

## THE B5BBS-25: A FLEMISH SET OF BIPOLAR MARKERS FOR THE "BIG-FIVE" PERSONALITY FACTORS

Ivan MERVIELDE  
*Laboratorium voor Ontwikkelings- en  
Persoonlijkheidspsychologie  
University of Ghent*

A set of 25 Flemish bipolar markers (B5BBS-25) for the "Big-Five" personality factors are selected, based on a factor analysis of a translation of the 50 bipolar marker scales compiled by Goldberg (1989). A factor analysis of these scales confirms their utility as markers of the five-factor model. A second order factor analysis of factor scores on the newly established instrument and factor scores on the SPEL, a Dutch set of marker scales, demonstrates the concurrent validity of the B5BBS-25, for four of the five factors. The fifth SPEL factor corresponds with the "culturedness" interpretation whereas the scales for the fifth factor of the B5BBS-25, are more in tune with the "Intellect-openness" interpretation for this factor. Analysis of teachers' ratings of primary school children on the selected scales confirmed the five factor structure. Multiple regression analysis illustrates that factor scores on the B5BBS-25 are significantly related to grade point average in each of six grades of primary school education.

### INTRODUCTION

Mischel (1968) challenged the classic assumptions underlying personality psychology and his remarks fueled a period of prolonged and heated controversy about personality dispositions and indeed about the construct of personality itself. In the past two decades the more severe critiques, such as the claim that personality is a fictional construction in the mind of the perceiver (Shweder, 1975), have been rejected on empirical grounds (Funder, 1989; Mervielde & Pot, 1989). Moreover, there is a growing and renewed interest in personality psychology as is evident from the publication of two handbooks (Briggs, Hogan, & Jones, in press; Pervin, 1991) and the recent annual reviews (Buss, 1991; Digman, 1990; Wiggins & Pincus, 1992).

Personality psychology has its main roots in abnormal psychology. Major personality theories are grounded on observations of "clinical" cases or populations and consequently, personality measurement has focussed on distinguishing between "normal" and "clinical" populations. Personality psychologists, called upon to select soldiers fit to fight in the two World Wars, paid much attention to emotional stability as a major factor in stress endurance. The introduction of personality measurement as an integral part of psychiatric diagnosis also favored

assessment techniques tuned to diagnosis of psychiatric syndromes. Instruments such as the Minnesota Multiphasic Personality Inventory (Hathaway & McKinley, 1943) and to a lesser extent, the Eysenck Personality Inventory (Eysenck & Eysenck, 1964) are the most obvious examples of personality measures which grew out of this concern with assessment of abnormality.

Although the emphasis on "abnormality" may be warranted for large scale screening purposes, it has certain drawbacks as a general strategy for personality measurement. The criteria for distinguishing "normal" from "abnormal" people may not be useful to delineate important individual differences within a normal population. Moreover, the emphasis on indicators of psychiatric illness may lead to an overestimation of the role of e.g., emotional stability for the prediction of individual differences.

### *The "Big-Five"*

Social psychological research on the dimensions underlying person perception (Rosenberg & Sedlak, 1972) has emphasized the major role of evaluative meaning, but failed to give a coherent picture of individual differences based on analysis of the descriptive meaning of trait terms (Peabody, 1967, 1984).

Allport and Odbert (1936) in the U.S. and Baumgartner in Germany (John, Angleitner, & Ostendorf, 1988) were among the first to recognize the importance of taxonomic research as a vehicle for delineating the domain of individual differences. Personality descriptors were culled from dictionaries and out of this effort grew the first attempts by Cattell (1943), Tupes and Christal (1961) and Norman (1967) to establish the major dimensions underlying the perception of individual differences. Goldberg (1981, 1982, 1989) is currently one of the more outspoken advocates for this type of research. This tradition of lexical research has spread from the U.S. to Europe. Brokken (1978) studied the major dimensions underlying the Dutch language. Angleitner, Ostendorf and John (1990) and Ostendorf (1990) did the same for the German language. From these studies emerged a consensus about the importance of the five factor model, commonly referred to as the "Big-Five": surgency, agreeableness, conscientiousness, emotional stability and intellect. Briggs (1989) as well as Waller and Ben-Porath (1987), criticized this approach. Goldberg (1990), John (1989, 1990) and McCrae (1989) addressed some of the issues raised by the critics.

