Personality and Individual Differences 48 (2010) 906–910

Contents lists available at ScienceDirect

Personality and Individual Differences

journal homepage: www.elsevier.com/locate/paid

Relationships between trait emotional intelligence and the Big Five in the Netherlands

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ARTICLE INFO

Article history:
Received 26 November 2009
Received in revised form 29 January 2010
Accepted 8 February 2010
Available online 11 March 2010

Keywords:
Trait emotional self-efficacy
Big Five
TEIQue
Cross-cultural

ABSTRACT

We investigated the relationships between trait emotional intelligence (trait EI; TEIQue-SF) and the Big Five personality dimensions (NEO-FFI) in two Dutch samples. Results were consistent with studies conducted with the full forms of the inventories in North America and Britain. Neuroticism was the strongest correlate of trait EI in both samples, followed by Extraversion, Conscientiousness, Agreeableness, and Openness. Regression analyses confirmed that the overlap between trait EI and the higher-order personality dimensions exceeds 50%, even when the constructs are operationalized via shortened assessments. These results are not only fully in line with trait EI theory, but also support the cross-cultural validity of the TEIQue-SF, and its suitability for the rapid assessment of global trait EI and its four constituent factors.

1. Introduction

Trait emotional intelligence (*trait EI* or *trait emotional self-efficacy*) is defined as a constellation of emotional self-perceptions located at the lower levels of personality hierarchies (Petrides, Pita & Kokkinaki, 2007). The construct provides a comprehensive operationalization of the affect-related aspects of personality and lies wholly outside the taxonomy of human cognitive ability (Carroll, 1993). Trait EI essentially concerns individual differences in people's self-perceptions of their emotional abilities.

Conceptually, an important advantage of trait EI theory is that it links the construct to mainstream scientific models in differential psychology, such as the Big Five and the Giant Three. These links are particularly useful when tackling novel research questions for which there is no prior empirical literature (e.g., Sánchez-Ruiz, Pérez-González, & Petrides, in press). Psychometrically, the Trait Emotional Intelligence Questionnaire (TEIQue), as the main operationalization vehicle of trait EI theory, provides superior criterion and predictive validity relative to other EI questionnaires (see Freudenthaler, Neubauer, Gabler, & Scherl, 2008; Gardner & Qualter, in press).

Numerous studies have been conducted with the short form of the TEIQue showing that it correlates positively with orgasmic frequency in women (Burri, Cherkas, & Spector, 2009), general well-being and job satisfaction (Singh & Woods, 2008), relationship satisfaction (Smith, Heaven, & Ciarrochi, 2008), and adaptive styles of humor (Vernon et al., 2009), and negatively with communicative anxiety (Dewaele, Petrides, & Furnham, 2008), Machiavellianism (Alia, Amorima, & Chamorro-Premuzic, 2009), and maladaptive styles of humor (Vernon et al., 2009). It has also been suggested that the TEIQue-SF has an inverted U relationship with reaction time (Austin, 2009) and that it mediates many of the links between personality and general health (Johnson, Batey, & Holdsworth, 2009).

The aim of this report is to examine the relationships between trait EI and the Big Five using the Dutch adaptation of the short form of the TEIQue. The study is important both from a psychometric perspective, given that there have been few systematic investigations of the TEIQue-SF and the Big Five, as well as from a cross-cultural perspective, since this is the first investigation of the TEIQue-SF in a Dutch sample. More particularly, we will be focusing on the zero-order correlations between the five trait EI scores (global trait EI, plus scores on the four factors of Emotionality, Self-control, Sociability, and Well-being) and the Big Five, as well as on multiple regression analyses aiming to determine the overall extent to which the Big Five can predict each of the trait EI variables. We expected that the strongest correlates of trait EI would be Neuroticism, followed by Extraversion and Conscientiousness and that over 50% of the variance in global trait EI scores would be accounted for by a linear combination of the Big Five factors.

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doi:10.1016/j.paid.2010.02.019

2. Method

2.1. Participants

Because the data were collected as part of a behavioral genetic study and there were several kinships in the data, we randomly selected one member from each kinship and allocated them into one sample, with their kin-pair allocated into a second sample. Sample 1 comprised 377 participants (108 males) with a mean age of 44.98 years (*SD* = 11.97, range 20–77), while sample 2 comprised 383 participants (104 males) with a mean age of 47.00 years (*SD* = 13.49, range 19–87).

