

# Psychometric Properties of the French Ten-Item Personality Inventory (TIPI)

Martin Storme,<sup>1</sup> Jean-Louis Tavani,<sup>2</sup> and Nils Myszowski<sup>3</sup>

<sup>1</sup>Laboratoire Adaptation Travail-Individu, Université Paris Descartes, Paris, France, <sup>2</sup>Laboratoire Parisien de Psychologie Sociale – GRPPS, Université Paris 8 Vincennes, Saint-Denis, France,

<sup>3</sup>Department of Psychology, Pace University, New York, NY, USA

**Abstract.** The aim of this study was to investigate the psychometric properties of the Ten-Item Personality Inventory (TIPI) in a French-speaking sample (1,554 participants, 59.3% of women). Our results showed that the French version of the TIPI has acceptable psychometric properties with satisfactory levels of temporal stability (after three and six weeks), satisfactory convergent and divergent construct validity in relationship with the Big Five Inventory (BFI), emotional intelligence, and self-esteem. As in the other translations of the TIPI, the limitation of our adaptation is the low level of internal consistency, especially concerning agreeableness, as in the Spanish version. The French TIPI is a promising scale that should be used preferably for exploratory purposes.

**Keywords:** TIPI, short measure, Big Five, French adaptation

This article aims at presenting the results of a study assessing the psychometric properties of a French adaptation of the Ten-Item Personality Inventory (TIPI; Gosling, Rentfrow, & Swann Jr., 2003), a very brief measure of the Big Five personality dimensions. The Big Five model of personality is one of the most famous and commonly used factorial models of personality (McCrae, 2009; Plaisant, Courtois, Réveillère, Mendelsohn, & John, 2010). It allows the description of people's behavioral tendencies based on five theoretically independent traits: Extroversion, agreeableness, conscientiousness, emotional stability, and openness to new experiences. This model has been successfully applied to predict a large variety of psychological characteristics in a large variety of contexts and has been shown to be relevant in various cultural settings (Goldberg & Saucier, 1998).

## Short Measures

The need for free and psychometrically valid questionnaires to assess the Big Five personality dimensions is particularly important given the large number of studies investigating personality on the basis of this theoretical model. All things being equal, longer instruments are expected to be more psychometrically robust than shorter ones (Gosling et al., 2003), that is the reason why questionnaires like the NEO PI-R (Costa & McCrae, 2008) are considered as a standard when it comes to evaluating the Big Five personality

dimensions. Nevertheless, practical constraints on the field sometimes lead researchers to look for shorter measures. For example, the Big Five Inventory (BFI; John & Srivastava, 1999; Plaisant et al., 2010) has been developed to achieve psychometrically robust appraisals in a relatively short lapse of time (about 5 min) and it is one of the most used questionnaires to measure the Big Five dimensions of personality.

Despite the fact that the BFI is a short measure, it is still considered as requiring too much time in some very specific contexts (Gosling et al., 2003). For example, some studies do not focus primarily on personality but could still benefit from controlling for personality characteristics of participants. Such contexts are not rare and that is why very brief measures were acclaimed by several psychology researchers (e.g., Donnellan, Oswald, Baird, & Lucas, 2006; Nichols & Webster, 2013; Reysen, Katsarska-Miller, Nesbit, & Pierce, 2013). Furthermore, short measures offer several advantages (e.g., reduction of participants' fatigue and boredom) and can be sometimes as robust as their longer counterparts (Burisch, 1997; Gosling et al., 2003; Robins, Hendin, & Trzesniewski, 2001).

Gosling et al. (2003) developed two very brief self-report measures of the Big Five: the Five-Item Personality Inventory (FIPI) and the Ten-Item Personality Inventory (TIPI). In the FIPI, each trait is assessed by one item whereas in the TIPI each trait is assessed by two items. In the TIPI, one reversed item had been added per trait. Because the time required to fill the TIPI in is almost the same as the time required to fill the FIPI in and because the TIPI showed slightly better reliability and construct

validity, Gosling et al. (2003) advised to use the TIPI instead of the FIPI. Psychometric analyses conducted on a large sample of participants suggested that the TIPI could be an acceptable measure of the Big Five in contexts in which a very brief measure is needed. One of the main limitations of the TIPI is its low internal consistency in the original version as in the translated versions (Gosling et al., 2003; Hofmans, Kuppens, & Allik, 2008; Muck, Hell, & Gosling, 2007; Oshio, Abe, & Cutrone, 2012; Renau, Oberst, Gosling, Rusiñol, & Lúsar, 2013; Romero, Villar, Gómez-Fraguela, & López-Romero, 2012). Despite the psychometric limitations of the scale, the original article introducing the TIPI has been cited more than 1,500 times in 10 years, showing the importance of such a questionnaire in the field of psychological research.