*Assessment of the "Big-Five"*

*American research.* Costa and McCrae (1985, 1989) were among the first to recognize the importance of this development for broadening the scope of traditional personality measurement. They extended their NEO- questionnaire, measuring neuroticism, extraversion and openness to include the two missing "Big-Five" dimensions, agreeableness and conscientiousness (Costa, P.T. Jr., McCrae, R. R., & Dye, D.A., 1991). McCrae and Costa (1987, 1989a, 1989b) also document the relationships between the five-factor model and a host of other instruments, confirming the validity of this model. Others, such as Hogan (1985) and Trapnell and Wiggins (1990) have extended their original personality measures to include the "missing" factors of the five-factor model. Goldberg (1989, 1990) selected 100 clusters of traits, representing the five-factors and proposed a set of 50 bipolar markers for the five factors.

*Dutch studies.* Elshout and Akkerman (1973) constructed the 5PFT, a questionnaire to measure the five factors. This instrument consists of a mixture of items, some are formulated as trait adjectives and others as behavioral acts. Hofstee, Brokken and Land (1981) selected a set of 21 marker scales for the SPEL. This instrument is based on an extensive psycho-lexical study of Dutch trait adjectives (Brokken, 1977). The SPEL has 21 scales, marking seven factors. The first five correspond to the five-factor model and the two additional ones are: aggressiveness and progressiveness.

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 Claeys et al. (1985).

*A Flemish set.* Hofstee (1990) has noted that only one out of four trait adjectives shows acceptable correspondence in meaning when translated from American English to Dutch. Mervielde (1977) also stressed the important differences in evaluative meaning between American and Flemish trait adjectives. The obvious difficulties involved in translating adjectives from one language into another necessitates cross-validation and partial replication of the research in order to guarantee cross-language comparison of research results. The purpose of the present study is to provide an abridged, Flemish version of the 50 bipolar scales selected by Goldberg (1989), validated on a sample of Flemish speaking subjects. The study involves translation of the original

50 bipolar scales, factor analysis of self-ratings on these traits and assessment of concurrent validity by comparing the selected scales with the SPEL (Hofstee, Brokken, & Land, 1981).

## METHOD

### *Subjects*

In order to mirror as closely as possible the studies reported by Goldberg (1989), two samples of psychology students, served as subjects for this study. The first sample comprised third year students ( $N = 62$ ), taking their first specialized course in personality. The second sample ( $N = 72$ ) consisted of second year psychology students with no prior knowledge of this kind of research. The majority of subjects were females (77 %). Their mean age was 20.46 years and the range from 18 to 27 years. Preliminary analyses revealed no marked differences between both samples, and therefore they were collapsed for all subsequent analyses.

### *Materials*

*Trait terms.* Both poles of the 50 bipolar scales, selected by Goldberg (BRS-50), were translated by two independent persons, including the author of this study. This procedure resulted in 143 terms. Both translators listed more than one term when they were not sure of the exact translation and therefore the number of translated terms is considerably greater than the source list.

The terms were mixed in a systematic way. Five blocks of five terms (one for each of the five scales), selected from the negative pole were listed first. They were followed by a similar block of 25 positive terms. The procedure was repeated until 100 terms were included. The end of the list contained the 43 alternative translations or synonyms. Subjects were required to make an applicability rating, on a scale ranging from 1 (not applicable) to 9 (highly applicable), for each of the 143 terms.

*SPEL-scales.* The concurrent validity of the new instrument will be assessed by comparing it with the SPEL (Hofstee, Brokken, & Land, 1981). This instrument is designed to measure the major personality descriptive dimensions for the Dutch language. The SPEL consists of 21 scales, aimed at measuring seven factors: introversion, agreeableness, conscientiousness, emotional instability, unculturedness, aggression and progressiveness. The first five of these can be considered as

more or less equivalent to the "Big-Five" commonly found in research with American subjects. The 21 SPEL-scales were grouped by factor and rated on an applicability scale ranging from 1 to 9.

