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Is short in length short in content? An examination of the domain representation of the Ten Item Personality Inventory scales in Dutch language

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ABSTRACT

In recent years, researchers have recognized the need for very short scales to measure basic personality dimensions. One of the most widely used instruments is the Ten Item Personality Inventory (TIPI), aimed at measuring the dimensions of the Five-Factor-Model of personality. The present paper examines to what extent the advantages of minimal length may come at the cost of decreased validity by examining how well the TIPI scales represent the Five-Factor-Model dimensions in a Dutch-speaking sample. Moreover, it was tested to what extent the TIPI covers the central core underlying each Five-Factor-Model dimension. The results show that the TIPI is a valid alternative for the existing Five-Factor-Model instruments when time is scarce, although the central core of mainly openness is not adequately captured by the respective TIPI scale scores.

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1. Introduction

Without doubt the Five-Factor-Model (FFM) is the most widely adopted model of personality (Gosling, Rentfrow, & Swann, 2003; John & Srivastava, 1999; McCrae & John, 1992). According to this model the major features of personality can be described by five broad factors, i.e., neuroticism, extraversion, openness, agreeableness, and conscientiousness. In turn, each of these factors encompasses several facets, which means that the Big Five is a hierarchical model of personality traits.

The most comprehensive instrument available to measure the Big Five is Costa and McCrae's (1992) Revised NEO Personality Inventory (NEO-PI-R). This instrument consists of 240 items and measures the five factors by means of 6 subscales per factor. Although the NEO-PI-R has excellent psychometric properties in terms of validity and reliability, the inventory takes about 45 min to complete. Respondents filling out such an instrument can experience this long completion time as a burden, which may evoke the feeling of being "oversurveyed". Besides the negative feeling, which may affect reliability (Herzberg & Brähler, 2006), this instrument cannot be used as a complementary measure in large-scale surveys where the number of items is severely restricted. In order to avoid these problems, several short instruments measuring the Big Five have been developed. The most widely used short forms are: Costa and McCrae's (1992) 60-item NEO Five Factor Inventory (NEO-FFI); Goldberg's (1992) set of 100 trait descriptors (TDA); a compact version of Goldberg's (1992) instrument containing 40 descriptors (Saucier, 1994); and the 44-item Big Five Inventory (BFI) by John and Srivastava (1999). Although the completion time of these instruments is considerably shorter as compared to the NEO-PI-R, the need for an even briefer instrument remained (Woods & Hampson, 2005). This need may stem from time- or other constraints, or from the desire to obtain information about the Big Five dimensions in order to study person × situation interactions (e.g. Fleeson, 2007) or to construct behavioural signatures across different situations (Mischel, 2004), as such studies require multiple assessments of the Five-Factor-Model dimensions in a variety of situations.

Recognizing this need, Gosling et al. (2003) designed a very short Big Five inventory: the Ten Item Personality Inventory (TIPI). In a number of studies, this scale was tested and approved on a wide range of psychometric criteria such as convergent and discriminant validity, test–retest reliability, and external correlates (Gosling et al., 2003). However, because of the minimal length of the TIPI, it is important to thoroughly evaluate to what extent the scales cover the corresponding Five-Factor-Model dimensions. Provided that the Five-Factor-Model is a hierarchical model with several facets being nested within the five factors, an important question reads whether for each factor, the TIPI should measure only the shared part of the factor-specific facets, or also their unique aspects, i.e. the variance not shared by the factor-specific facets. According to the authors, this question relates to the discussion about the central core of the Five-Factor-Model dimensions, which

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Table 1
Principal component analysis of both versions of the TIPI-d after Varimax rotation

	Study 1: TIPI-d version 1					Study 2: TIPI-d version 2				
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Neu1	−.75	.18	.31	.30	.07	.88	.08	.14	−.20	−.08
Neu2	.83	.03	.21	.20	−.04	−.88	.07	.17	−.09	−.06
Ext1	.02	−.05	.23	−.83	.14	−.08	−.06	.15	.87	−.01
Ext2	.02	.03	.06	.89	.03	.04	−.01	.09	−.88	.03
Ope1	.28	−.46	.32	−.12	.41	−.06	−.58	.47	.40	.18
Ope2	−.02	.91	.04	.03	.06	−.02	.94	.04	.06	.08
Agr1	−.24	−.10	−.10	−.02	.70	.11	.06	−.39	.34	.28
Agr2	.15	.09	.80	−.14	−.04	.02	−.01	.89	.07	−.06
Con1	−.16	−.14	.70	.01	−.28	.07	.06	.20	.03	−.76
Con2	.10	.14	−.18	−.06	.81	.05	.07	.09	.02	.87

Note: loadings with absolute value <.300 are grey.

parallels the *g* factor in intelligence testing. Provided that it is possible to separate the central core of each factor from its periphery or secondary associations, it is possible to evaluate the main requirement of the TIPI: ideally it should be related to the central core of each personality dimension, being the shared part of the factor-specific facets, and not to the secondary content, that is the unique aspects of the factor-specific facets.

