

THE ASSESSMENT OF THE BIG FIVE IN THE DUTCH LANGUAGE DOMAIN

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This article provides an overview of the inventories and methods available to assess the Big Five personality factors in the Dutch language domain. The review covers both instruments relevant to research and/or clinical practice and includes a discussion of their background, applications and current status. Special consideration is given to new developments regarding the personality assessment of children. In addition, the article provides empirical data on the concurrent validity of the B5BBS25, the NEO-PI-R and the FFPI.

Introduction

In 1994, a special issue of *Psychologica Belgica* was published reporting European research on the Five-Factor model (Mervielde & Vandierendonck, 1994). The contributors to this volume mainly focused on research extending the lexical hypothesis (Buyst, De Fruyt, & Mervielde, 1994; Hofstee & Arends, 1994; Kohnstamm, Slotboom, & Elphick, 1994; Ostendorf & Angleitner, 1994) or provided a critical analysis of current Five-Factor trait theory (Brand, 1994). However, the assessment of the five factors was beyond the scope of this review. The current and renewed interest in personality psychology, and more particular in trait psychology, necessitates a review of the available assessment tools in the Dutch language domain.

The basic assumption underlying the Five-Factor paradigm is that all important individual differences have been encoded in the natural language as person descriptive terms. This assumption is commonly referred to as the lexical hypothesis (Goldberg, 1981). The analysis of the structure of the personality descriptive language is therefore expected to provide a solid basis for a taxonomy of individual differences. Indeed, research on the structure of self-descriptions and observer ratings using extensive lists of personality descriptive adjectives or questionnaire items reveals no more than five robust, replicable factors, commonly labelled as: Extraversion, Agreeableness, Conscientiousness, Emotional Stability/Neuroticism and Intellect/Openness

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to Experience (Digman, 1990; Goldberg, 1993; John, 1990). For a review of the historical antecedents of the model, the reader is referred to Goldberg (1993) and John (1990).

After several years of fundamental research to (dis)confirm the Five-Factor Model (FFM¹), current FFM research focuses on applications of the model (McCrae, 1992; McCrae & John, 1992) in clinical psychology (McCrae, 1991; Waller & Ben-Porath, 1987), psychopathology (Montag & Levin, 1994; Widiger & Trull, 1992), psychiatry (Costa & Widiger, 1994; Trull, 1992; Wiggins & Pincus, 1989), health psychology (Costa & McCrae, 1987; Smith & Williams, 1992), educational psychology (De Fruyt & Mervielde, 1996; De Raad & Schouwenburg, 1996; Johnson & Bloom, 1995; Mervielde, 1994a; Mervielde, Buyst, & De Fruyt, 1995), developmental psychology (Digman & Shmelyov, 1996; John, Caspi, Robbins, Moffitt, & Stouthamer-Loeber, 1994; Robins, John, Caspi, Moffitt, & Stouthamer-Loeber, 1996) and in industrial and organisational settings (Barrick & Mount, 1991; Costa, McCrae, & Kay, 1995; Piedmont & Weinstein, 1994; Schmit, Guion, & Raymark, 1994; Schmit & Ryan, 1993; Schneider & Hough, 1995; Tett, Jackson, & Rothstein, 1991; Van Dam, 1995; Van der Zee, Bakker, & Van der Maesen de Sombreff, 1992). The popularity of the FFM in personality assessment or in research where personality is assumed to be a covariate, stems from its assumed complete coverage of the personality sphere. Being the largest common denominator representing individual differences, one is sure that no important personality domains are omitted. In order to enable Dutch researchers and applied psychologists to incorporate FFM measures in their work, this article discusses the different methods and inventories to assess the Big Five.

Assessment of the Big Five

Adult Five-Factor Measures

In the early sixties, de Wolff (1965) used personality scales derived from the work of Tupes and Christal (1958) to select employees for the Koninklijke Nederlandse Hoogovens en Staalfabrieken NV. De Wolff was impressed by the degree of convergence among the different factor solutions of data sets reported by Tupes and Christal (1961). Moreover, he was surprised to notice variables with high primary loadings (>.70) and almost no important secondary loadings, when five factors were extracted. Starting from the Tupes and Christal report (1961), he selected 15 bipolar adjective scales and replicated the findings of

¹ A list of abbreviations and their meaning is presented in the Appendix.

Table 1
Dutch/Flemish Personality Inventories to Assess the Big Five in Adults

Inventory	Rater	Age range	Item format	Scale format	Number of items	Status
5PFT (Elshout & Akkerman, 1975)	self ratings	18+	adjective or short description	unipolar 7 point scale	70	published
SPEL (Hofstee, Brokken, & Land, 1981)	self/observer ratings	18+	clusters of 2 or 3 adjectives		SPEL I 21 clusters SPEL II 54 clusters	published
S.P.O.L.A.P. (Claeys, De Boeck, Van den Bosch, Biesmans, & Bohrer)	self ratings	18+	free descriptions			published
B5BBS25 (Mervielde, 1992)	self/observer ratings	self: 18+ observer: 4+	bipolar adjectives	bipolar 9 point scale	25	published
NEO PI-R /NEO-FFI (Hoekstra, Ormel, & De Fruyt, 1996)	self/observer ratings	18+	items referring to behaviour, attitudes or values	5 point scale	NEO-PI-R: 240 NEO-FFI: 60	published
FFPI (Hendriks, Hofstee, de Raad, & Angleitner, 1995)	self/observer ratings	18+	short non-dispositional items	5 point scale	100	available from the authors

Tupes and Christal. Sterken (1969) and later Elshout and Akkerman (1973, 1974) and Akkerman (1974) introduced the five main personality factors to Dutch psychologists. An overview of the Five-Factor assessment instruments for adults developed since then is presented in Table 1.