## RESULTS

### *Factor analysis of 143 terms*

Five principal components were extracted and Varimax-rotated. This analysis revealed the traditional "Big-Five" factors but in a non-traditional order. This is not surprising because the number of terms for each factor was altered due to the addition of multiple translations. The number of added alternative translations for each of the five factors was: 5 (I), 5 (II), 14 (III), 10 (IV) and 9 (V). This may have influenced the relative importance of the factors as indicated by explained percentage of variance. Table 1 shows that the five-factor solution accounts for 42.3% of the variance. The total number of translated adjectives with their highest loading on the expected factor is 78.<sup>1</sup>

Table 1. — *Factor Analysis on the 143 Terms*

| Factor                       | % explained variance | N* |
|------------------------------|----------------------|----|
| I. Introversion-Extraversion | 7.8                  | 15 |
| II. Agreeableness            | 4.7                  | 17 |
| III. Conscientiousness       | 20.7                 | 17 |
| IV. Emotional Stability      | 5.0                  | 14 |
| V. Intellect-Openness        | 4.1                  | 15 |
| Total                        | 42.3                 | 78 |

\*N = number of translated adjectives with highest loading on the expected factor

### *Selection of bipolar scales*

The selection of terms for the construction of bipolar scales was based on several criteria. The selected terms had to have their highest loading on the same factor as in the original analysis. A sufficient and equal number of terms with positive and negative loadings for each factor had to be selected. Terms with positive and negative loadings had to be

<sup>1</sup> An analysis on ipsatized scores yielded slightly different results. The main difference occurred for the agreeableness factor (II). For this factor the analysis of ipsatized scores indicated that only 7 of the 20 terms had their highest loading on the expected factor. The main effect of ipstatization was that it weakened the agreeableness factor. The explanation for this may be as follows. Each of the Big Five factors has a desirable and an undesirable pole. Factor II (agreeableness) is the factor most similar to "social desirability" (Graziano & Eisenberg, in press). Ipsatization may remove differences in social desirability (a response set) as well as real differences in agreeableness (a correlate of social desirability).

opposite in meaning in order to be considered as acceptable endpoints for a bipolar scale. Taking into consideration all these criteria, 25 bipolar scales were selected and will subsequently be referred to as the B5BBS-25 scales. The selected scales, together with their loadings from the five factor solution are listed in Table 2.

Table 2. — *Factor Loadings for the Selected Scales*

|                                             | Left term | Right term |
|---------------------------------------------|-----------|------------|
| <b>Factor I (Introversion-Extraversion)</b> |           |            |
| IE01: bedeesd - zelfzeker                   | -.77      | .49        |
| IE02: stil - spraakzaam                     | -.74      | .62        |
| IE03: onderdanig - assertief                | -.50      | .60        |
| IE04: geremd - spontaan                     | -.71      | .64        |
| IE05: introvert - extravert                 | -.56      | .62        |
| <b>Factor II (Agreeableness)</b>            |           |            |
| AG1: koel - hartelijk                       | .51       | -.62       |
| AG2: onvriendelijk - vriendelijk            | .40       | -.59       |
| AG3: zelfzuchtig - onzelfzuchtig            | .51       | -.57       |
| AG4: tegenwerkend - meewerkend              | .48       | -.55       |
| AG5: strak - soepel                         | .53       | -.49       |
| <b>Factor III (Conscientiousness)</b>       |           |            |
| CO1: onnauwkeurig - nauwkeurig              | .77       | -.78       |
| CO2: achteloos - nauwgezet                  | .60       | -.73       |
| CO3: nalatig - grondig                      | .70       | .71        |
| CO4: onzorgvuldig - zorgvuldig              | .74       | -.69       |
| CO5: lui - ijverig                          | .57       | -.51       |
| <b>Factor IV (Emotional Stability)</b>      |           |            |
| ES1: zenuwachtig - rustig                   | .71       | -.66       |
| ES2: nerveus - op zijn gemak                | .66       | -.53       |
| ES3: gespannen - ontspannen                 | .55       | -.68       |
| ES4: onstandvastig - standvastig            | .53       | -.64       |
| ES5: opvliegend - kalm                      | .53       | -.67       |
| <b>Factor V (Intellect-Openness)</b>        |           |            |
| IO1: onintelligent - intelligent            | -.50      | .70        |
| IO2: onverstandig - verstandig              | -.57      | .67        |
| IO3: fantasieloos - fantasierijk            | -.42      | .55        |
| IO4: oncreatief - creatief                  | -.39      | .49        |
| IO5: ongeïnteresseerd - leergierig          | -.36      | .43        |