To this end, we first developed a Dutch version of the TIPI. To this day, the TIPI has been used in a series of studies and various translations are available, although to our knowledge only a German version (Muck, Hell, & Gosling, 2007) and a German adaption of the TIPI (Herzberg & Brähler, 2006) have been validated. Next, we tested how well the different scales represent the facets of the corresponding Five-Factor-Model dimensions and to what extent the central core of the Five-Factor-Model dimensions is covered by the TIPI.

2. Study 1

2.1. Method

2.1.1. Participants

A sample of 345 first year psychology students of the University of Leuven participated in return for course credits. The participants were aged between 13 and 63 years (M = 18.5; SD = 2.9), and 77.5% of the sample was female. Based on general demographic statistics, the large majority of these respondents are Dutch-speaking, Belgian citizens of western European descent.

2.1.2. Materials

The original TIPI (Gosling et al., 2003) was translated into Dutch by a native expert and back-translated by two independent researchers. The Dutch translation is available from the authors upon request. Participants also filled out the Dutch version of the NEO-PI-R (Hoekstra, Ormel, & DeFruyt, 1996). Additionally, the third-person R-form of the NEO-PI-R (Costa & McCrae, 1992) was completed as a peer-report by a close friend or a family member of the participant. Three hundred and two peer-reports were collected using peers aged between 14 and 69 years (M = 29.5; SD = 13.7); 63% of the peers were female.

2.2. Results

2.2.1. Factor structure of the TIPI-d

We performed an exploratory instead of a confirmatory factor analysis because confirmatory models with less than three indicators per factor are susceptible to estimation problems such as negative error variances (Kline, 2005, p. 114). The result of this principal component analysis after Varimax rotation[1] is shown in Table 1.

As can be seen in Table 1, the items for neuroticism, extraversion, and openness are clustered in factors 1, 4, and 2, respectively. However, the items designed to measure agreeableness and conscientiousness are ineffective since factor 3 and factor 5 are made up of a mixture of the items of both Five-Factor-Model dimensions. In sum, the factor structure for neuroticism, openness and extraversion complies with the intended structure. For agreeableness and conscientiousness, however, the factor structure mismatches the intended structure.

2.2.2. External correlates

In order to assess the convergent and discriminant validity of the TIPI-d we correlated the TIPI-d scale scores for each of the Five-Factor-Model dimensions with the self-rated and the peer-rated NEO-PI-R scale scores. An overview of these correlations can be found in Table 2.

The pattern of correlations between the TIPI-d scale scores and the NEO-PI-R peer-ratings is similar to the pattern of correlations between the TIPI scale scores and the NEO-PI-R self-ratings, the only difference being that the latter are larger in absolute value. Moreover, the convergent correlations are higher than the divergent correlations for all Five-Factor-Model factors, except for openness. In particular the divergent correlations between the TIPI-d scale score for openness and the NEO-PI-R scale scores for extraversion and conscientiousness are higher than the convergent correlation between the TIPI-d and NEO-PI-R scale score for openness.

2.3. Discussion

Overall, this version of the TIPI-d does not fully meet the criteria required for a sound short Five-Factor-Model instrument. First of all, only three of the five dimensions can clearly be identified. In particular the dimensions agreeableness and conscientiousness both contain items with high factor loadings on the other dimension, and as such these two dimensions can not be interpreted unambiguously. The most likely rationale for this uninterpretability is that a naïve translation of the descriptors for conscientiousness and agreeableness resulted in items being lexically related to both dimensions.

Second, the tests on convergent and discriminant validity were satisfying for all dimensions, except for openness. It was seen that, when correlating the TIPI-d scale score with the NEO-PI-R scale

[1] When applying an oblique rotation (Oblimin) the correlations between the factors were very low for both versions of the TIPI-d (ranging from .01 to .14). Hence the factor loadings are very similar with both types of rotations.

