary factors of the 16PF-E were calculated. The coefficients for six primaries and four secondaries exceeded .50 and were significant at the .001 level (A, E, F, H, I, L, Exvia, Cortertia, Independence, and Prodigious Subjectivity) with four being exceptionally high: I. Sensitive (.80), Exvia (.67), Cortertia (.75), and Prodigious Subjectivity (.70). These results, in conjunction with other data and previous research, provide additional support for Cattell's conceptualization of the normal personality sphere.

INTRODUCTION

Rehabilitation programs are designed to enhance clients' long-term psychosocial and vocational adjustment. Yet an impressive body of literature indicates that some characteristics are less amenable to modification than are others (Bloom, 1964). To provide additional data relevant to this issue, the longitudinal stability of a broad range of personality traits was assessed in conjunction with an investigation of the long-term effects of vocational rehabilitation services on clients' adjustment (Bolton, 1978b).

The focus of this report is the Sixteen Personality Factor Questionnaire (16PF), a self-report inventory that purports to measure the major dimensions of normal personality functioning. Four points are especially noteworthy: (a) The psychometric foundation of the 16PF encompasses more than a quarter of a century of research (Cattell, 1946; 1973). (b) A broad array of evidence supports the factorial validity of Cattell's 16PF conceptualization of the normal personality sphere (Bolton, 1978a). (c) A recent review and synthesis of 19 studies of disabled persons using the 16PF documented the value of this approach in understanding response to disablement (Roessler & Bolton, 1978, pp. 29-40). (d) Finally, research on Form E of the 16PF, which was designed for use with persons with limited educational and cultural backgrounds, has verified its primary and secondary factor structure (Bolton, 1977; Burdsal & Bolton, 1979).

METHOD

Thirty-two disabled clients who completed a battery of psychological inventories at the time of acceptance for rehabilitation services between November, 1969 and April, 1972, responded to the same inventories again in

November, 1977. The median interval between the initial and follow-up assessments was six years and four months. At acceptance for services 31% of the sample had been diagnosed as having major disabling conditions of an emotional or mental nature, with the remainder possessing various types of physical handicaps. At follow-up the sample was: 41% male, median age of 27 years, 47% married, 62% employed, and 28% receiving some form of public assistance.

Three self-report personality questionnaires, the 16PF-E (Institute for Personality and Ability Testing, 1967), the Tennessee Self Concept Scale (TSCS; Fitts, 1965), and the Mini-Mult (Kincannon, 1968) were administered. These inventories represent the three major approaches to instrument construction and purport to quantify three different aspects of personality functioning, the normal personality sphere, the phenomenal self, and emotional maladjustment, respectively. The 16PF measures 16 primary dimensions and eight secondary (or second-order) dimensions of the normal personality sphere. Fifteen scales were selected from the other instruments as follows: five aspects of self-concept and two empirically derived psychopathology subscales of the TSCS and eight traditional MMPI clinical scales from the Mini-Mult. In addition, global self-ratings of physical health, emotional adjustment, and family relationships, and an index of social participation were obtained on the follow-up questionnaire.

RESULTS AND DISCUSSION

Descriptive statistics, including estimated reliabilities and pre/post stability coefficients for the 16 primary and eight secondary scales of 16PF-E are presented in Table 1. The parallel form reliabilities for the 16 primaries were obtained by correlating Form E sten scores with composite sten scores from Forms C and D for a sample of 306 males (IPAT, 1976, p. 7). Scores on the eight secondary factors were calculated using the formulas provided by Cattell, Eber and Tatsuoka (1970, p. 129) and the parallel form reliabilities of the secondaries were estimated using a formula derived by Nunnally (1967, p. 231).

Six of the primary scales (A, E, F, H, I and L) and four of the secondary scales (Exvia, Cortertia, Independence and Prodigal Subjectivity) evidenced substantial stability over the 6-year interval, as indicated by correlations greater than .50 and statistical significance at the .001 level (2-tailed). Not surprisingly, the six stable primaries are the major contributors to the four stable secondaries.