Vijf Persoonlijkheidsfactorentest (5PFT). In 1969, Elshout and Sterken started with the construction of a broad personality questionnaire to assess the five personality factors in military personnel. Elshout and his colleague

Akkerman were impressed by the work of Cattell (1957) and inspired by the reports of Tupes and Christal (1958, 1961, 1992), only available within military settings. Tupes and Christal used orthogonal varimax rotation in their principal component analyses. Principal component analyses of self ratings by students and military personnel revealed five recurrent factors, labelled as "Extraversie" (Extraversion or Surgency), "Vriendelijkheid" (Agreeableness), "Gewetensvolheid" (Conscientiousness), "Zelfbeheersing" (Emotional Stability) and "Ontwikkeling" (Intellect/Culture) (Elshout & Akkerman, 1975). The "Vijf Persoonlijkheidsfactoren-test" (5PFT; Five Personality Factors Test) constructed by Elshout and Akkerman (1974) was first published by Berkhout in 1974. This 70-item inventory was the first questionnaire to assess the now familiar five factors of personality in the Dutch language domain. The Dutch translation of the factor labels refers to the names given by Sterken (1969). Cluster analysis of the 5PFT-items shows 16 clusters that can be conceived as facets of the principal components. A tentative translation is provided between parentheses. For Extraversion the clusters are labelled "spraakzaam/open" (talkative), "activiteit" (activity), "veel mensen om zich heen willen" (liking to be among people), and "op de voorgrond treden" (dominance). Agreeableness has four facets, i.e. "vertrouwende instelling" (trusting others), "denkt positief over mensen" (thinking positive about others), "coöperatief" (cooperative), "hartelijk-warm" (generous-warm); Conscientiousness items cluster into three groups: "orde en netheid" (order), "verantwoordelijkheid" (responsibility) and "zich houden aan sociale conventies" (respecting social conventions). The Emotional Stability factor of the 5PFT is rather homogeneous and has only two clusters, i.e. "sterke emoties" (strong emotions) and "zich ongelukkig voelen" (being unhappy). Finally, the fifth factor has three clusters, i.e. "vindingrijk-speels verstand-weetgierig-intelligent" (creative-intelligent), "zelfstandig-eigen oordeel" (independence) and "ontwikkeld-beschouwend" (cultured). Elshout and Akkerman tried to decompose the broad big five factors, hereby anticipating modern hierarchically-structured personality models such as Costa and McCrae's NEO-model (1992). Despite its interesting historical background and its satisfactory psychometric characteristics, the 5PFT has been largely neglected in most reviews of the FFM (John, Angleitner, & Ostendorf, 1988; John, 1990).

Standaard Persoonlijkheidseigenschappen Lijst (SPEL-I-II). Starting with a comprehensive list of 1203 Dutch personality descriptive adjectives, Hofstee, Brokken and Land (1981) constructed the Standard Personality Adjective Checklist (Standaard Persoonlijkheidseigenschappen Lijst) as a spin-off of their lexical study. Depending on the form, the SPEL comprises 21 (short form, SPEL-I) or 54 sets (long form, SPEL-II) with two to three adjectives. The SPEL assesses seven factors: (1) Introversion, (2) Agreeableness, (3) Conscientiousness, (4) Emotional Stability, (5) Culture, (6) Aggressiveness and (7) Progressiveness.

(*S.P.O.L.A.P.*). A procedure for rating free self-descriptions on the Big Five was constructed and validated by Claey's, De Boeck, Van Den Bosch, Biesmans and Böhrer (1985). In this procedure, subjects are asked to describe their personality as completely as possible using 10 self-generated personality descriptive adjectives. Using the Big Five domain descriptions of Elshout and Akkerman, a small sample of judges provided ratings on how extraverted, agreeable, conscientious, emotionally stable or cultivated a person would be described by a given adjective. A subject's personality trait score is inferred from the sum of the ratings of the 10 self-generated adjectives on each of the five dimensions. A main problem with the free-description approach is that subjects are highly selective with respect to the range of personality adjectives they mention. Mervielde (1994a) showed that teachers' personal constructs about pupils usually refer to no more than three personality dimensions. Van Dam (1996) found similar results with selection psychologists describing job applicants. This restriction of range phenomenon limits the validity of a free-description approach for individual assessment.

