

THE FIVE-FACTOR MODEL: QUO VADIS?

Ivan MERVIELDE
University of Ghent

It is argued that research about the Five-Factor model has much to gain from specification and analysis of middle-level categories that bridge the distance between the broad-band Five-Factor level and the adjective or item level. Two competing approaches, the ABC-model and the NEO-PIR model, are discussed as viable but not necessarily incompatible approaches for further differentiation of the Five-Factor model. Analysis at the intermediate level of trait categorisation is considered to be essential for charting the developmental roots of the Five-Factor model and to advance cross-language comparisons of trait structure.

Five years ago, only a handful of people shared the enthusiasm about the model and they adhered to a common set of research procedures and standards. Nowadays the cat is out of the bag and is creating offspring with strange bedfellows. It should come as no surprise that critics rise to the occasion and seize the opportunity to point to inconsistencies and failures to confirm the model. Pervin (1994) provides a critical analysis of current (Five-Factor) trait theory together with sixteen invited comments. Brand (1994 -this issue) reiterates many of the problems raised by Pervin in the special issue of *Psychological Inquiry* devoted to that debate. Goldberg (1994), Hofstee (1994a), McCrae (1994), Mervielde (1994) and Ostendorf and Angleitner (1994) commented on Pervin's criticisms and instead of reiterating their arguments, I prefer to incorporate some of the significant issues as part of an agenda for future research.

FURTHER DIFFERENTIATION OF THE FIVE-FACTOR MODEL

Although the lexical approach is basically inductive, deriving the broad-band factors from ratings on hundreds of traits, it has largely ignored specification of middle level categories. Except for Goldberg's (1990) synonym clusters and Norman's specification of middle level categories, there is little systematic research on intermediate levels between the Big Five and the adjective trait level. Both the Dutch and German lexical studies reduced, in one or two steps, several hundreds of traits to a broad-band five-factor structure.

The questionnaire approach as exemplified by the development of the NEO-PI and recently the NEO-PIR (Costa, McCrae, & Dye, 1991) specifies

six facets for each of the five factors. Although the structure of the NEO-PIR facets is confirmed by empirical data, the adopted facets do not necessarily cover the entire spectrum of traits emerging from the lexical approach. Cross-cultural inconsistencies regarding the loading patterns are likely for facets that have substantial secondary loadings. In a large Flemish college student sample, the localisation of the facets Assertiveness and Impulsiveness differs from the one reported in the American NEO-PIR manual (De Fruyt & Mervielde, 1994).

A strictly empirical approach to the further differentiation of the FFM was proposed by Hofstee and De Raad (1991) as the Abridged Big-Five Circumplex model (see also Hofstee & Arends, 1994-this issue). The AB5C-model does not add new dimensions beyond the FFM but instead subdivides the ten circumplexes formed by all pairs of combinations of the five factors. Traits are empirically allocated to 12 segments per circumplex whose spatial location correspond to the hourly positions on an analog clock. This model has also been applied to a set of English traits by Hofstee, De Raad and Goldberg (1992). The approach adopted for the construction of the NEO-PI and NEO-PIR, has the advantage of being firmly rooted in a broad spectrum of psychological theories and hence benefits from face-validity. The AB5C-approach, guarantees a better coverage of the entire spectrum of individual differences but still yields sparsely populated segments. More in particular, incongruent AB5C-segments (blends constructed by combining an evaluative positive pole of one factor with the negative pole from another factor) tend to be less densely populated than congruent segments (Mervielde, 1991). Although Hofstee (1994a) emphasizes that blends are fusions of meaning: „e.g. Ambition as an Extraverted version of Orderliness; Tolerance as a combination of Kindness and Emotional stability; Conventionality as Orderliness with a touch of Uncreativity” (p. 136), it can also be argued that they are spawned by aggregation of subgroups showing a distinctive correlational pattern.

The NEO-PIR as well as the AB5C-approach to further differentiation of the ‘Big-Five’ have their own merits and defaults but they should not be considered as mutual exclusive strategies. It would be highly informative to apply both approaches to a broad sample of subjects. Such a study could show the relationship of NEO-facets to the AB5C-segments and eventually illustrate whether AB5C-segments cover trait variance not accounted for by the NEO-PIR.

Although a consensus emerges about the replicability of the five-factor trait structure, it would be premature to stop the search for reliable factors

beyond those five. When extracting six instead of five factors from the correlations among the 25 bipolar Flemish Big five marker scales, we usually find that the fifth factor splits into Openness and Intellect scales (Mervielde, Buyst, & De Fruyt, in press). Five factors may indeed be the current lowest common denominator, showing replicability across self-ratings, ratings by others, trait adjectives, questionnaires etc. Procedures to increase the reliability such as using averaged ratings (Hofstee, 1994b) may produce more reliable correlations and eventually permit the extraction of more than five replicable factors.