2.2. Measures

Trait Emotional Intelligence Questionnaire-Short Form (TEIQue-SF; Petrides, 2009; Sevdalis, Petrides, & Harvey, 2007). This is a 30-item questionnaire designed to measure global trait EI. A priori factor scores can also be derived by applying the scoring key of the full form, although these tend to have lower reliabilities. The TEIQue-SF does not yield scores on the 15 trait EI facets. For a detailed psychometric investigation of the TEIQue-SF via Generalized Graded Unfolding, see Zampetakis (under review). The internal consistencies of the global trait EI score and the four factors across the two samples are given, respectively, in Tables 2 and 3.

NEO-FFI (Costa & McCrae, 1992; Hoekstra, Ormel, & de Fruyt, 1996). The NEO-FFI is a shortened version of the NEO Personality Inventory-Revised. It comprises 60 items, 12 for each of the five dimensions of adult personality: Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness. The internal consistencies of the five factors across the two samples are given in Table 1.

2.3. Procedure

Participants were volunteer members of the Netherlands Twin Registry (NTR). The NTR collects data from Dutch twins, their families, and their partners in the context of a longitudinal study on health, lifestyle, and personality. All adult members of the NTR receive mailed questionnaires on health, personality and lifestyle

Table 1
Correlations between the TEIQue-SF and NEO-FFI for the two study samples.

	Global trait EI		Well-being		Self-control		Emotionality		Sociability	
Neuroticism (.85 and .85)	−.59**	−.66**	−.51**	−.53**	−.60**	−.63**	−.26**	−.32**	−.43**	−.52**
Extraversion (.74 and .75)	.54**	.52**	.50**	.45**	.33**	.30**	.34**	.32**	.45**	.46**
Openness (.69 and .66)	.24**	.24**	.15**	.19**	.13*	.10	.30**	.28**	.21**	.16**
Agreeableness (.74 and .70)	.36**	.34**	.26**	.21**	.17**	.20**	.37**	.42**	.16**	.05
Conscientiousness (.76 and .75).	.45**	.48**	.35**	.33**	.30**	.38**	.31**	.27**	.35**	.37**

Note. $N = 377$ and $N = 383$. Numbers in parentheses are internal consistency coefficients for sample 1 and sample 2, respectively.
* $p < .05$, two-tailed.
** $p < .01$, two-tailed.

Table 2
Regressions of the global and four factor scores of the TEIQue-SF on the Big Five (sample 1).

Dependent variable	*R*	R^2	Adjusted R^2	*F* (df)	NEO-FFI	*β*	*t*
Global trait EI (.87)	.715	.511	.503	70.32** (5, 337)	N	−.39	8.85**
					E	.22	4.73**
					O	.15	3.86**
					A	.13	3.15**
					C	.18	4.08**
Well-being (.74)	.605	.366	.357	42.83** (5, 371)	N	−.33	6.90**
					E	.30	5.93**
					O	.06	1.41
					A	.05	1.03
					C	.08	1.66
Self-control (.59)	.615	.378	.369	40.94** (5, 337)	N	−.55	11.17**
					E	.03	.64
					O	.09	2.00*
					A	−.01	.18
					C	.08	1.59
Emotionality (.66)	.520	.270	.261	27.50** (5, 371)	N	−.06	1.25
					E	.11	2.08*
					O	.24	5.28**
					A	.25	5.16**
					C	.17	3.28**
Sociability (.60)	.550	.302	.293	32.22** (5, 372)	N	−.26	5.12**
					E	.26	4.88**
					O	.14	3.21**
					A	−.04	.90
					C	.15	3.05**

Note. In column 1, numbers in parentheses are internal consistency coefficients. N = Neuroticism, E = Extraversion, O = Openness, A = Agreeableness, C = Conscientiousness.
* $p < .05$, two-tailed.
** $p < .01$, two-tailed.

Table 3
Regressions of the global and four factor scores of the TEIQue-SF on the Big Five (sample 2).