## French Adaptation

Although the Big Five personality dimensions are widely used in studies involving French-speaking participants, there are currently few validated and free questionnaires to assess them and most of them are under commercial control: for example, NEO PI-R (Rolland, Parker, & Stumpf, 1998), BB-5 (Barbot, 2011), D5D (Rolland & Mogenet, 2001), or PFIPI (Rolland & De Fruyt, 2009). This is surprising considering that French is spoken on several continents in which psychological studies are conducted: Twenty-nine countries over the world have French as an official language (in Europe, Africa, Oceania, North and Central America) and about 70 million individuals are native French-speakers. Among the available short self-report measures adapted to French, the BFI seems to be the most widely used by French-speaking researchers. The TIPI has already been adapted successfully to several languages such as Dutch, German, Spanish, or Japanese (Hofmans et al., 2008; Muck et al., 2007; Oshio et al., 2012; Renau et al., 2013; Romero et al., 2012) and French-speaking researchers could benefit from it too if it were available in French.

The aim of our study was to provide a validated adaptation of the TIPI in French. We aimed at testing the reliability (scale-score reliability and test-retest stability) and the construct validity of the scale. In order to investigate the construct validity, we aimed at exploring the factor structure of the TIPI and the convergence between the TIPI and the BFI, which has already been adapted to French by Plaisant et al. (2010).

In order to investigate the construct validity of the TIPI, we aimed at verifying that we find similar relationships with our adapted scale and two other theoretically relevant constructs that have been shown to be correlated with the Big Five dimensions of personality: Emotional intelligence and self-esteem. Schutte et al. (1998) showed with a small sample of students that the main predictor of emotional intelligence was openness to new experiences. Using other scales and a larger sample, Petrides et al. (2010) relationships showed that the other four personality traits were also predictors of emotional intelligence. Therefore, we expected to find significant correlations between the five TIPI scores and emotional intelligence. Concerning

self-esteem, several studies showed that emotional stability was its main predictor (Erdle, Gosling, & Potter, 2009; Robins, Tracy, Trzesniewski, Potter, & Gosling, 2001). We expected to observe significant correlation between the TIPI score of emotional stability and self-esteem. Finally, we aimed at investigating whether age and gender differences regarding the TIPI are similar to previously observed age and gender differences with the other instruments (Allemand, Zimprich, & Hendriks, 2008; Donnellan & Lucas, 2008; McCrae et al., 1999; Roberts, Walton, & Viechtbauer, 2006; Schmitt, Realo, Voracek, & Allik, 2008; Soto, John, Gosling, & Potter, 2011).

## Method

### Participants

Native French-speaking participants (1,554) (59.3% of women) completed the French version of the TIPI along with other theoretically relevant questionnaires regarding the examination of the construct validity. The sample was composed of 627 adults from the general population ( $M_{\text{age}} = 38.53$ ,  $SD_{\text{age}} = 12.87$ , 44% of women) participating in various experiments in our laboratory and 927 students ( $M_{\text{age}} = 21.76$ ,  $SD_{\text{age}} = 3.86$ , 70% of women) from Paris universities. The age of the participants ranged between 16 and 88 years old ( $M = 28.55$ ,  $SD = 11.98$ ). We had demographic information about the diploma and jobs of 399 participants of the nonstudent participants (64%). This subsample was more educated than the French population with 25% participants who had no degree or high school degrees (approximately 48% in France) and 75% participants who had post-Baccalaureate degrees (approximately 42% in France). The subsample included 28% of managers (approximately 20% in France), 44% of employees, 8% of self-employed individuals (approximately 11% in France), 16% of unemployed individuals (approximately 11% in France), and 3% of retired individuals.