Big 5 Bipolaire Beoordelingsschalen (B5BBS25). In 1992, Mervielde translated the 50 bipolar marker scales of Goldberg (1989, 1992) to assess the Big Five, using several criteria for the selection of terms (Mervielde, 1992). The resulting 25 bipolar scales were validated against the SPEL (Hofstee, Brokken, & Land, 1981) and the Eysenck Personality Questionnaire-Revised (Eysenck, Eysenck, & Barrett, 1985). The B5BBS25 has 5 scales, assessing the first four of the Big Five, plus an Intellect-Openness scale. Each scale comprises five bipolar pairs and the internal consistency of the scales is satisfactory. Extracting 6 factors usually splits the fifth factor in a separate Intellect and an Openness component. The bi-polar adjectives are rated on a 9-point Likert scale and can be used as a self-rating scale for adolescents and adults and as an observer rating scale for target subjects from 5 years onwards. Since its inception, the structure of the B5BBS25 has been confirmed in several independent studies with samples of children (Mervielde, Buyst, & De Fruyt, 1995), adolescents and adults (Anthierens, 1992; De Fruyt, Buyst, & Mervielde, 1993). The B5BBS25 is especially useful in research, when only a global Big-Five description is necessary. Its use for individual personality assessment is probably limited, because of the general descriptive level of personality adjectives.

23 Bipolar Big Five Questionnaire (23BB5). Analogous to Mervielde's B5BBS25 (1992), Duijsens and Diekstra (1995) constructed their own bipolar adjective list, consisting of 23 adjective pairs. Extraversion is the largest factor, followed by Agreeableness, Neuroticism, Conscientiousness and Openness. The five scales entail 4 to 6 bipolar items per scale and the scale reliabilities are satisfactory. No replication or cross-validation studies are published thus far, limiting its use as a diagnostic tool or as a research instrument.

Table 2
Revised NEO-PI Domain and Facet Labels

US Revised NEO-PI (Costa & McCrae, 1992)	Dutch/Flemish Revised NEO-PI (Hoekstra, Ormel, & De Fruyt, 1996)
N: NEUROTICISM	N: NEUROTICISME
N1: Anxiety	N1: Angst
N2: Angry Hostility	N2: Ergernis
N3: Depression	N3: Depressie
N4: Self-Consciousness	N4: Schaamte
N5: Impulsiveness	N5: Impulsiviteit
N6: Vulnerability	N6: Kwetsbaarheid
E: EXTRAVERSION	E: EXTRAVERSIE
E1: Warmth	E1: Hartelijkheid
E2: Gregariousness	E2: Sociabiliteit
E3: Assertiveness	E3: Dominantie
E4: Activity	E4: Energie
E5: Excitement-Seeking	E5: Avonturisme
E6: Positive Emotions	E6: Vrolijkheid
O: OPENNESS	O: OPENHEID
O1: Fantasy	O1: Fantasie
O2: Aesthetics	O2: Esthetiek
O3: Feelings	O3: Gevoelens
O4: Actions	O4: Veranderingen
O5: Ideas	O5: Ideeën
O6: Values	O6: Waarden
A: AGREEABLENESS	A: ALTRUISME
A1: Trust	A1: Vertrouwen
A2: Straightforwardness	A2: Oprechtheid
A3: Altruism	A3: Zorgzaamheid
A4: Compliance	A4: Inschikkelijkheid
A5: Modesty	A5: Bescheidenheid
A6: Tender-Mindedness	A6: Medeleven
C: CONSCIENTIOUSNESS	C: CONSCIENTIEUSHEID
C1: Competence	C1: Doelmatigheid
C2: Order	C2: Ordelijkheid
C3: Dutifulness	C3: Betrouwbaarheid
C4: Achievement Striving	C4: Ambitie
C5: Self-Discipline	C5: Zelf-discipline
C6: Deliberation	C6: Bedachtzaamheid

NEO Persoonlijkheidsvragenlijsten: NEO-PI-R/NEO-FFI. Costa and McCrae's NEO-PI-R (1985, 1992a) evolved to the most commonly used broad band personality questionnaire to assess the five main domains of personality. The NEO inventories reflect like no other instruments the current interest in personality psychology, assessing the five broad domains and thirty more specific personality facets. These features make the NEO the most comprehensive personality inventory currently available, with an impressive background of empirical research and an extensive literature in which the instrument has been used to assess personality. The NEO-PI-R includes 240 items, 48 items per domain factor. Each domain has 6 facets, with 8 items per facet. The facets can be conceptualized as an intermediate level between the higher order domain factors and concrete behaviour. An overview of the facets, together with their Dutch label, is presented in Table 2.

The short form, called the NEO-FFI, has 60 items, i.e. 12 per domain, and is useful when only global information on personality is required. Costa and McCrae's fifth factor, called "Openness", has a somewhat different nature than the fifth factor resulting from the lexical studies, usually identified as "Intellect" (Goldberg, 1981, 1982) or "Culture" (Norman, 1963; Tupes & Christal, 1961). Openness reflects traits such as "curious", "creative", "investigative", "imaginative" and "fantasy", traits that are usually underrepresented in dictionaries. For a detailed discussion of the nature of the fifth factor and the different conceptualisations, the reader is referred to De Raad and Van Heck (1994). Authorised translations and adaptations of the NEO-inventories are available for the major languages. The common Dutch/Flemish translation (Hoekstra, Ormel, & De Fruyt, 1996) has been validated on several Dutch and Flemish samples. The Dutch translation covers as much as possible the US item pool. The structure of the Dutch edition and the descriptive meaning of the domains and facets closely resemble the original US version (Hoekstra et al., 1996).