Dependent variable	R	R^2	Adjusted R^2	F (df)	NEO-FFI	β	t
Global trait EI (.87)	.751	.565	.558	89.27** (5, 344)	N	−.45	10.62**
					E	.19	4.54**
					O	.18	5.16**
					A	.10	2.76**
					C	.18	4.57**
Well-being (.66)	.596	.355	.346	40.94** (5, 372)	N	−.38	7.63**
					E	.23	4.64**
					O	.14	3.41**
					A	.01	0.16
					C	.08	1.68
Self-control (.64)	.643	.414	.405	48.58** (5, 344)	N	−.58	11.63**
					E	−.04	.81
					O	.07	1.60
					A	.03	.65
					C	.14	2.99**
Emotionality (.63)	.546	.298	.288	31.32** (5, 369)	N	−.14	2.65**
					E	.11	2.22*
					O	.22	5.11**
					A	.30	6.52**
					C	.09	1.83
Sociability (.63)	.622	.387	.379	47.02** (5, 372)	N	−.36	7.36**
					E	.28	5.78**
					O	.13	3.20**
					A	−.18	4.23**
					C	.17	3.72**

Note. In column 1, numbers in parentheses are internal consistency coefficients. N = Neuroticism, E = Extraversion, O = Openness, A = Agreeableness, C = Conscientiousness.
* $p < .05$, two-tailed.
** $p < .01$, two-tailed.

every two to three years (Boomsma et al., 2006). The data collection for the TEIQue-SF and the NEO-FFI took place between July 2006 and February 2008.

3. Results

Two sets of analyses were performed on each of the two datasets obtained from the sample 1 and sample 2 subgroups. First, we calculated the zero-order correlations between the five trait EI variables and the Big Five personality dimensions. The second set of analyses involved regressing each of the five trait EI variables onto the Big Five personality dimensions. The aims were to ascertain the strongest personality predictors for the different aspects of trait EI and to obtain estimates of variance overlap.

Zero-order correlations between the trait EI variables and the Big Five are shown in Table 1. The table contains data from both the sample 1 and sample 2 subgroups, which allows for efficient comparison, and shows the consistency in our results. As can be seen, most correlations are statistically significant. In fact, the only correlations that do not reach significance are those between Openness and the trait EI factor of Self-control in sample 2, and between Agreeableness and the trait EI factor of Sociability also in sample 2. Particularly high associations exist between trait EI and Neuroticism—the only higher-order dimension to be negatively related to trait EI—while more muted effects appear between trait EI and Openness.

Four broad observations can be made in relation to these findings. First, the correlations obtained from the two samples are remarkably similar. Given the large sample sizes, we can be confident that these estimates are very close to the true population values. Second, most values are substantial, corroborating the extensive overlap between trait EI and the higher-order personality dimensions. Third, it appears that the principle of aggregation (Rushton, Brainerd, & Pressley, 1983) is in operation, with global trait EI generally showing stronger relationships with the Big Five than its four factors. However, it should be kept in mind that the use of a global trait EI score, although in many respects beneficial, can potentially mask differential relationships between the trait EI factors and criteria (e.g., Sánchez-Ruiz, Hernández-Torrano, Pérez-González, Batey, & Petrides, under review). The fourth observation is that the correlations between global trait EI and the Big Five were near-identical to those reported by Vernon, Villani, Schermer, and Petrides (2008), who collected data in North America with the full forms of the two inventories, in contrast to the corresponding correlations with the trait EI factors, which showed some discrepancies.

The multiple regression results for sample 1 and sample 2 can be found in Tables 2 and 3, respectively. These tables show the regression (method = 'Enter') of each of the five TEIQue-SF scores on all of the Big Five variables and quantify the overall overlap between trait EI and the Big Five factors of personality. At the global level, the overlap exceeds 50% of the total trait EI variance in both datasets. This estimate may be considered conservative because of the attenuating effects of measurement error and the imperfect coverage of the relevant content domains, given our use of the short forms of the TEIQue and NEO inventories (Smith, McCarthy, & Anderson, 2000). All of the Big Five dimensions contribute significantly and independently to the prediction of the global score in both datasets. Neuroticism makes the largest independent contribution ($\beta = -.39$ and $-.45$), whereas Agreeableness makes the smallest ($\beta = .13$ and $.10$).