Table 2
Correlations between the self-rated and peer-rated NEO-PI-R scale scores and the scale scores for both TIPI-d versions

	Study 1: TIPI-d version 1					Study 2: TIPI-d version 2				
	N	E	O	A	C	N	E	O	A	C
NEO-PI-R scale scores										
N	.70**	−.26**	.14*	−.16**	−.13*	.64**	−.22**	−.14*	−.10	−.08
E	−.20**	.74**	−.42**	.15**	−.02	−.17**	.72**	.34**	.00	−.05
O	−.08	.14*	.12*	.08	−.18**	.02	.17**	.48**	.01	−.16*
A	.07	−.06	.08	.48**	.35**	.11	−.05	.07	.49**	.24**
C	−.15**	.09	.03	.25**	.66**	−.10	.04	.05	.22**	.67**
NEO-PI-R scale scores peer-ratings										
N	.42**	−.16**	.13*	−.09	−.02	.35**	−.07	−.06	−.03	−.07
E	−.23**	.58**	−.35**	.06	−.10	−.13*	.56**	.23**	−.00	.00
O	−.13*	.17**	.06	.01	−.18**	−.03	.20**	.31**	−.04	−.18**
A	.03	−.10	.08	.31**	.25**	.03	−.11	−.01	.40**	.24**
C	−.01	.04	−.01	.19**	.49**	.03	−.03	.06	.17**	.50**

Note: convergent correlations are underlined.
* $p < .05$.
** $p < .01$.

scores, openness as measured by the TIPI-d was associated to extraversion and conscientiousness to a stronger degree than to the NEO-PI-R version of openness. In other words, these discriminant correlations were higher than the convergent correlation, indicating a validity problem for openness.

Summarized, for three Five-Factor-Model dimensions, i.e. agreeableness, conscientiousness, and openness, the TIPI-d items need adjustment in order to meet the psychometric standards of a solid short Five-Factor-Model instrument. In a subsequent study, the problematic items were adapted and a second version of the TIPI-d was developed and validated.

3. Study 2

3.1. Method

3.1.1. Participants

Study 2 took place about six months after Study 1, and recruited from the same sample of participants. Two hundred and ninety five of the original 345 subjects participated in Study 2. The participants' age ranged between 17 and 24 ($M = 18.5$; SD = 0.9) and the sample consisted of 79% of females.

3.1.2. Materials

Based on the results of Study 1, five descriptors of the TIPI-d were adjusted. In particular, two descriptors of openness, two of conscientiousness, and one of agreeableness were reformulated by experts. Changes were made by scrutinizing the content of the items in conjunction with the results from Study 1. The descriptors for conscientiousness and agreeableness were changed such that a naïve Dutch translation did no longer result in descriptors which are potentially (lexically) related to both dimensions. For example the Dutch translation of 'dependable' and 'disorganized', could be interpreted in terms of positive or negative agreeable features. Therefore we changed these indicators of conscientiousness into Dutch terms that can be translated as 'thorough' and 'lazy'. As such, the items were less ambiguous while still being related to the content domain. Second, we conceived that the Dutch translations of descriptors 'complex', 'conventional', two descriptors of openness, and 'warm', a descriptor of agreeableness, resulted in too general terms. Consequently, these descriptors were replaced by more specific ones, which can be translated as 'vivid imagination', 'little artistic interests', and 'friendly', respectively, again without changing the content domain. This adapted version of the TIPI-d is available from the authors upon request.

As all participants of the second study also took part in the first study, information is available for the self- and peer-report versions of the NEO-PI-R. Additionally, participants were administered the Rosenberg Self-Esteem Scale (Rosenberg, 1979), the Dutch adaptation of the Spielberger trait anger scale (Van der Ploeg, Defares, & Spielberger, 1982), the Buss and Perry (1992) Aggression Questionnaire, Carver and White's (1994) BIS/BAS questionnaire, and the Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988).

3.2. Results and discussion

3.2.1. Factor structure of the second version of the TIPI-d

A principal component analysis, followed by Varimax rotation[1] (see Table 1) revealed a pattern of factor loadings in agreement with the intended structure. Every pair of items designed to measure one of the Five-Factor-Model dimensions has a high factor loading on one specific factor. As a consequence, the five factors can be interpreted in terms of the Five-Factor model dimensions.

3.2.2. External correlates

Correlations between the scale scores of the second version of the TIPI on the one hand, and scale scores based on self-ratings and peer-ratings of the NEO-PI-R on the other hand are shown in Table 2.