Note. The highest factor loadings are printed in bold, loadings less than .20 are omitted.

### *Correspondence with the factors of the SPEL*

To assess the validity of the B5BBS-25 factors, they will be compared with the seven factors of the SPEL-scales. To compute scores on the bipolar scales the raw scores on both poles were subtracted from each other. These bipolar scores were submitted to principal component

analysis and varimax rotation. This analysis revealed five factors with eigenvalues greater than 1, explaining 66.4% of the variance. All bipolar scales had their highest loading on the expected factor as is evident from the rotated factor matrix reported in table 3.

Table 3. — *Factor Loadings for B5BBS-25 Scales*

|                                        | I   | III | IV  | II  | V   |
|----------------------------------------|-----|-----|-----|-----|-----|
| <b>Factor I (Intro-Extraversion)</b>   |     |     |     |     |     |
| IE2: stil - spraakzaam                 | .85 |     |     | .25 |     |
| IE4: geremd - spontaan                 | .84 |     |     | .22 |     |
| IE1: bedeesd - zelfzeker               | .78 |     | .30 |     |     |
| IE5: introvert - extravert             | .72 |     | .37 |     |     |
| IE3: onderdanig — assertief            | .70 |     |     | .37 | .29 |
| <b>Factor III (Conscientiousness)</b>  |     |     |     |     |     |
| CO4: onzorgvuldig - zorgvuldig         |     | .87 |     |     |     |
| CO1: onnauwkeurig - nauwkeurig         |     | .87 |     |     |     |
| CO3: nalatig - grondig                 |     | .86 |     |     |     |
| CO2: achteloos - nauwgezet             |     | .75 |     | .24 |     |
| CO5: lui - ijverig                     | .29 | .72 |     |     |     |
| <b>Factor IV (Emotional Stability)</b> |     |     |     |     |     |
| ES1: zenuwachtig - rustig              |     |     | .90 |     |     |
| ES2: nerveus - op zijn gemak           | .36 |     | .81 |     |     |
| ES3: gespannen - ontspannen            | .31 |     | .79 | .22 |     |
| ES5: opvliegend - kalm                 |     |     | .74 |     |     |
| ES4: onstandvastig - standvastig       |     | .41 | .57 |     |     |
| <b>Factor II (Agreeableness)</b>       |     |     |     |     |     |
| AG1: koel - hartelijk                  | .34 |     |     | .75 |     |
| AG4: tegenwerkend - meewerkend         |     |     | .22 | .75 |     |
| AG3: zelfzuchtig - onzelfzuchtig       |     |     | .26 | .65 |     |
| AG2: onvriendelijk - vriendelijk       |     |     |     | .64 | .38 |
| AG5: strak - soepel                    | .44 |     | .20 | .53 |     |
| <b>Factor V (Intellect-Openness)</b>   |     |     |     |     |     |
| IO1: onintelligent - intelligent       |     |     |     |     | .79 |
| IO2: onverstandig - verstandig         |     |     |     |     | .77 |
| IO3: fantasieloos - fantasierijk       |     |     |     |     | .62 |
| IO4: oncreatief - creatief             | .28 |     |     |     | .59 |
| IO5: ongeïnteresseerd - leergierig     |     | .32 |     | .33 | .52 |

Note. The highest factor loadings are printed in bold, loadings less than .20 are omitted.

The same sample of subjects also provided self-ratings on the 21 SPEL-scales. A principal component analysis produced seven factors with eigenvalues greater than 1, explaining 77.4% of the variance. All scales had their highest loading on the expected factors as is evident from the varimax rotated factor matrix reproduced in table 4.