## Material

### The French TIPI

We translated the TIPI into French using a back-translation methodology. The questionnaire was translated to French by two native French speakers and the French version was translated back to English by a native English speaker who did not know the original version. This last version was compared to the original one and the translators agreed on a final version in French. The French translation of the TIPI used in this validation study is reported in Table 1. The French version of the TIPI is a 10-item self-report questionnaire, divided into five subscales (two items per subscale): Extroversion (items 1 and 6), agreeableness (items 2 and 7), conscientiousness (items 3 and 8),

Table 1. Original and French versions of the TIPI

Item	Dimension	Label
		I see myself as:
1	Extroversion	Extraverted, enthusiastic
2	Agreeableness (reversed)	Critical, quarrelsome
3	Conscientiousness	Dependable, self-disciplined
4	Emotional stability (reversed)	Anxious, easily upset
5	Openness	Open to new experiences, complex
6	Extroversion (reversed)	Reserved, quiet
7	Agreeableness	Sympathetic, warm
8	Conscientiousness (reversed)	Disorganized, careless
9	Emotional stability	Calm, emotionally stable
10	Openness (reversed)	Conventional, uncreative
		Je me considère comme quelqu'un de:
1	Extroversion	Extraverti(e), enthousiaste
2	Agréabilité (inversé)	Critique, querelleur(se)
3	Conscienciosité	Fiable, discipliné(e)
4	Stabilitéémotionnelle (inversé)	Anxieux(se), facilement irrité(e)
5	Ouverture	Ouvert(e) aux nouvelles expériences, complexe
6	Extroversion (inversé)	Réservé(e), discret(e)
7	Agréabilité	Sympathique, chaleureux(se)
8	Conscienciosité (inversé)	Désorganisé(e), négligent(e)
9	Stabilité émotionnelle	Calme, stable émotionnellement
10	Ouverture (inversé)	Conventionnel(le), peu créatif(ve)

emotional stability (items 4 and 9), and openness to new experiences (items 5 and 10). Participants respond to the questionnaire using a 7-point Likert scale from 1 (= strongly disagree: "fortement en désaccord") to 7 (= strongly agree: "fortement en accord"). All even items are reversed items.

### The Big Five Inventory

The French translation of this scale is a 45-item measure of the Big Five dimensions of personality (John & Srivastava, 1999; Plaisant et al., 2010). It has been shown to be a good compromise between brevity and psychometric robustness. The participants respond using a 5-point Likert scale from 1 (= *strongly disagree*) to 5 (= *strongly agree*). The observed internal consistency in our sample was satisfactory with Cronbach's  $\alpha$  ranging from .68 for conscientiousness to .82 for extroversion.

### The Self-Report Emotional Intelligence Scale

To measure the level of emotional intelligence of participants, we used the French version of the Schutte Self-Report Emotional Intelligence Scale (SSREI; Ansiau, Bergery, Dejoux, Dherment-Ferere, & Wechtler, 2007; Schutte et al., 1998). Based on a factor analysis, Ansiau et al. (2007) suggested another scoring strategy for the French version of the SSREI: The total score should not include items 3, 7, 23, 24, 30, and 31, because they do not seem to belong to the same latent dimension as the other items. The scale showed satisfactory scale-score reliability in our sample (Cronbach's  $\alpha = .84$ ).

### The Rosenberg Self-Esteem Scale

This 10-item unidimensional scale measures the value one attributes to oneself (RSES; Rosenberg, 1989; Vallieres & Vallerand, 1990). The French translation has shown satisfactory psychometric properties (Vallieres & Vallerand, 1990). The participants respond using a 4-point Likert scale from 1 (= *totally disagree*) to 4 (= *totally agree*). The observed internal consistency in our sample was satisfactory (Cronbach's  $\alpha = .92$ ).

### Procedure

In order to have a large and diverse sample, we recruited our participants on the sidelines of other studies conducted at the university. In order to reduce boredom and to elicit motivation, all participants did not take all the validity questionnaires. A subsample of 509 participants took the BFI, another subsample of 481 participants took the SSREI, and another subsample of 82 participants took the Rosenberg Self-Esteem scale. The subsamples were composed both of student and nonstudent participants. Finally, a subsample of 117 students was selected to take the TIPI three times, in order to investigate the test-retest stability at 3 and 6 weeks.

## Results

### Age and Gender Differences

Univariate descriptive statistics of the TIPI for student and nonstudent participants are reported in Table 2.