A joint principal component analysis followed by varimax rotation of the Dutch/Flemish NEO-PI-R facet scales together with the B5BBS25 scales is presented in Table 3. The data were obtained from a sample of first year students in psychology ($N=175$). The scree plot and the pattern of decrease of the eigenvalues (9.38, 6.19, 5.49, 3.93, 3.28, 2.24, 1.70, 1.63, 1.32) clearly point towards a five factor solution, explaining 51.4% of the variance. All NEO-PI-R facets and their complementary B5BBS25 scales have their primary loading on the expected factor. It's interesting to notice that the Intellect scale of the B5BBS25 loads primarily on Conscientiousness.

Both the Dutch NEO-FFI and the more extended Dutch NEO-PI-R have satisfactory psychometric characteristics. Reliabilities for the FFI-domains (12 items) range from 0.68 to 0.86, whereas for the NEO-PI-R they are 0.86 or higher. The internal consistency of the facet scales (8 items) ranges between

Table 3

Rotated Factor Structure for Joint Factor Analysis of NEO-PI-R Facets and B5BBS25 Scales (N=175)

	E	N	C	A	O
E2 Gregariousness	.74	-.05	-.02	.18	-.32
E B5BBS25	.74	-.31	.10	-.10	.09
E6 Positive Emotions	.73	-.26	.02	.25	.07
E1 Warmth	.72	.04	.13	.46	.14
E4 Activity	.67	-.02	.23	.07	.12
E3 Assertiveness	.60	-.30	.16	-.28	.25
E5 Excitement-Seeking	.57	.04	-.11	-.11	-.11
N1 Anxiety	-.23	.82	.01	.05	.05
N6 Vulnerability	-.08	.79	-.14	.07	-.13
N3 Depression	-.31	.79	-.16	.07	.04
S B5BBS25	-.02	-.71	.11	.09	.09
N2 Angry Hostility	.01	.66	-.11	-.49	.19
N4 Self-Consciousness	-.23	.64	-.11	.29	-.07
N5 Impulsiveness	.38	.52	-.38	-.06	.18
C B5BBS25	-.06	.00	.77	.16	-.19
C2 Order	.09	.00	.77	.02	-.29
C5 Self-Discipline	.14	-.34	.72	.15	.05
C3 Dutifulness	.07	.03	.71	.26	.07
C4 Achievement Striving	.41	-.06	.70	-.03	-.08
C6 Deliberation	-.28	-.21	.63	.01	-.19
C1 Competence	.13	-.34	.60	-.11	.13
I B5BBS25	-.01	-.08	.53	-.11	.35
A2 Straightforwardness	-.10	.04	.16	.72	.11
A4 Compliance	-.25	-.06	.04	.72	-.20
A3 Altruism	.22	.18	.18	.71	.08
A5 Modesty	-.06	.04	-.16	.63	-.07
A B5BBS25	.29	-.11	.18	.62	.00
A1 Trust	.35	-.01	.05	.54	-.07
A6 Tender-Mindedness	.09	.36	-.11	.45	.33
O2 Aesthetics	.01	.12	-.02	.14	.65
O5 Ideas	-.25	-.16	.23	-.19	.64
O1 Fantasy	.10	.17	-.23	.00	.61
O6 Values	-.17	-.05	-.11	-.03	.58
O3 Feelings	.30	.45	.19	.08	.54
O B5BBS25	.12	-.13	-.01	-.08	.51
O4 Actions	.36	-.18	-.17	.06	.42

Notes. 1. Factor loadings $\geq .30$ are printed in bold. 2. B5BBS25 scales: E (Extraversion), N (Neuroticism), C (Conscientiousness), A (Agreeableness), O (Openness), I (Intellect).

0.57 to 0.83. The construct and concurrent validity of both the NEO-FFI and NEO-PI-R are well documented. The results reported in Table 4 show that the B5BBS25-scales closely resemble the domain factors as measured by the NEO-PI-R (Costa & McCrae, 1992), except for Openness with a correlation of only .36.

The detailed Dutch manual provides NEO-PI-R norm scores per sex (reported in stanines) for samples of students, and means and standard deviations for samples of psychiatric patients and job applicants. Norm scores for a representative population sample will be eligible in 1998. For the NEO-FFI detailed norm scores per sex and age group are eligible for a population sample and for selection purposes. Thus far, only the self-rating form of the Dutch NEO-PI-R/FFI is available from the publisher; the authors of the Dutch adaptation have the intention to publish the observer rating form, together with accompanying norm-tables, in the near future.