In order to compare the factors of the B5BBS-25 to those of the SPEL, factor scores were computed based on the factor analysis reported in table 3 and 4. The set of twelve factor scores (5 from the

Table 4. — *Factor Structure for 21 SPEL-scales*

|                                        | I    | II   | III  | IV   | V   | VI  | VII  |
|----------------------------------------|------|------|------|------|-----|-----|------|
| <b>Factor I (Introversion)</b>         |      |      |      |      |     |     |      |
| Eenzelvig, ontoegankelijk              | .82  | -.23 |      |      | .24 |     |      |
| Gereserveerd, terughoudend             | .79  | -.30 |      |      |     |     |      |
| Beschouwend, filosofisch               | .55  |      |      |      |     |     | .45  |
| <b>Factor II (Agreeableness)</b>       |      |      |      |      |     |     |      |
| Opgewekt, vrolijk, zonnig              |      | .88  |      |      |     |     |      |
| Gezellig, plezierig, prettig           | -.28 | .83  |      |      |     |     |      |
| Enthousiast, geestdriftig              |      | .75  |      | .23  |     |     |      |
| <b>Factor III (Conscientiousness)</b>  |      |      |      |      |     |     |      |
| Ijverig, vlijtig                       | -.29 |      | .80  |      |     |     |      |
| Plichtsgetrouw, punctueel, stipt       |      |      | .80  |      |     |     |      |
| Spaarzaam, zuinig                      |      |      | .69  |      |     |     |      |
| <b>Factor IV (Emotional Stability)</b> |      |      |      |      |     |     |      |
| Huilerig, jankend, schrikkerig         |      |      |      | -.81 |     |     |      |
| Onafhankelijk, zelfstandig             |      |      |      | .77  |     |     | .24  |
| Zeker, zelfbewust                      |      | .27  | .28  | .73  |     |     |      |
| <b>Factor V (Culture)</b>              |      |      |      |      |     |     |      |
| Onbeleefd, ongemanierd                 |      |      |      |      | .88 |     |      |
| Banaal, platvloers                     |      |      |      |      | .87 |     |      |
| Onbeschaafd, onfatsoenlijk, ordinar    |      |      |      |      | .87 |     |      |
| <b>Factor VI (Aggressiveness)</b>      |      |      |      |      |     |     |      |
| Aanvallend, opstandig, strijdzuchtig   |      |      |      |      |     | .88 |      |
| Baasachtig, bazig                      |      |      |      |      |     | .80 |      |
| Heetgebakerd, heethoofdig, opvliegend  |      |      | -.26 |      |     | .80 |      |
| <b>Factor VII (Progressiveness)</b>    |      |      |      |      |     |     |      |
| Progressief, vooruitstrevend           |      | .21  |      |      |     |     | .84  |
| Behoudend, conservatief                | .33  |      |      |      |     |     | -.73 |
| Radicaal, revolutionair                |      |      |      |      |     | .32 | .69  |

Note. The highest factor loadings are printed in bold, loadings less than .20 are omitted.

B5BBS and 7 from the SPEL) was submitted to a second order analysis. This factor analysis revealed six factors with an eigenvalue greater than 1, explaining 77.1% of the total variance. The varimax rotated factor matrix with the loadings of the 12 factor scores is represented in Table 5

Inspection of this table shows that there is good correspondence between the factor scores of both instruments. First of all, it should be noted that the B5BBS-25 factor scores have higher loadings than the corresponding SPEL factors. For four of the "Big Five" there is complete agreement between the two instruments. The Introversion-Extraversion factor scores of the B5BBS-25 have a .91 loading on the first factor (explains 15.6% of the variance), together with the intro-