Table 2. Descriptive statistics and correlates of the TIPI

Sample	Variable	<i>N</i>	<i>M</i> ( <i>SD</i> )	<i>E.</i>	<i>A.</i>	<i>C.</i>	<i>E.S.</i>	<i>O.</i>
Student population	TIPI <i>E.</i>	825	8.86 (2.99)		-.02	-.04	.01	.22
	TIPI <i>A.</i>	825	10.17 (2.18)			.13	.26	.09
	TIPI <i>C.</i>	825	10.46 (2.49)				.19	-.02
	TIPI <i>E.S.</i>	825	8.55 (2.88)					.09
	TIPI <i>O.</i>	825	10.45 (2.24)					
General population	TIPI <i>E.</i>	625	9.08 (2.83)		.01	-.07	.03	.26
	TIPI <i>A.</i>	625	10.72 (2.10)			.16	.28	.15
	TIPI <i>C.</i>	625	11.43 (2.30)				.19	.04
	TIPI <i>E.S.</i>	625	9.44 (2.75)					.15
	TIPI <i>O.</i>	625	10.68 (2.26)					
BFI validity sample	BFI <i>E.</i>	509	26.21 (6.39)	.78	.15	.09	.14	.27
	BFI <i>A.</i>	509	38.01 (5.98)	.02	.63	.18	.37	.14
	BFI <i>C.</i>	509	32.74 (6.35)	.09	.20	.71	.23	.14
	BFI <i>E.S.</i>	509	23.99 (6.82)	.10	.30	.21	.77	.17
	BFI <i>O.</i>	509	35.83 (6.48)	.20	.15	.02	.12	.66
Other validity samples	RSES	82	31.49 (4.31)	.14	.11	.20	.48	.12
	SSREI	481	92.28 (9.95)	.14	.19	.25	.24	.29

Notes. Regarding the BFI validity sample, correlations reported in the diagonal and in the bottom part of the matrix are correlations between the TIPI and the BFI, correlations reported in the upper part are correlations between TIPI scores.

Table 3. Reliability of the original and French versions of the TIPI

Version	Dimension	Cronbach's $\alpha$	Inter-item correlation	$R_{\text{test-retest}}$	$R_{\text{test-retest}}$
				3 weeks	6 weeks
Original version	Extroversion	.68			.77
	Agreeableness	.40			.71
	Conscientiousness	.50			.76
	Emotional stability	.73			.70
	Openness	.45			.62
French version	Extroversion	.69	.52	.78	.82
	Agreeableness	.22	.13	.62	.68
	Conscientiousness	.57	.40	.58	.72
	Emotional stability	.61	.44	.70	.76
	Openness	.39	.23	.69	.68

We investigated the effect of age and gender differences on the five total scores in the whole sample. We found significant positive correlations between age and agreeableness ( $r = 0.09$ ,  $p < .001$ ), conscientiousness ( $r = 0.24$ ,  $p < .001$ ), and emotional stability ( $r = 0.19$ ,  $p < .001$ ). Regarding the effect of gender, we found that men scored significantly higher than women on emotional stability ( $z = 5.47$ ,  $p < .001$ ) and openness ( $z = 2.67$ ,  $p < .01$ ), and significantly lower on agreeableness ( $z = -5.53$ ,  $p < .001$ ).

## Reliability Analyses

With an average polychoric-correlation-based Cronbach's  $\alpha$  per scale of .50 (see Table 3), the scale-score reliability of the TIPI was found to be low regarding usual standards. The temporal stability of the TIPI was investigated on a subsample of students ( $N_{3\text{-weeks}} = 117$ ,  $N_{6\text{-weeks}} = 89$ ). Scores were relatively stable after 3 weeks with test-retest

correlation coefficients ranging from .58 (for conscientiousness) to .78 (for extroversion), and after 6 weeks with coefficients ranging from .68 (for agreeableness and openness) to .82 (for extroversion; see Table 3).

## Validity Analyses

### Factor Structure

Despite the fact that it is not recommended to test factor structures that have less than three indicators per latent variable (Kline, 2005), we investigated the factor structure of the French TIPI in order to gain knowledge about its psychometric properties. The factor structure of the TIPI was analyzed by ordinal confirmatory factor analysis (CFA) using the R-package "lavaan" (Rosseel, 2012). Ordinal CFA is an extension of Rasch models and is recommended when the response scale belongs to the Likert scale

category (Wirth & Edwards, 2007). The theoretical model that we fitted to the data was a five-correlated-factor model, following the suggestions of Muck et al. (2007). In all the models, the variance and the largest factor loading of each latent variable was set to 1. We used three statistical indices to evaluate the model fit:  $\chi^2/df$  ratio ( $\chi^2/df < 5$ ), Comparative Fit Index (CFI  $> .93$ ), and Root Mean Square Error of Approximation (RMSEA  $< .08$ ) (Hu & Bentler, 1999; Schumacker & Lomax, 2004). We reported the weighted least squares (WLR) estimates.