The correlations between the second version of the TIPI-d, and both the self- and peer-ratings display a pattern that affirms its convergent and discriminant validity. For all Five-Factor-Model dimensions, the convergent correlations are significantly different from zero and substantial in magnitude. Moreover, the convergent correlations are substantially larger than the divergent correlations.

To further validate the second version of the TIPI-d, we calculated correlation coefficients between the scale scores and the Rosenberg Self-Esteem Scale (Rosenberg, 1979), the Spielberger trait anger scale (Van der Ploeg et al., 1982), the Buss and Perry (1992) Aggression Questionnaire, Carver and White's (1994) BIS/BAS questionnaire, and the Positive and Negative Affect Schedule (Watson et al., 1988). Based on the studies of Robins, Tracy, Trzesniewski, Potter, and Gosling (2001), Sharpe and Desai (2001), Smits and De Boeck (2006), and Watson and Clark (1992), a specific pattern of correlations can be expected between the Five-Factor-Model dimensions and these other constructs. A structured overview of these expected relationships, together with the correlation coefficients obtained in the current study, is given in Table 3.

Table 3
Overview of the correlations together with the expected relationships between the Five-Factor-Model dimensions as measured by the TIPI-d (version 2) and the respective scale scores of the Rosenberg Self-Esteem Scale (Rosenberg, 1979), the Spielberger trait anger scale (Van der Ploeg et al., 1982), the Buss and Perry (1992) Aggression Questionnaire, Carver and White's (1994) BIS/BAS questionnaire, and the positive and negative affect schedule (Watson, Clark, & Tellegen, 1988)

	Tipi version 2									
	N		E		O		A		C	
Self-esteem	−.48**	(−)	.31**	(+)	.17**	(+/0)	.09	+/0	.06	(+)
Trait anger	.27**	(+)	.10	(−)	−.04	(0)	−.42**	(−)	−.23**	(−)
Physical aggression	−.03	(+)	.01	(−/0)	.00	(0)	−.36**	(−)	−.28**	(−/0)
Verbal aggression	−.07	(+)	.26**	(0)	−.00	(+/0)	−.39**	(−)	−.16**	(−/0)
Anger	.33**	(+)	.16**	(−/0)	−.07	(0)	−.38**	(−)	−.24**	(−)
Hostility	.40**	(+)	−.16**	(−)	−.11	(0)	−.11	(−)	−.12*	(−/0)
BIS	.63**	(+)	−.16**	(−)	−.04	(−/0)	.19**	(+)	.18**	(+/0)
BAS drive	−.08	(−/0)	.32**	(+)	.10	(0)	−.11	(−)	.05	(+/0)
BAS fun	−.08	(−/0)	.33**	(+)	.25**	(+/0)	−.10	(−/0)	−.32**	(−)
BAS reward	.13*	(+/0)	.21**	(+)	.19**	(0)	.13*	(+/0)	.04	(+/0)
Positive affect	−.24**	(−)	.48**	(+)	.35**	(+)	.09	(+)	.22**	(+)
Negative affect	.62**	(+)	−.15**	(−)	−.05	(−/0)	−.23**	(−)	−.07	(−/0)

Note: the expected relationships are between brackets. The symbols +/0 and −/0 mean that the correlations found in previous research were either not unambiguous or moderately large in absolute value (<.20).
* $p < .05$.
** $p < .01$.

For almost all expected relationships for which a clear positive or negative relationship was predicted, the data complied with the specific expectation. In case we did not find the expected relationship, the correlation coefficient was non-significant, which means that the data-based correlation coefficient never opposed the sign of the expected correlation. In general, it can be said that the correlation pattern as predicted by previous research is very well replicated when using the second version of the TIPI-d.

3.2.3. Content validity

Finally, we studied how well the TIPI-d covers the several facets underlying the Five-Factor-Model dimensions. This was done by computing correlation coefficients between the scale scores of the second version of the TIPI-d and the facet scores of the NEO-PI-R. These correlations are the numbers without brackets in Table 4. However, the facets of one single Five-Factor-Model dimension are highly intercorrelated, which means that the simple correlation coefficients confound both common factor and unique variance. Therefore, we also computed partial correlation coefficients, which signify the degree of association between the respective Five-Factor-Model dimension, as measured by the second version of the TIPI-d, and the facet as measured by the NEO-PI-R, when controlling for all other facets of the respective dimension. In other words, we evaluate whether there is still an association between the facet and the Five-Factor-Model dimension if the association of the specific dimension with all other facets is taken into account. The numbers between brackets in Table 4 are the partial correlation coefficients.