Five-Factor Personality Inventory (FFPI). Faced with the empirical finding that personality descriptive adjectives usually have substantial loadings on two of the Big Five, Hofstee, De Raad and Goldberg (1992) characterise traits by their loadings on a subset of two of the five factors. Their Abridged Big Five Circumplex Model (AB5C) comprises 10 circumplexes formed by all paired combinations of the Big Five. Circumplexes are further partitioned into segments of 30° each. Using the primary and secondary loadings, traits are assigned to 12 segments within each of the 10 abridged circumplex models. A similar approach has been followed for the German language and for American-English. The description of personality traits in a circumplex model is conceptually different of organising traits in terms of a hierarchical trait model, such as in the NEO, where primary traits are assigned to secondary order domains according to their primary loading.

The Dutch AB5C adjective model served as a starting point to produce a pool of 909 short sentence items to tap the well-filled AB5C facets. For each of these 65 AB5C facets, items were written individually by a small group of researchers. Items were phrased according to a priori rules (Hendriks, 1993; Hendriks, Hofstee, De Raad, & Angleitner, 1995) and submitted to a critical peer review, resulting in a pool of 909 Dutch items. An additional 136 items were produced on the basis of personality descriptive verbs and 266 Intellect items were appended to "link up" the Dutch pool to the American and German fifth factor (Hendriks, 1997). The resulting item pool of 1311 (909+136+266) sentence items was further examined for comprehensibility, observability and social desirability and finally, 914 items were found to be translatable in American-English and German. Self- and others' ratings were collected on this 914 item pool, followed by detailed item analyses. Several criteria were accounted for to select the final FFPI item set, including (1) primary and secondary factor loadings, (2) self-others correlation, and (3) difficulty, observability and non-

Table 4

Pearson Correlation Coefficients Between NEO PI-R Domains/Facets and B5BBS25 Subscales (N=175)

	S	E	O	A	C	I
NEUROTICISM	-.60	-.38	-.08	-.15	-.14	-.10
N1 Anxiety	-.55	-.37	-.05	-.05	.00	-.01
N2 Angry Hostility	-.45	-.11	.01	-.38	-.19	.06
N3 Depression	-.47	-.49	-.10	-.17	-.07	-.12
N4 Self-consciousness	-.32	-.45	-.05	.05	-.04	-.09
N5 Impulsiveness	-.32	.09	.05	-.07	-.28	-.14
N6 Vulnerability	-.54	-.27	-.12	-.02	-.08	-.15
EXTRAVERSION	.07	.71	.17	.33	-.03	.03
E1 Warmth	.06	.50	.16	.47	.08	.01
E2 Gregariousness	.09	.53	.00	.30	-.01	-.06
E3 Assertiveness	.13	.68	.23	.05	-.03	.11
E4 Activity	-.04	.43	.05	.26	.06	.14
E5 Excitement-seeking	.02	.23	.01	.08	-.06	-.02
E6 Positive Emotions	.20	.55	.15	.32	.01	.01
OPENNESS	-.03	.09	.36	-.03	-.20	.20
O1 Fantasy	-.10	-.01	.49	-.01	-.29	.07
O2 Aesthetics	-.02	.00	.16	.02	-.15	.05
O3 Feelings	-.23	.13	.19	.08	-.04	.11
O4 Actions	.07	.28	.10	.10	-.20	.04
O5 Ideas	.18	-.05	.24	-.16	.07	.36
O6 Values	-.02	-.02	.06	-.14	-.11	.13
AGREEABLENESS	-.02	-.08	-.16	.51	.19	-.08
A1 Trust	.03	.23	-.07	.32	.17	-.06
A2 Straightforwardness	.04	-.12	-.15	.34	.22	.07
A3 Altruism	-.06	.03	.04	.55	.19	.04
A4 Compliance	.10	-.29	-.16	.38	.15	-.09
A5 Modesty	-.04	-.08	-.19	.29	.02	-.22
A6 Tendermindedness	-.20	-.08	.02	.14	-.09	-.06
CONSCIENTIOUSNESS	.22	.21	-.03	.22	.67	.35
C1 Competence	.34	.18	.15	.04	.33	.37
C2 Order	.11	.09	-.13	.16	.66	.22
C3 Dutifulness	.10	.09	.00	.24	.50	.29
C4 Achievement Striving	.07	.32	-.06	.14	.48	.25
C5 Self-discipline	.24	.20	-.02	.23	.51	.26
C6 Deliberation	.18	-.05	-.03	.08	.44	.23

Notes. 1. Correlations $\geq .20$ in absolute value are significant at the $p < .01$ level and are printed in bold.

2. B5BBS25 scales: S (Stability), E (Extraversion), O (Openness), A (Agreeableness), C (Conscientiousness), I (Intellect).

extreme social desirability (Hendriks, 1997).

The final FFPI entails 100 brief non-dispositional sentence items, with 20 items covering each scale. The scales are labelled "Extraversie" (Extraversion), "Mildheid" (Agreeableness), "Ordelijkheid" (Conscientiousness), "Stabiliteit" (Emotional Stability) and "Autonomie" (Autonomy). The internal consistencies range from .89 (Autonomy) to .93 (Extraversion). The first four factors of the FFPI correlate between .75 and .81 (Hendriks et al., 1995) with the four NEO-PI-R counterparts. However, The fifth factor of the FFPI correlates only .10 with Openness to Experience of the NEO-PI-R (Hendriks, 1997). Thus far, there are only preliminary data regarding the concurrent validity with other inventories.