The initial model did not fit well to the data ( $\chi^2/df = 595.71/30 = 19.86$ , CFI = .85, RMSEA = .12). As Muck et al. (2007) suggested when working on the TIPI-G, we looked for residual covariances to be estimated using modification indices. We followed the recommendations of Reis and Judd (2000) and randomly split the whole sample into three subsamples to run parallel analyses. We used the first sample to find out which residual covariances should be correlated and the two other samples to test and confirm the model that was built on the first subsample. On the first subsample, the investigation of modification indices suggested to freely estimate five residual covariances: Item 2 with items 1, 4, and 6 and item 6 with items 3 and 9. After correlating residuals, fit was found to be acceptable on the first subsample ( $\chi^2/df = 110.63/25 = 4.42$ , CFI = .93, RMSEA = .08). The same model showed acceptable fit on the second subsample ( $\chi^2/df = 121.17/25 = 4.85$ , CFI = .93, RMSEA = .09) and on the third subsample ( $\chi^2/df = 76.71/25 = 3.07$ , CFI = .96, RMSEA = .06). Freely estimated factor loadings were all significant. In this model, openness was significantly correlated with extroversion ( $r = .30$ ,  $p < .001$ ), agreeableness ( $r = .15$ ,  $p < .01$ ), and emotional stability ( $r = .17$ ,  $p < .001$ ); conscientiousness was significantly correlated with agreeableness ( $r = .13$ ,  $p < .01$ ) and emotional stability ( $r = .33$ ,  $p < .001$ ); extroversion was also significantly correlated with agreeableness ( $r = .39$ ,  $p < .001$ ) and emotional stability ( $r = .11$ ,  $p < .05$ ); agreeableness was also significantly correlated with emotional stability ( $r = .22$ ,  $p < .001$ ).

### External Criteria

Observed correlations between the TIPI and the BFI are reported in Table 2. The analyses revealed that the weakest observed correlation between two convergent traits of the TIPI and the BFI ( $r_{\text{Agreeableness}} = 0.63$ ) was significantly stronger ( $z = 6.87$ ,  $p < .001$ ) than the strongest observed divergent correlation ( $r_{\text{TIPI-Agreeableness, BFI-Emotional stability}} = 0.30$ ). The observed convergent correlations were significantly lower in the French sample than in the original sample for conscientiousness ( $z = 5.72$ ,  $p < .001$ ), agreeableness ( $z = 2.50$ ,  $p < .05$ ), emotional stability ( $z = 2.12$ ,  $p < .05$ ) and comparable for extroversion and openness.

Correlations with emotional intelligence are reported in Table 2. A multiple linear regression revealed that openness was one of the main predictors of emotional intelligence ( $\beta = 0.23$ ,  $p < .001$ ). In addition, the four other traits

remained significant when controlling for openness: Extroversion ( $\beta = 0.12$ ,  $p < .05$ ), agreeableness ( $\beta = 0.11$ ,  $p < .05$ ), conscientiousness ( $\beta = 0.22$ ,  $p < .001$ ), and emotional stability ( $\beta = 0.11$ ,  $p < .05$ ) were found to be predictors of emotional intelligence. None of the observed correlation coefficients were significantly different from those observed by Schutte et al. (1998). Correlations with self-esteem are also reported in Table 2. Using multiple linear regression, we found that emotional stability was the main predictor of self-esteem ( $\beta = 0.54$ ,  $p < .001$ ). The other personality dimensions were nonsignificant except for extroversion, which was marginally significant ( $\beta = 0.28$ ,  $p = .06$ ). None of the observed correlation coefficients were significantly different from those observed by Gosling et al. (2003) with the BFI and the RSES, except for extroversion which was significantly lower in our sample ( $z = -2.28$ ,  $p < .05$ ).

## Discussion

The psychometric properties of our French adaptation of the TIPI were found to be comparable to those of the original version (Gosling et al., 2003). The scale showed satisfactory temporal stability and convergent validity with the BFI. Furthermore, test-retest correlations and patterns of correlations with the BFI were comparable to those obtained with the original TIPI (Gosling et al., 2003).