Table 5. — *Secondary Factor Analysis of Factorscores on SPEL and B5BBS-25*

|                                        | I    | II   | III  | IV   | V   | VI   |
|----------------------------------------|------|------|------|------|-----|------|
| <b>Factor I (Intro- Extraversion)</b>  |      |      |      |      |     |      |
| B5BBS-25 Intro- Extraversion           | .92  |      |      |      |     |      |
| SPEL Introversion                      | .70  | .36  |      |      | .28 |      |
| <b>Factor II (Agreeableness)</b>       |      |      |      |      |     |      |
| B5BBS-25 Agreeableness                 |      | -.88 |      |      |     |      |
| SPEL Aggressiveness                    | -.42 | .65  |      | .39  |     | -.25 |
| SPEL Agreeableness                     | -.31 | -.44 |      |      | .35 | -.37 |
| <b>Factor III (Conscientiousness)</b>  |      |      |      |      |     |      |
| B5BBS-25 Conscientiousness             |      |      | -.92 |      |     |      |
| SPEL Conscientiousness                 |      |      | -.89 |      |     |      |
| <b>Factor IV (Emotional Stability)</b> |      |      |      |      |     |      |
| B5BBS-25 Emotional stability           |      |      |      | .84  |     |      |
| SPEL Emotional instability             | -.33 | .28  |      | -.76 |     |      |
| <b>Factor V (Intellect-Openness)</b>   |      |      |      |      |     |      |
| B5BBS-25 Intellect-Openness            |      |      |      |      | .83 | -.25 |
| SPEL Progressiveness                   |      |      |      |      | .75 | .27  |
| <b>Factor VI (Unculturedness)</b>      |      |      |      |      |     |      |
| SPEL (un)culturedness                  |      |      |      |      |     | .83  |

*Note.* The highest factor loadings are printed in bold, loadings less than .20 are omitted.

version scale of the SPEL. The third factor, accounts for 14.4% of the variance and can be identified as the Conscientiousness factor, with high loadings for the factor III scores of the B5BBS-25 and the SPEL. The second factor, explains 14% of the variance and is a mixture of the Agreeableness factor scores of both instruments and the Aggressiveness scale of the SPEL. The difference in sign of the loadings indicates that the Aggressiveness factor operates as negative Agreeableness. The Emotional Stability factor scores also load on the same factor (13.3%) in this second order analysis. The opposite sign for the loading is due to the different orientation of the scales in the two instruments. The fifth and sixth factors of this analysis demonstrate that the "intellect-culture-openness" factor (Big-Five factor V) is not replicable across the two instruments. The factor scores on the fifth factor of the B5BBS-25 have their highest loading, together with the scores on factor VII of the SPEL (progressiveness). Factor scores on the "Culture-factor" of the SPEL constitute a separate sixth factor explaining 8.3% of the variance. This lack of resemblance for the intellect-culture-openness factor should not come as a surprise, given the ongoing debate about the true nature of this factor (McCrae, 1990). Inspection of the SPEL-scales for this factor (uncultured, unpolite, unrefined etc.) indicates that these scales primarily reflect the "Culture" interpretation of the factor. The B5BBS-25 counterpart, however, has scales such as intelligent —

unintelligent, smart — stupid, pointing more towards the "Intellect" interpretation as well as two "Openness" type scales (uncreative — creative, imaginative — unimaginative). The major difference between the two instruments can thus be summarized as a difference in emphasis on certain facets of the fifth factor. The fifth B5BBS-25 factor is more in tune with the intellect-openness interpretation, whereas the corresponding SPEL factor seems to be confined to the "Culture" facet.

#### *Structure of ratings of children on the selected scales*

The selection of the B5BBS-25 was based on self-ratings of psychology students. The structure of self-ratings does not necessarily correspond to the structure of ratings of other targets. Given that subjects have more information about their own behaviour than about the behaviour of well-known targets, the structure of their other-ratings may turn out to be less complex. To test the validity of the selected scales on a new sample and to illustrate their usefulness as rating scales, some data of a research project about the validity of the Big Five as a model for individual differences among primary school children will be presented (Mervielde, 1991). Teachers from 168 classes drawn from 84 schools spread over the Flemish speaking part of Belgium, rated 10 children from grade 1 to 6 on the 25 selected scales. A separate factor analysis for each of the 6 grades, confirmed the factorial structure of the B5BBS-25 scales. The primary loadings obtained in these analyses are summarized in Table 6. The sample size for each grade is reported in Table 7. Table 6 shows that for factors I, II and III, all scales have their highest loading on the expected factor in each of the six samples. Scale ES4 (onstandvastig — standvastig) did not have its highest loading on factor IV for 5 of the six samples. In most cases this scale was linked with the factor III scales. At least for teachers, this scale reflects aspects of both conscientiousness and stability. Factor V scales for grades 1 to 4, correspond to the factor analysis of students' self-ratings. The lower loadings for some of the scales in grades 5 and 6 illustrates that for these grades, factor V bifurcates into intellect and creativity. The internal consistency, as measured by Cronbach's  $\alpha$  is reported in Table 7. These values are more than adequate, given the fact that each domain scale consists of only 5 bipolar scales.

