



COMPARING THE NEO-FFI AND SAUCIER'S MINI-MARKERS AS MEASURES OF THE BIG FIVE

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Summary—The NEO-FFI (Costa & McCrae, 1992) and Saucier's adjective Mini-Markers (1994) were compared as measures of the Five Factor Model. Confirmatory factor analyses and principal components analyses followed by correlations found discrepancies between the two measures and corroborated previous assertions that the lack of a simple factor structure makes it difficult to use confirmatory techniques to examine personality models. Copyright © 1996 Elsevier Science Ltd.

INTRODUCTION

Although tentative consensus is emerging regarding the fundamental structure of personality, converging on five global traits (the 'Big Five' or Five Factor Model; McCrae, 1992; Goldberg, 1993), issues regarding the structure of personality are inextricable from issues of personality measurement and ambiguities remain regarding the 'best' interpretation and measurement of the five factors. Notable among these are differences between questionnaire versions, for example, Costa and McCrae's NEO inventories (Costa & McCrae, 1992) and five factor solutions identified through factor analyses of trait lexicons, such as the Markers developed by Goldberg (1992; Hofstee, De Raad & Goldberg, 1992). Goldberg (1993) noted substantial agreement but also important differences between the questionnaire and lexical approaches.

Costa and McCrae (1992) developed a hierarchical model and 240-item questionnaire, the NEO-PI-R, addressing the five factors and 30 subordinate facets. They also developed a shorter, 60-item version of the questionnaire, the NEO-FFI, which measures only the five domains. Those proprietary questionnaires have become very popular among researchers (Costa & McCrae, 1992).

Goldberg (1992) developed a 100-adjective inventory (five 20-item markers) of the Big Five, emphasizing the distinction between "*factor markers*, which are intended solely as a means of locating other measures within a comprehensive structural representation, and *personality scales*, which are intended as measures of individual differences to be used for decision making in applied contexts" (1992, p. 27). He adopted a cluster sampling approach in selecting adjective items, preferring factor-univocal variables to representative or uniform samples: "Such a marker set should include five reasonably homogeneous subsets of variables, each subset being roughly orthogonal to all the others" (1992, p. 27). The average correlation between Goldberg's Markers and their corresponding NEO-PI-R composite and factor scores was 0.60 (Goldberg, 1992).

Saucier (1994) reduced Goldberg's Markers to a 40-item inventory (five eight-item mini-markers) with fewer difficult items (e.g. Imperturbable), fewer negation terms, lower interscale correlations, higher mean inter-item correlations, and somewhat lower alpha reliabilities. Saucier did not compare the Mini-Markers with the NEO. Moreover, neither Goldberg nor Saucier used confirmatory factor analyses to examine the structure of their markers. The present study was intended to complement the existing research by examining Saucier's Mini-Markers with a confirmatory factor analysis and by comparing them to Costa and McCrae's NEO measure.

METHOD

The NEO-FFI and the Saucier Mini-Markers were completed by 601 undergraduates. A confirmatory factor analysis (CFA) and EQS (Bentler, 1989) examined the correspondence between the

two models. The five factors of the NEO-FFI were modeled as latent variables measured by 60 items, 12 for each factor. Similarly, the five factors of Saucier's Mini-Markers were modeled as latent variables measured by 40 items, eight for each factor. In turn, five second-order factors were modeled as latent variables, each measured by a corresponding factor from each scale. This analysis produced a χ^2 (4835) of 12944.1, $P < 0.001$ and Bentler–Bonnet comparative fit index of 0.63, suggesting that the proposed model did not fit the data well.

Separate analyses of the two inventories indicated that they did not have strong factor structures. A CFA of the NEO-FFI produced a χ^2 (1710) of 4830.8, $P < 0.001$ and a Bentler–Bonnet comparative fit index of 0.66. Similarly, a CFA of Saucier's Mini-Markers produced a χ^2 (740) of 3491.5, $P < 0.001$ and a Bentler–Bonnet comparative fit index of 0.71. None the less, both instruments produced acceptable five factor principal components analysis (PCA) solutions with patterns of loadings consistent with the design of each instrument. Five factor solutions accounted for 48% of the variance for Saucier's Mini-Markers and 35% for the NEO-FFI.