In contrast, just two stability coefficients for the 15 scales selected from the TSCS and Mini-Mult exceeded .40: Psychosis (TSCS), $r = .58$, and Hysteria (Mini-Mult), $r = .52$. Furthermore, only two of the 16PF-E primaries and one secondary scale evidenced mean change over the 6-year interval: G, Q₂, and Super-Ego Strength were significant at the .05 level. Because high stability is synonymous with lack of differential client change, or low variance in change scores, it is not surprising that clients' changes on the stable 16PF-E variables were uncorrelated with the global self-ratings or social activity at follow-up. However, several of the less stable self concept scales (TSCS) and psychopathology scales (Mini-Mult) were significantly related to the ratings and to the social participation index. Furthermore, the high longitudinal stability

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Table 1

Descriptive Statistics for the
Primary and Secondary 16PF-E Factors^a

	Primaries	Pretest		Posttest		Rel.	Stab. ^b
		M	S	M	S		
A	Outgoing	6.4	1.8	6.6	2.0	.64	.54***
B	Intelligent	7.8	2.0	8.2	1.8	.61	.35*
C	Stable	6.8	2.5	5.9	1.8	.63	.19
E	Assertive	5.6	2.2	6.0	1.8	.62	.61***
F	Enthusiastic	6.1	2.0	6.2	2.0	.57	.60***
G	Conscientious	6.9	2.0	5.9	1.8	.60	.32
H	Uninhibited	6.3	2.3	6.7	2.4	.80	.57***
I	Sensitive	6.3	2.4	6.1	2.5	.57	.80***
L	Suspicious	6.0	2.3	6.3	1.9	.52	.53***
M	Imaginative	5.8	1.8	5.8	1.9	.50	.48**
N	Shrewd	5.9	1.6	6.3	1.7	.31	.14
O	Apprehensive	5.2	2.2	5.4	2.1	.60	.44**
Q1	Liberal	6.5	2.0	6.3	2.3	.64	.42*
Q2	Self-sufficient	5.7	2.0	6.5	2.0	.61	.45**
Q3	Controlled	6.5	2.0	6.2	2.0	.52	.47**
Q4	Tense	5.5	2.1	5.6	1.5	.66	.23
Secondaries							
1	Exvia	6.3	2.0	6.2	2.0	.81	.67***
2	Anxiety	5.0	2.1	5.2	1.7	.86	.40*
3	Cortertia	5.1	2.3	5.5	2.3	.77	.75***
4	Independence	6.1	1.9	6.6	1.5	.71	.58***
5	Discreetness	5.9	1.7	6.3	1.7	.30	.06
6	Subjectivity	6.3	1.6	6.2	1.9	-- ^c	.70***
7	Intelligence	7.8	2.0	8.2	1.8	.61	.35*
8	Super-Ego	6.7	1.8	5.9	1.8	.69	.49**

^aAll scores are stens (M = 5.5, S = 2.0) based on a normative sample of 1242 rehabilitation clients (IPAT, 1971, p. 13). The descriptive labels identify the high end of the bipolar scales.

^bThe probability levels (2-tailed) for the stability coefficients are: * $p < .05$, ** $p < .01$, *** $p < .001$.

^cThe reliabilities for the secondary scales were estimated using a formula for weighted composites (Nunnally, 1967, p. 231). For all secondaries except Prodigious Subjectivity the independent estimates for pretest and posttest data were virtually identical and, therefore, were simply averaged. For Subjectivity, the unusually low estimates of .13 and .43 were due to the presence of negative covariance elements in the composite.

of Exvia and Cortertia is consistent with the accumulated knowledge about their nature and development: both possess sizable genetic components and Cortertia aligns with objective, physiological response measures (Cattell, 1973, pp. 182-188). While the much lower stability of anxiety is also consistent with previous research (e.g., Cattell & Scheier, 1961), the exceptionally high stability

coefficient for Prodigal Subjectivity is surprising, especially given the problematic reliability estimates in this investigation (see the footnote to Table 1).

Their relatively high stability and absence of mean change over the 6-year period, which included rehabilitation services and counseling, suggests that several of the primary and secondary dimensions of the 16PF-E normal personality sphere are generally not amenable to substantial modification, at least for non-intensive forms of intervention. Or stated somewhat differently, several of the major dimensions of disabled clients' personalities are fairly permanent and resistant to large changes. An exception to this generalization is Anxiety and its primary components (C, O and Q₄), a personality constellation that is known to fluctuate over time. While traditional rehabilitation services may lack the psychotherapeutic focus to effect change on certain basic personality characteristics, the more stable dimensions of the 16PF-E clearly have potential value as predictors of clients' responses to treatment. More generally, the longitudinal stability of the 16PF-E provides additional support for Cattell's conceptualization of normal personality functioning.

FOOTNOTE

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