Almost all facets are significantly correlated with their respective Five-Factor-Model dimension while being unrelated or related to a lesser extent with the other Five-Factor-Model dimensions. In other words, the second version of the TIPI-d shows good convergent and divergent validity. However, when we take into account the fact that the facets of one dimension share a substantial degree of variance, the resulting correlations between each facet separately and its scale score tend to disappear for most facets, and per Five-Factor-Model factor the unique variance of only one or two facets is reflected in the scale score of the second version of the TIPI-d.

Subsequently, we tested whether the second version of the TIPI-d measures the central core of the different Five-Factor-Model dimensions by applying the method of correlated vectors (Jensen, 1998). In this method (a) a vector of facet factor loadings for a specific Five-Factor-Model dimension, and (b) a vector of the correlations between these facets and their respective TIPI-d scale score, are correlated. The logic behind the method of correlated vectors is that the central core of a Five-Factor-Model dimension can be conceptualised by the vector of its facet factor loadings. As such, each factor loading represents the extent to which the respective facet captures the central core. For a scale tapping the central core of the Five-Factor-Model dimensions, it is expected that the scale scores correlate highly with those facets that are important for the central core, while correlating to a smaller extent with facets being less important, which can be tested by correlating (a) and (b). Applying the method of correlated vectors to the TIPI-d data yields correlations of .917, .747, −.360, .471, and .269 for N, E, O, A, and C, respectively. This means that the second version of the TIPI-d is able to capture the central core of neuroticism and extraversion. Regarding agreeableness and conscientiousness, the moderate correlations suggest that both the important facets and the less important facets are reflected in the scale scores. For openness the negative correlation signifies that the TIPI-d scale score reflects the less important facets rather than the important ones.

4. General discussion

The second version of the TIPI-d is shown to be a valid alternative for the existing Five-Factor-Model instruments, although the central core of each Five-Factor dimension is not always fully captured in the TIPI-d scale scores. Whereas the first version of the TIPI-d was problematic in differentiating the dimensions conscientiousness and agreeableness, the second version resolved this problem. A clear five-factor structure, where each factor is primarily composed of the two items designed to measure that factor, was found. Another problem with the first version was that the convergent and discriminant validity of the dimension openness was flawed. The second version also resolved convergent and discriminant validity problems for the openness scale of version 1. Both on the level of the scale scores, as on the level of the different facets, the second version of the TIPI-d shows good convergent and divergent validity for all Five-Factor-Model dimensions. Moreover, it should be noted that the second version of the TIPI-d was administered six months after the self- and peer-ratings on the NEO-PI-R. This further supports the validity of our translation as highly significant correlations are found, even when both instruments are completed with a substantial period of time in between.

Regarding the content validity of our Dutch version of the TIPI, the results indicate that the TIPI-d scale scores for the biggest part

Table 4
Correlations between the scale scores for the TIPI-d (version 2) and the respective facets as measured by the NEO-PI-R

	TIPI version 2 scale scores				
	N *N* = 238	E *N* = 234	O *N* = 238	A *N* = 239	C *N* = 235
Neuroticism					
Anxiety	.30** (.05)	−.08	−.04	−.06	−.07
Angry hostility	.23** (.07)	−.05	−.02	.06	.09
Depression	.32** (.06)	−.18**	.11	.02	.05
Self-consciousness	.25** (.02)	.01	−.02	−.04	.03
Impulsiveness	.06 (−.11)	−.14*	−.11	.06	.01
Vulnerability	.37** (.19**)	−.12	−.01	.11	.00
Extraversion					
Warmth	−.09	.41** (.08)	.25**	.11	.03
Gregariousness	.09	.44** (.12)	−.03	−.17**	.09
Assertiveness	−.15*	.47** (.23**)	.28**	.02	−.14*
Activity	−.30**	.41** (.12)	.23**	−.16*	.09
Excitement seeking	.26**	.28** (.02)	−.06	−.24**	−.01
Positive emotions	−.06	.44** (.14*)	.08	.02	−.19**
Openness					
Fantasy	.00	.16*	.20** (.13)	−.00	.03
Aesthetics	.07	.04	.21** (.03)	.03	.06
Feelings	−.06	.21**	.15* (.03)	.07	.01
Actions	−.22**	.20**	.27** (.21**)	−.07	.16*
Ideas	.00	.17**	.21** (.13*)	−.17**	.07
Values	−.07	.25**	.07 (−.06)	.11	−.05
Agreeableness					
Trust	.04	.14*	−.10	.30** (.12)	.05
Compliance	−.16*	.01	.07	.32** (.08)	.11
Altruism	−.02	−.18**	.06	.36** (.15*)	.24**
Straightforwardness	.07	−.02	−.06	.30** (.04)	.09
Modesty	−.16*	−.08	−.08	.25** (.08)	.12
Tender-mindedness	.07	.14*	−.01	.22** (−.04)	.19**
Conscientiousness					
Competence	.05	.06	−.29**	.21**	.37** (.04)
Order	−.03	−.03	−.11	.14*	.40** (.17**)
Dutifulness	−.05	.04	−.03	.21**	.40** (.15*)
Achievement striving	.02	.08	−.11	.20**	.38** (.06)
Self-discipline	−.27**	−.18**	−.00	.13*	.41** (.05)
Deliberation	−.07	.05	−.10	.15*	.37** (.06)