THE DEVELOPMENTAL ROOTS OF THE FFM

There is very little research on the applicability of the five-factor model to represent individual differences among children. Digman (Digman & Takemoto-Chock, 1981; Digman & Inouye, 1986) demonstrates that teachers' ratings of sixth grade elementary school children can be adequately represented by the five-factor model. Mervielde, Buyst and De Fruyt (in press) confirmed Digman's findings and extended them to younger children, demonstrating that the emergence of the five-factor structure coincides with the beginning of elementary education.

Research with young children and adolescents provides mixed evidence. Van Lieshout and Haselager (1992) assessing self, parents', peers' and teachers' perception of children aged 3 to 17 with a Dutch adaptation of the California Child Q set (Block & Block, 1980) decided to extract 5 factors. Four factors of the Big Five were clearly identifiable, except for Extraversion. The additional factor was labelled as Dynamic Activity versus Immaturity, referring to physical activities for the positive pole and immature irritable behaviour describing the negative pole. John, Caspi, Robins, Moffitt and Stouthamer-Loeber (1994) assessing mothers' perception of 350 adolescent 12 to 13 year old boys suggest a five plus two model, adding Irritability and Activity as separate factors and not as facets of Neuroticism and Extraversion. Graziano and Ward (1992), however, confirmed the five-factor structure using teacher ratings of 11 to 14 year old girls and boys on 40 bipolar scales adapted from Digman and Inouye (1986). These conflicting results may be due to different methods (Q-sorts versus ratings), selection of scales, raters (mothers versus teachers) or gender of the children.

Although trait theory emphasizes stability, there is no inherent contradiction between trait theory and developmental theory (Mervielde,

1994). One recurrent problem that developmentalists have to face is the lack of agreement on the final stage of development. This is partly because what constitutes adulthood is often considered as defined by cultural norms. However, given that a consensus has evolved among personality psychologists regarding the basic dimensions underlying adult individual differences, that structure may become the *target structure* for personality development. From the trait point of view, development is a process of continuing differentiation toward the specified adult target structure. Development is regarded as both an intraindividual and interindividual process of differentiation. Differentiation implies that there should be a growing number of behaviours that reflect each of the major dimensions of adult personality as well as an increase in the variance explained by those factors with increasing age and through the life-span. Therefore it is reasonable to expect at some point in development an integration of the adult structure into fewer or even apparently different dimensions. Moreover, facets of the adult structure may have more or less prominence at an earlier stage in development and seemingly reflect a different underlying structure. Buyst, De Fruyt and Mervielde's (1994 - this issue) analysis of free descriptions indicates that for young children Extraversion is reflected by the child's level of activity, whereas for older children there is a better balance between activity and sociability. Mervielde, Buyst and De Fruyt (in press) show that the relative importance of Intellect and Openness, as facets of the fifth factor, reverses with age: Intellect is the more important facet for age 4 to 6, for children 8 to 10 both facets are equally important and for the oldest group (10 to 12) Openness marks the fifth factor more than Intellect does. A similar shift is observed in the correlation of both facets with school achievement, measured as grade point average. Buss and Plomin (1975, 1984) suggest the primary importance of emotionality, activity, sociability and impulsiveness. These temperamental traits are incorporated in the adult personality structure as facets of the five factors but not as independent broad factors. Conceptualizing the temperamental traits as facets may contribute to the development of a more unified and comprehensive model of individual differences across the life span. Why some of the traits develop at an earlier stage is an interesting problem that perhaps should be addressed in terms of age-related adaptiveness of the various facets.

CROSS-LANGUAGE RESEARCH

Ostendorf and Angleitner (1994-this issue) briefly review several new lexical studies broadening the cross-cultural search for replicable structures. The difficulties involved in adhering to common standards and procedures should not be underestimated. Moreover, the lack of research on the replicability of the middle-level category structure may tempt some to question the replicability at the highest level of the hierarchical structure. Comparing factor content across cultures is indeed a harrowing task if one is confined to either the lowest or the highest level of the hierarchical taxonomy. No one requires item-level replicability but the lack of research on middle-level category structure prematurely locates the discussion at the broad-band factor level. More in particular, one should distinguish middle-level categories that exemplify simple structure from those that have substantial loadings on several factors. Analysis at the intermediate level may be what is needed to conciliate those that attack the replicability of the Big Five by pointing towards item-level inconsistencies and those that defend it by claiming cross-cultural similarities at the Five-Factor level.