Table 5 reports FFPI scale and NEO-PI-R domain intercorrelations reported by De Fruyt and Nilsen (1996) obtained from a group of 105 subjects (25 men, 79 women, gender not specified by one subject; mean age = 26.6 years, age range between 17 and 62). This sample mainly includes second year psychology students and their relatives, participating in a study on personality correlates of emotional expression (De Fruyt, 1997).

The Neuroticism/Emotional Stability scales, Extraversion, Agreeableness

Table 5

Pearson Correlation Coefficients Between NEO-PI-R Domains/Facets and FFPI Scales

	FFPI-I		FFPI-II		FFPI-III		FFPI-IV		FFPI-V	
NEO-N	-.34	**	-.01		-.12		-.73	**	-.50	**
NEO-E	.79	**	-.30	*	-.19		.27	*	.54	**
NEO-O	.20		-.26	*	-.60	**	.00		.45	**
NEO-A	.06		.64	**	.21		.10		-.06	
NEO-C	-.01		.13		.82	**	.04		.10	

Note. FFPI-I: Extraversion; FFPI-II: Agreeableness; FFPI-III: Conscientiousness; FFPI-IV: Emotional Stability; FFPI-V: Intellect/Autonomy.

and Conscientiousness scales of the NEO-PI-R and the FFPI show intercorrelations ranging between .64 (Agreeableness) to .82 for Conscientiousness. The Openness domain scale of the NEO-PI-R shows a higher (negative) correlation with the FFPI-Conscientiousness factor, than with the fifth factor of the FFPI. The fifth factor of the FFPI is significantly correlated with Extraversion (.54), Neuroticism (-.50) and with Openness (.45) of the NEO, underscoring the different nature of this factor. The fifth of the FFPI seems to differ from both the fifth of the NEO and the fifth factor resulting from the lexical studies. According to these data we are inclined to label this

factor "Autonomy-Independence versus obedience", because there are no clear references to Intellect or Culture in the item set. Hendriks (personal communication, June 18, 1996) comments that these intercorrelations are not fully comparable with those reported by Hendriks et al. (1995). In this study, we calculated FFPI-scale scores, without correction for acquiescence, while Hendriks et al. (1995) computed FFPI factor scores, after correcting for acquiescence. A joint principal component analysis of NEO-facets and FFPI-scales shows the first four scales of the FFPI having the highest loading on the first four varimax rotated factors respectively, followed by the expected NEO-PI-R facets. The fifth factor of this joint analysis first loads four Openness facets, followed by the fifth scale of the FFPI. The first four FFPI scales have the highest loading in this joint analysis probably because they cover a broader range of behaviour than the specific NEO facets. The fifth of the FFPI has a more specific content and does not very well capture the common denominator underlying the NEO Openness facets. These findings demonstrate that the FFPI and the NEO-PI-R are no equivalent instruments to assess the Big Five.

Childhood Five-Factor Measures

The inventories described thus far are mainly for the assessment of adult personality characteristics. However the structure of adult individual differences cannot be transposed unequivocally to the study of children (Buyst et al., 1994). Indeed, attempts to link factors of temperament theories, such as the nine Thomas and Chess' factors and Buss and Plomin's EAS dimensions, suggest that not all of the Big Five are salient dimensions for the description of childhood personality, at least not in their adult conceptualisation (Halverson, Kohnstamm, & Martin, 1994). Facets in childhood personality description may achieve domain status in adulthood and important childhood temperament factors, such as "Activity", may become facets of broad personality domains in adulthood.

There are a number of studies demonstrating that the Big Five are salient dimensions in parent (Buyst et al., 1994) and teacher ratings (Digman, 1963; Mervielde et al., 1995) of children when adjective lists are used or in California Child Q-sorts (Block & Block, 1980; John et al., 1994; Van Lieshout & Haselager, 1994). However, these studies do not provide evidence that only the Big Five are salient and replicable. Indeed, one cannot exclude that additional or other dimensions appear when other sets of items, e.g., items of temperament inventories, are analysed. The personality descriptive lexicon for children cannot be derived directly from the dictionary, as can be done for adults, because not all personality descriptive adjectives are applicable from early development. For example, "ambitious" may have a high loading on Conscientiousness in adults, but it would probably be a bad item to rate

Conscientiousness in pre-school children, supposed that Conscientiousness is a salient dimension for this age-group. Furthermore, one may question if personality descriptive adjectives are adequate to describe developmental personality differences. Sentence items, phrased in non-dispositional terms, may be more accurate to describe the behaviour for a certain age-group. In order to examine these hypotheses, one first needs to compile the personality descriptive behaviour of different age-groups.