Note: numbers between brackets are partial correlation coefficients.
* $p < .05$.
** $p < .01$.

reflect the shared part of the different facets, as was demonstrated by the finding that most correlations between TIPI-d scale scores and facet scores dropped significantly when controlling for the respective other facet scores. On the one hand, this should not come as a surprise as the facets are nested within their respective Five-Factor-Model dimension; hence having a substantial degree of (substantive) overlap. Moreover, a scale score is traditionally a sum or an average across a set of items. Such an operation levels off the impact of the individual items. On the other hand, the high number of non-significant partial correlation coefficients denotes that the specific singularities of the different facets get lost in the scale score. Also this result is not very surprising since the TIPI-d, just as the original TIPI, has only two items per Five-Factor-Model dimension. This makes it very hard to cover all different facets, even when multiple descriptors per item are used. In particular, for neuroticism the TIPI-d scale score is somewhat skewed to vulnerability which is the sole facet whose unique impact is represented in the score. Regarding openness, some specific aspects of actions and ideas are reflected by the TIPI-d scale score, while for agreeableness this is the case for the facet altruism. Finally, the TIPI-d score for extraversion reflects assertiveness and positive emotions, while order and dutifulness are the facets for which singularities are picked up by the TIPI-d score for conscientiousness. As a result, it is important for researchers to take these skewed facet-representations into account when interpreting results obtained with the TIPI.

As a last validity test, we assessed whether the TIPI-d captures the central core of the different Five-Factor-Model dimensions. Underlying this test is the idea that the different facets of the Five-Factor-Model dimensions represent to a certain extent its central core. Consequently some facets are very important for the central core of that respective Five-Factor-Model dimension, i.e. they have a high factor loading, while other facets have less impact. If the TIPI-d grasps this central core then the correlations between its scale scores and the respective facets should parallel the facet factor loadings. For neuroticism and extraversion these correlations were very high, which means that the central core of these dimensions is well covered by the TIPI-d. The correlation for agreeableness and conscientiousness was moderate, denoting that the TIPI-d measures the central core of these dimensions to a reasonable extent, but not perfectly. Finally, the correlation for openness was negative and moderate in magnitude. This indicates that the TIPI-d is not able to capture the central core of this dimension. The fact that we changed two general descriptors, i.e. complex and conventional, into more specific ones, i.e. vivid imagination and little artistic interests, may have caused this problem. Therefore, it may be interesting to search for descriptors that are general enough to capture the central core, while at the same time having a specific meaning for the respondents. To our knowledge the method of correlated vectors, which is relatively well known in research on intelligence, has never been applied to personality research. While the logic is straightforward and the method may provide

useful insights, it should be noted however that the method of correlated vector is data-driven, and therefore it is not unconceivable that other studies, using other samples, would find other vectors and hence other results. Another limitation is the homogeneous nature of the sample, all being first year psychology students. This emphasizes the need for further research, especially with more diverse and representative samples.

In summary, we conclude that the TIPI is a useful measure when used on the level of the global Five-Factor-Model dimensions. Especially when a time-efficient Five-Factor-Model instrument is needed, such as in longitudinal studies or experience-sampling studies where there are high demand characteristics on the respondent's side, this measure can be helpful. However, if for some reason, a researcher needs a Five-Factor-Model measure where the individual contribution of each of the facets, instead of the shared variance, is reflected in the scale score, or where the measure should really tap the central core of all Five-Factor-Model dimensions, a more elaborate measure such as the NEO-PI-R should be used.

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