Observed age and gender differences were in line with previous results using the Big Five model (Allemand et al., 2008; Donnellan & Lucas, 2008; McCrae et al., 1999; Roberts et al., 2006; Schmitt et al., 2008; Soto et al., 2011). We found that age was positively correlated with agreeableness, conscientiousness, and emotional stability and that men scored higher than women on emotional stability and openness and lower on agreeableness. Trends for the other traits were also in the same direction as in previous literature. Furthermore, observed relationships with emotional intelligence and self-esteem were consistent with those observed with longer questionnaires assessing the Big Five dimensions of personality (Erdle et al., 2009; Petrides et al., 2010; Robins, Tracy, et al., 2001; Schutte et al., 1998).

The main limitations of our adaptation of the TIPI are related to the quality of its internal structure. First, we observed low levels of internal consistency, which is consistent with the properties of the original scale and its adaptations to other languages (Gosling et al., 2003; Hofmans et al., 2008; Muck et al., 2007; Romero et al., 2012). Agreeableness exhibited especially low level of internal consistency, which is similar to previous findings with the TIPI on Spanish samples (Renau et al., 2013; Romero et al., 2012). In the Spanish version (Renau et al., 2013), the correlation between some aspects of agreeableness (e.g., being quarrelsome) was related to emotional stability as it is in our French version. The authors explained that in the Spanish culture, it has been shown that being quarrelsome is related to being emotionally unstable (Benet-Martinez & John, 2000) which could explain unexpected residual correlations. It is possible that this result can be generalized

to Latin cultures, including the French culture. One way to increase the reliability of agreeableness could be to choose adjectives that do not tap into the aggressive aspect of low agreeableness as it seems to be associated with low emotional stability. Second, the factor structure needed to be adjusted by including some residual covariances which is also consistent with previous findings involving the TIPI (Muck et al., 2007). Because of its low reliability (especially for agreeableness) and because of the relative complexity of its factor structure, the French TIPI should not be used when a robust measure of the Big Five is required.

Note that brief measures are necessarily more likely to exhibit low scale-score reliability given that the Cronbach's  $\alpha$  also depends on the number of items. Furthermore, Gosling et al. (2003) explicitly emphasized the content validity by using items that were relatively different from each other in the same dimension, which necessarily has negative consequences on the internal consistency and the factor structure. Gosling et al. (2003) strongly insisted on the fact that Cronbach's  $\alpha$  and factor analysis are not appropriate for a scale like the TIPI and that researchers should instead focus on temporal stability when investigating the reliability of the TIPI and correlations with other measures of the Big Five when investigating the validity of the TIPI. Regarding both criteria, our validation study provides evidence that the reliability and the validity of the French TIPI is satisfactory for such a short measure.

Our study provides contradictory results regarding the psychometric qualities of the TIPI. The TIPI is a challenge to psychometrics because at one level it can be considered as a nonreliable and nonvalid measure with poor Cronbach's  $\alpha$  and poor CFA indices, whereas at another level it seems to be stable over time and meaningfully related to other constructs with satisfactory temporal stability and meaningful convergent/divergent validity with the BFI, age, gender, emotional intelligence, and self-esteem. Following the reasoning of Gosling et al. (2003), we believe that temporal stability and convergent/divergent validity are more important when it comes to short measures. Therefore, we also believe that the French TIPI can be an interesting measure of the Big Five dimensions of personality when personality is not the main focus of the study and for exploratory purposes only. Considering that the TIPI provides results that are relatively stable over time and convergent with the BFI, it can provide researchers with a rough idea of results that they might find with more reliable scales, as we could see with emotional intelligence and self-esteem.

With the release of our adaptation of the TIPI, more studies conducted on French-speaking participants will be able to include a measure of the Big Five dimensions in their protocol. The Big Five model of personality is a standard in personality research and empirical studies can benefit from being able to control for the five traits, even when their main focus is not personality.

Nevertheless, as soon as researchers need a reliable estimate of personality and when they are not in an exploratory phase, they should use more robust measures, such as the French versions of the BFI (Plaisant et al., 2010) or the NEO PI-R (Rolland et al., 1998), which have been shown to have significantly better internal structures.

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Martin Storme

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Université Paris Descartes  
71 Avenue Edouard Vaillant  
92774 Boulogne Billancourt  
France  
Tel. +331 55 205-858  
Fax +33 15 520-5745  
E-mail martinstorme@ymail.com

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