To address this question empirically, a group of temperament and personality researchers are working in an international collaborative research project to trace the developmental antecedents of the FFM. Instead of starting from a theoretical framework of important traits to describe children, these researchers follow a more emic bottom-up approach in which parents in diverse cultures are asked to freely describe their children of 3, 6, 9 or 12 years old. These descriptions are segmented into personality descriptive units and are then classified according to a personality descriptive classification system, including the Big Five categories (for more details, see Kohnstamm, Mervielde, Besevegis, & Halverson, 1995). These childhood personality descriptive lexica are then used as a starting point to write personality inventory items for several age-groups (Buyst et al., 1994; Mervielde, De Fruyt, & Buyst, 1996). Following this culture specific emic approach, two different sets of questionnaires are available now, a set developed in the Dutch language community, another inventory in the Flemish community.

BeoordelingsLijst voor Individuele verschillen bij Kinderen (BLIK-Vragenlijsten). Starting from the personality descriptive language used by parents to describe their children, Kohnstamm and his team developed four BLIK-inventories to assess the personality of children aged 3 (BLIK-3; Elphick, Kohnstamm, & Slotboom, 1997), 6 (BLIK-6; Elphick, Slotboom, & Kohnstamm, 1997), 9 (BLIK-9; Slotboom, Kohnstamm, & Elphick, 1997) and 12 (BLIK-12; Kohnstamm, Slotboom, & Elphick, 1997) years. The BLIK inventories entail 111, 107, 108 and 112 items for the four age groups respectively and the items reflect both the content and the phrasing of parents' descriptors for a particular age group. A number of items is similar among the inventories. The unique items for a certain age group reflect specific behaviour or phrasing for that particular age. Items are directly culled from the parental free descriptions. As a result, the final item sets include both dispositional and non-dispositional terms and phrases. The facet structure of the questionnaires is being examined and cross-validated now (Slotboom & Elphick, 1997) and the authors intend to publish the inventories in 1998.

Hiërarchische Persoonlijkheidsvragenlijst voor Kinderen (HiPIC). Starting from a large pool of parental free personality descriptions, Mervielde and De Fruyt (1997a) assembled 3 pools with sentence items to assess the personality of children aged 5 to 7, 8

to 10 and 11 to 13 years respectively. The sentence items refer to concrete behaviour, are phrased in the third person singular, contain a verb form, do not include trait adjectives and avoid negations. The items closely represent the content entailed in the free descriptions for the different age-groups. Principal component analysis, followed by varimax rotation, shows a clearly interpretable five factor solution for all age-groups, with clearly identifiable Conscientiousness, Benevolence-Agreeableness, Extraversion, Emotional Stability and Imagination components. Principal component analysis of the items primarily loading a domain factor, followed by oblimin rotation, shows 2 to 5 facets for each domain. The 18 facets are labelled as: Achievement Motivation (C1), Concentration (C2), Perseverance (C3) and Orderliness (C4) for Conscientiousness; Egocentrism (W1), Irritability (W2), Compliance (W3), Dominance (W4) and Altruism (W5) for Benevolence; Shyness (E1), Optimism (E2), Expressiveness (E3) and Energy (E4) for Extraversion; Anxiety-Depression (N1) and Self-confidence (N2) for Emotional Stability and finally Creativity (I1), Curiosity (I2) and Intellect (I3) for the Imagination domain. A comparison of the items for the three age groups revealed that it was possible to construct from the common items for the three ages one questionnaire assessing these 18 facets. This final common questionnaire, called the HiPIC (Mervielde & De Fruyt, 1997b), includes 144 items, assessing the five factors and 18 childhood personality facets, with each facet assessed by 8 items. The HiPIC taps the most important personality developmental characteristics for childhood and is currently available from the authors for research and clinical purposes.

Discussion

Deary and Matthews (1993) conclude that: "today trait psychology is alive and well". Given the past controversies with respect to trait theory and the Person-Environment debate in the sixties and seventies, the come-back of trait psychology is all the more remarkable. Research in the trait field was covered well during the past ten years by international journals such as the *European Journal of Personality*, *Journal of Personality*, *Journal of Personality Assessment*, the *Journal of Personality and Social Psychology* and *Personality and Individual Differences*. The list of references appended to this article, as well as the special reviews regarding the FFM in different journals, illustrate the interest for trait psychology and the FFM in particular. Therefore, statements questioning the feasibility of "something like the FFM" (Pervin, 1994) seem a bit too critical, in view of the large body of research findings and progress that has been made during the past ten years.

The history of the development of the FFM shows that the structure of

personality descriptive language reveals five robust dimensions, the so-called Big Five. Although the initial developments were reported for the American-English language, cross-cultural European research has also contributed to the empirical evidence. Of considerable importance in this respect are the lexical studies by Brokken (1978), the work of the Groninger group by Hofstee (1990) and Hofstee and De Raad (1991) and the German lexical studies from the Bielefeld group (Angleitner, Ostendorf, & John, 1990; Ostendorf, 1990). It was the objective of this article to provide an overview of the available instruments in the Dutch language domain to assess the Big Five.