REFERENCES

- Block, J., & Block, J. H. (1980). The role of ego-control and ego-resiliency in the organization of behaviour. In W. A. Collins, *Development of cognition, affect and social relations. Minnesota Symposium on Child Psychology* (Vol. 13, pp. 39-101). Hillsdale, NJ: Erlbaum.
- Buyst, V. De Fruyt, F., & Mervielde, I. (1994). Parental descriptions of children's personality: A Five-Factor Model classification. *Psychologica Belgica*, 34, 231-255.
- Brand, C. R. (1994). How many dimensions of personality? - The 'Big 5', the 'Gigantic' or the 'Comprehensive 6'? *Psychologica Belgica*, 34, 00-00.
- Buss, A. H., & Plomin, R. (1975). *A temperament theory of personality development*. New York: Wiley-Interscience.
- Buss, A. H., & Plomin, R. (1984). *Temperament: Early developing personality traits*. Hillsdale, NJ: Erlbaum.
- Costa, P. T., Jr., McCrae, R. R., & Dye, D. A. (1991). Facet scales for agreeableness and conscientiousness: A revision of the NEO personality inventory. *Personality and Individual Differences*, 12, 887-889.
- De Fruyt, F., & Mervielde, I. (1994). Holland's RIASEC interest types and the five-factor model of personality. *Reports in Psychology*, 1994 (1), 28 pp.
- Digman, J. M., & Inouye, J. (1986). Further specification of the five robust factors of personality. *Journal of Personality and Social Psychology*, 50,

- 116-123.
- Digman, J. M., & Takemoto-Chock, K. (1981). Factors in the natural language of personality: Re-analysis, comparison, and interpretation of six major studies. *Multivariate Behavioral Research*, 16, 149-170.
- Goldberg, L. R. (1990). An alternative „description of personality”: The Big-Five factor structure. *Journal of Personality and Social Psychology*, 59, 1216-1229.
- Goldberg, L. R. (1994). How not to whip a straw dog. *Psychological Inquiry*, 5, 128-130
- Graziano, W. G., & Ward, D. (1992). Probing the Big Five in adolescence: Personality and adjustment during a developmental transition. *Journal of Personality*, 60, 425-439.
- Hofstee, W. K. B. (1994a). Will the true trait theorist please stand up? *Psychological Inquiry*, 5, 134-137.
- Hofstee, W. K. B. (1994b). Who should own the definition of personality? *European Journal of Personality*, 8, 335-340.
- Hofstee, W. K. B., & Arends, L. R. (1994). The heuristic potential of the abridged Big-Five dimensional circumplex (AB5C) model: Explaining the chiasmic illusion. *Psychologica Belgica*, 34, 195-206.
- Hofstee, W. K. B., & De Raad, B. (1991). Persoonlijkheds-structuur: De AB5C-taxonomie van Nederlandse eigenschapstermen [Personality structure: The AB5C-taxonomy of Dutch trait terms]. *Nederlands Tijdschrift voor Psychologie*, 46, 262-274.
- Hofstee, W. 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.
- John, O. P., Caspi, A., Robins, R. W., Moffit, T. E., & Stouthamer-Loeber, M. (1994). The „Little Five”: Exploring the nomological network of the Five-Factor Model of personality in adolescent boys. *Child Development*, 65, 160-178.
- McCrae, R. R. (1994). New goals for trait psychology. *Psychological Inquiry*, 5, 148-153
- Mervielde, I. (1991). *Replicability of AB5C-factor poles* (Research note IM/RN 21/10/91). Department of Psychology, University of Ghent, Belgium.
- Mervielde, I. (1994). Trait theory: Back to the future. *Psychological Inquiry*, 5, 153-156.
- Mervielde, I., Buyst, V., & De Fruyt, F. (in press). The validity of the Big-Five as a model for teachers' ratings of individual differences among children aged 4 to 12. *Personality and Individual Differences*.
- Ostendorf, F., & Angleitner, A. (1994a). Enthusiasts contra pessimists. *Psychological Inquiry*, 5, 159-162.
- Ostendorf, F., & Angleitner, A. (1994b). The Five-Factor Taxonomy: Robust dimensions of personality description. *Psychologica Belgica*, 34, 175-194.
- Pervin, L. A. (1994). A critical analysis of current trait theory. *Psychological Inquiry*, 5, 103-113.
- Van Lieshout, C. F. M., & Haselager, G. J. T. (1992). Persoonlijkhedsfactoren

in Q-sort persoonsbeschrijvingen van kinderen: relatie tot het vijf-factoren model [Personality dimensions in California Q-set descriptions: relation with the Five Factor Model]. *Pedagogische Studiën*, 69, 23-39.

AUTHOR NOTE

The author's research is supported in part by a grant from the University of Ghent (OZF-01112792) and by a NATO Collaborative Research grant (CRG 941239).

Correspondence concerning this article should be addressed to Ivan Mervielde, Department of Developmental and Personality Psychology, University of Ghent. H. Dunantlaan 2, B-9000 Ghent, Belgium. Electronic mail may be sent via Internet to Ivan.Mervielde@rug.ac.be.