Table 6. — *Factor Loadings for Ratings of Primary School Children Grades 1 to 6<sup>a</sup>*

| Scale                                       | Grade 1 | Grade 2 | Grade 3 | Grade 4 | Grade 5 | Grade 6 |
|---------------------------------------------|---------|---------|---------|---------|---------|---------|
| <b>Factor I (Introversion-Extraversion)</b> |         |         |         |         |         |         |
| IE01: bedeesd - zelfzeker                   | .74     | .80     | .80     | .77     | .83     | .81     |
| IE02: stil - spraakzaam                     | .88     | .85     | .85     | .89     | .87     | .85     |
| IE03: onderdanig - assertief                | .81     | .74     | .76     | .83     | .86     | .74     |
| IE04: geremd - spontaan                     | .88     | .89     | .85     | .84     | .91     | .84     |
| IE05: introvert - extravert                 | .89     | .88     | .80     | .76     | .89     | .84     |
| <b>Factor II (Agreeableness)</b>            |         |         |         |         |         |         |
| AG1: koel - hartelijk                       | .68     | .75     | .72     | .71     | .63     | .69     |
| AG2: onvriendelijk - vriendelijk            | .78     | .84     | .80     | .76     | .76     | .82     |
| AG3: zelfzuchtig - onzelfzuchtig            | .79     | .80     | .76     | .79     | .63     | .80     |
| AG4: tegenwerkend - meewerkend              | .79     | .66     | .75     | .58     | .62     | .63     |
| AG5: strak - soepel                         | .64     | .69     | .56     | .73     | .70     | .69     |
| <b>Factor III (Conscientiousness)</b>       |         |         |         |         |         |         |
| CO1: onnauwkeurig - nauwkeurig              | .90     | .87     | .87     | .90     | .90     | .88     |
| CO2: achteloos - nauwgezet                  | .89     | .90     | .85     | .87     | .88     | .90     |
| CO3: nalatig - grondig                      | .87     | .86     | .90     | .90     | .91     | .92     |
| CO4: onzorgvuldig - zorgvuldig              | .86     | .89     | .86     | .88     | .87     | .87     |
| CO5: lui - ijverig                          | .55     | .71     | .73     | .78     | .84     | .84     |
| <b>Factor IV (Emotional Stability)</b>      |         |         |         |         |         |         |
| ES1: zenuwachtig - rustig                   | .87     | .85     | .88     | .88     | .85     | .90     |
| ES2: nerveus - op zijn gemak                | .88     | .82     | .89     | .88     | .92     | .90     |
| ES3: gespannen - ontspannen                 | .74     | .80     | .81     | .79     | .86     | .82     |
| ES4: onstandvastig - standvastig            | .41     | .64     | .39     | .45     | .40     | .35     |
| ES5: opvliegend - kalm                      | .60     | .55     | .51     | .61     | .40     | .46     |
| <b>Factor V (Intellect-Openness)</b>        |         |         |         |         |         |         |
| IO1: onintelligent - intelligent            | .80     | .67     | .69     | .70     | .37     | .42     |
| IO2: onverstandig - verstandig              | .77     | .66     | .66     | .68     | .37     | .41     |
| IO3: fantasieloos - fantasierijk            | .55     | .72     | .64     | .66     | .81     | .81     |
| IO4: oncreatief - creatief                  | .54     | .67     | .53     | .59     | .81     | .80     |
| IO5: ongeïnteresseerd - leergierig          | .77     | .51     | .38     | .56     | .33     | .3      |

Note. Highest factor loadings are printed in bold.