Although, the work of Elshout and Akkerman (1974) in The Netherlands developed rather independently of international research, their contributions are all the more interesting given the fact that they were among the first to pay attention to the findings of Tupes and Christal. Their subsequent research and the publication of the SPFT provided Dutch psychologists already in 1974 with an instrument to assess the Big Five. Furthermore, Elshout and Akkerman underscored the importance of personality assessment at a more fine-grained level beyond the five domains. Especially the clusters they distinguished in their fifth factor are interesting, given the later controversy among five-factor researchers regarding the status and the label for this factor (see De Raad & Van Heck (1994) for a review). The SPFT's fifth factor includes three clusters, i.e. "vindingrijk-speels verstand-weetgierig-intelligent" (creative-intelligent, ...), "zelfstandig-eigen oordeel" (independence, autonomy; ...) and "ontwikkeld-beschouwend" (cultured; ...). The "culture" interpretation of the fifth factor is well-known from the work of Tupes and Christal (1961) and Norman (1963). The second cluster of Elshout and Akkerman's fifth factor, "independence-autonomy", has been reported in recent developmental studies (John, Caspi, Robins, Moffitt, & Stouthamer-Loeber, 1994; Van Lieshout & Haselager, 1994) and factor five of the Dutch Five Factor Personality Inventory (Hendriks, Hofstee, De Raad, & Angleitner, 1995) is labelled "Autonomy", covering items reflecting intellectual autonomy and independence. Finally, Elshout and Akkerman also distinguish a cluster referring to "intellect and creativity/openness", linking up the SPFT to Costa & McCrae's fifth factor. Elshout and Akkerman's three clusters refer to all labels that have been suggested in the FFM's history for the fifth factor, i.e. "culture", "intellect", "openness" and finally "autonomy".

In 1981, the publication of the SPEL (Hofstee, Brokken, & Land) provided researchers and clinicians with an alternative Big-Five measure. A procedure for scoring free self-descriptions on each of the five factors was published by S.P.O.L.A.P. (1987) and validated by Claey's et al. (1985). The B5BBS25 (Mervielde, 1992) has been successfully used in research, when global personality information was considered to be sufficient. The recent authorised publication of the Dutch/Flemish adaptation of the NEO-PI-R will open

perspectives to incorporate the Big Five in research and clinical practice. Its well documented history and links to the international literature makes the NEO-PI-R a useful tool for research and clinical practice. Given its novel empirical background, the publication of the FFPI (Hendriks, Hofstee, De Raad, & Angleitner, 1995) will be welcomed by researchers. The translation into American-English and German will be instrumental in setting up international research projects and comparative research. This overview has illustrated that the NEO-PI-R and the FFPI are no equivalent instruments to assess the Big Five. This discrepancy is most obvious for the fifth of the Big Five, referred to as "Autonomy" in the FFPI and "Openness to Experience" in the NEO-PI-R. In this respect Elphick, Slotboom and Kohnstamm (1997) suggest that the fifth of the FFPI is a blend of Extraversion and Intellectual development.

The availability of inventories, such as the BLIK and the HiPIC, to assess the Big Five in children, will facilitate longitudinal research on personality development throughout the life span. In this view, the adult five factor structure and its facets can be conceptualised as a target structure for personality development (Mervielde, 1994b, 1994c).

The review presented in this article illustrates that both the adjectives lists and the personality inventories are potentially useful instruments to incorporate in research. However, for some research and especially for applied purposes, inventories incorporating facets, are probably best suited to provide the psychologist with a detailed personality description. Sentence items are usually preferred by respondents above personality descriptive adjectives and probably allow a more unambiguous assessment of more particular personality descriptive constructs. Both the HiPIC and the NEO-PI-R inventories cover a broad spectrum of personality traits and concepts extensively described in the psychological literature. With the availability of these instruments in the Dutch language, the gate is open to further investigate the applicability of the Big Five in research and applications in the areas of clinical psychology, psychiatry, applied and organisational psychology.

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Appendix
List of Abbreviations

- 23BB5: 23 Bipolar Big Five Questionnaire (Duijsens & Diekstra, 1995)
5PFT: Vijf Persoonlijkheidsfactorentest (Elshout & Akkerman, 1974)
AB5C: Abridged Big Five Circumplex Model (Hofstee, de Raad, & Goldberg, 1992)
B5BBS25: Big 5 Bipolaire Beoordelingsschalen (Mervielde, 1992)
BLIK: Beoordelingslijsten voor individuele verschillen bij kinderen (Slotboom & Elphick, 1997)
EAS: Emotionality, Activity and Sociability scales (Buss & Plomin)
FFM: Five-Factor Model
FFPI: Five-Factor Personality Inventory (Hendriks, 1997)
HIPIC: Hierarchical Personality Inventory for Children (Mervielde & De Fruyt, 1997)
NEO-FFI: NEO Five-Factor Inventory (Costa & McCrae, 1992; Hoekstra, Ormel, & De Fruyt, 1996)
NEO-PI-R: NEO Personality Inventory Revised (Costa & McCrae, 1992; Hoekstra, Ormel & De Fruyt, 1996)
SPEL-I-II: Standaard Persoonlijkheidseigenschappen Lijst (Hofstee, Brokken, & Land, 1981)

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