To examine the correspondence between the two instruments, composite scores were calculated using the recommended scoring procedure for each instrument. Cronbach's alphas for Saucier's Mini-Markers were 0.86, 0.82, 0.84, 0.78 and 0.78, and for the NEO they were 0.84, 0.75, 0.74, 0.75 and 0.83. Correlations of composite scores between the corresponding subscales of each instrument were: 0.62 for I (Extraversion); 0.69 for II (Agreeableness); 0.68 for III (Conscientiousness); -0.54 for IV (Neuroticism); and 0.57 for V (Openness).

Although there is no consensus regarding correcting for attenuation due to unreliability, the unreliability in the subscales influenced the size of the correlations between corresponding subscales. Following a procedure described by Guilford and Fruchter (1978, p. 450), deattenuated correlations between corresponding subscales were calculated. They were: 0.73 for I (Extraversion); 0.88 for II (Agreeableness); 0.86 for III (Conscientiousness); -0.71 for IV (Neuroticism); and 0.71 for V (Openness).

A confirmatory factor analysis that modeled five orthogonal latent variables (second-order factors) measured by a composite score from each instrument did not converge due to the magnitude of correlations between non-corresponding subscales from the two measures and between subscales within each measure. When the constraint between neuroticism and agreeableness was lifted, the resulting model did not fit the data well. The χ^2 (39) was 672.7, and the Bentler–Bonnet comparative fit index was 0.67.

DISCUSSION

These results suggest that Saucier's Mini-Markers and the NEO-FFI measure similar, but clearly not identical constructs. Similarly labeled subscales shared between 25 and 50% of their variance (up to 77% deattenuated). Moreover, both measures demonstrated relatively weak factor structures in confirmatory factor analyses. The results of the CFAs corroborate Church and Burke's (1994) conclusion that "parsimonious personality models are unlikely to meet conventional goodness-of-fit criteria . . . because of the limited simple structure of personality measures and the personality domain itself" (p. 93).

These results also suggest that Goldberg and Saucier's goal of a comprehensive, structural representation in univocal, homogeneous and orthogonal markers has not been realized. Even when reduced to eight core trait terms for each factor, the present results suggest that the lexical approach does not fare much better than questionnaire versions. None the less, given that the two measures demonstrate comparable psychometric properties, the Mini-Markers have the advantages of being shorter and of being in the public domain.

REFERENCES

- Bentler, P. M. (1989). *EQS structural equations program manual*. Los Angeles: BMDP Statistical Software.
- Church, A. T., & Burke, P. J. (1994). Exploratory and confirmatory tests of the big five and Tellegen's three- and four-dimensional models. *Journal of Personality and Social Psychology*, 66, 93–114.
- Costa, P. T., Jr., & McCrae, R. R. (1992). *Revised NEO personality inventory and NEO five-factor inventory professional manual*. Odessa, FL: Psychological Assessment Resources.
- Goldberg, L. R. (1992). The development of markers for the big-five factor structure. *Psychological Assessment*, 4, 26–42.

- Goldberg, L. R. (1993). The structure of phenotypic personality traits. *American Psychologist, 48*, 26–34.
- Guilford, J. P., & Fruchter, B. (1978). *Fundamental statistics in psychology and education*. New York: McGraw-Hill.
- Hofstee, Willem K. B., de Raad, B., & Goldberg, L. R. (1992). Integration of the big five and circumplex approaches to trait structure. *Journal of Personality and Social Psychology, 63*, 146–163.
- McCrae, R. R. (Ed.). (1992). The five factor model: Issues and applications [Special issue]. *Journal of Personality, 60* (2).
- Saucier, G. (1994). Mini-Markers: A brief version of Goldberg's unipolar big-five markers. *Journal of Personality Assessment, 63*, 506–516.