<sup>a</sup> Based on Mervielde (1991).

Table 7. — *Cronbach's alpha for B5BBS-25 Subscales*

| Sample  | N    | EXT | AGR | CON | STA | INT |
|---------|------|-----|-----|-----|-----|-----|
| Grade 1 | 280  | .93 | .88 | .94 | .84 | .90 |
| Grade 2 | 280  | .90 | .87 | .94 | .88 | .88 |
| Grade 3 | 300  | .90 | .86 | .94 | .83 | .89 |
| Grade 4 | 300  | .91 | .88 | .96 | .89 | .91 |
| Grade 5 | 260  | .94 | .84 | .96 | .81 | .88 |
| Grade 6 | 260  | .90 | .85 | .95 | .82 | .87 |
| Total   | 1680 | .91 | .85 | .95 | .85 | .89 |

*Predictive validity of ratings on the B5BBS-25*

Critics of personality research in general, tend to reiterate Mischel's (1968) claims about the low external or predictive validity of personality measures. The Big Five are best considered as broad band factors that can be broken down into several more specific factors (John, 1990). The assessment of broad-band factors, such as the Big Five, does not preclude the prediction of significant, real world, criteria. To illustrate this, table 8, summarizes data on the relationship between factor scores on the B5BBS-25 and grade point average for grades 1 to 6 (Mervielde, 1992).

Table 8. — *Correlations Between Grade Point Average and Big Five Factor Scores<sup>a</sup>*

| Sample  | N   | EXT   | AGR  | CON   | STA   | INT   | Mult.R |
|---------|-----|-------|------|-------|-------|-------|--------|
| Grade 1 | 260 | .15*  | -.05 | .34** | .17*  | .48** | .63**  |
| Grade 2 | 280 | .03   | -.10 | .46** | .24** | .43** | .68**  |
| Grade 3 | 300 | .18** | .10  | .54** | .03   | .40** | .71**  |
| Grade 4 | 300 | .07   | -.01 | .58** | -.05  | .48** | .76**  |
| Grade 5 | 260 | .19** | -.04 | .68** | .02   | .27** | .76**  |
| Grade 6 | 260 | .17*  | -.03 | .74** | .12   | .25** | .81**  |

<sup>a</sup> Based on Mervielde (1992).

\*  $p < .01$  \*\*  $p < .001$

This table demonstrates that the multiple correlation between Big Five factor scores and grade point average gradually increases from the first to the sixth grade. For each grade, factor scores on conscientiousness and intellect, are significantly related to grade point average. The drop in predictive value for intellect ratings in grades 5 and 6, is due to the fact that for these grades the factor loads primarily on the creativity and imagination scales. The three remaining intellect scales combine with the conscientiousness factor and hence are responsible for the higher correlation with grade point average. The positive correlation of extraversion with grade point average for 4 of the 6 samples is also in agreement with research based on Eysenck's junior personality scale (Morris, 1979).

## DISCUSSION

The major purpose of this study was to provide a set of bipolar markers for the "Big Five" personality factors, validated on a sample of Flemish speaking persons and with a high degree of correspondence to the set of 50 bipolar marker scales developed by Goldberg (1989).

The research confirms that translation of terms from one language into another is a difficult task. The factor analysis of translated terms revealed that about 75% of the original American terms loaded on the expected factors.

The comparison of factor scores from the SPEL and the newly established instrument illustrates that both instruments cover a common ground except for the fifth factor. This confirms the ongoing discussion about the different facets of this factor and its varying interpretations (McCrae, 1990). The B5BBS-25 has scales which are more likely to be indicators of "Intellect-Openness", whereas the fifth factor of the SPEL reflects the "Culture" facet of this factor.

Data from a large scale study on the validity of the Big Five as a model for teachers' ratings of individual differences among primary school children, illustrate the validity of the B5BBS-25 as rating scales. The criterion validity of this instrument is confirmed by showing that it is a good predictor of grade point average in primary school.

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H. Dunantlaan, 2  
9000 Ghent

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