Among the trait EI factors, the largest R^2_{adj} were for Self-control (.37 and .41 in the first and second samples, respectively) and the smallest for Emotionality (.26 and .29, respectively). In terms of Big Five predictors, Neuroticism had significant negative effects in all cases across both samples, with the exception of Emotionality in sample 1. Extraversion and Openness each had six significant positive effects, the former on Well-being, Emotionality, and Sociability in both samples and the latter on Emotionality and Sociability in

both samples, on Self-control in sample 1, and on Well-being in sample 2. Last, Conscientiousness had four significant positive effects, on Sociability in both samples, on Emotionality in sample 1, and on Self-control in sample 2.

4. Discussion

This report is the latest in a line of psychometric studies investigating the interrelationships between trait EI and the higher-order dimensions of personality (see also Petrides, Pérez-González, & Furnham, 2007; Petrides, Pita et al., 2007; Veselka et al., 2010). It is also the first investigation of the TEIQue-SF in the Netherlands (for related research with Dutch children, see Mavroveli, Petrides, Rieffe, & Bakker, 2007). Our analyses replicated previous findings of extensive overlap between trait EI and the Big Five dimensions (e.g., Freudenthaler et al., 2008; Greven, Chamorro-Premuzic, Arteche, & Furnham, 2008; Mikolajczak, Luminet, Leroy, & Roy, 2007; Vernon et al., 2009), and quantified this overlap via multiple regression analyses (for implications concerning incremental validity, see Petrides, Pérez-González et al., 2007).

When the current results are compared to previous studies, it can be observed that the short and full forms of the TEIQue provide near-identical estimates of trait EI at the global level, and broadly similar estimates at the factor level. Specifically, similarities are evident when the present results, obtained in a Dutch sample, are compared to those of Freudenthaler et al. (2008) obtained in a German-speaking sample, of Greven et al. (2008) in a UK sample, of Mikolajczak et al. (2007) in a French-speaking sample, and of Vernon et al. (2009) in a North American sample. Across all of these studies, we see particularly high correlations of the Big Five with global trait EI, and somewhat smaller, yet still significant, correlations with its four factors.

Our results are also relevant to, and can be interpreted from the perspective of, the emerging literature on the general factor of personality (GFP; Figueredo & Rushton, 2009; Hofstee, 2001; Musek, 2007; Rushton & Irwing, 2009a,b). In relation to research involving the TEIQue, it has been shown that a general factor can be extracted from a joint dataset with the NEO PI-R (Veselka, Schermer, Petrides, & Vernon, 2009) and, using specifically the TEIQue-SF, from a joint dataset with the HEXACO (Veselka et al., 2009).

The extraction of a general factor is possible because trait EI provides comprehensive coverage of the affective aspects of personality. However, even though these aspects comprise a large part of the realm of personality, there are other aspects that are not included in the sampling domain of trait EI (values, motives, traits largely unrelated to affect, etc.). For this reason, we would hesitate to recommend the TEIQue as an operationalization of the GFP, although the evidence is that it can provide a good approximation of it. The fact that a GFP can be extracted from TEIQue datasets corroborates the view that emotional intelligence ought to be integrated into multilevel personality hierarchies, somewhere between the highly specific traits at their base and the broad general factor at their apex (Petrides, Pita et al., 2007; Rushton et al., 2009).

Many self-report questionnaires of emotional intelligence tend to have weak psychometric properties (e.g., Grubb & McDaniel, 2008; Rossen, Kranzler, & Algina, 2008; Siu, 2009) and, more importantly, to provide limited coverage of the construct's sampling domain. Setting aside the fact that they are often invalid for the purpose for which they were originally developed (i.e., to measure emotional intelligence as an ability, competency, or skill), these measures overlook many (in some cases, most) central facets of the construct. Such questionnaires are best understood as partial measures of trait EI that share, or can be made to share, large amounts of variance with the TEIQue. This is precisely why trait EI theory can provide a context for the interpretation of results from these questionnaires. In fact, it is only through the perspective of trait EI theory that such results can be linked to mainstream differential psychology research.

The main reason why we recommend the TEIQue for use in research and applied settings is that it provides a gateway to trait EI theory, meaning that the instrument is predicated on a particular sampling domain, which gives rise to a particular factor structure and, more important, a particular way of distributing and interpreting variance. The key benefits of trait EI theory, and of the TEIQue as its operationalization vehicle, are to be found at a conceptual level, rather than the level of predictive and incremental utility, notwithstanding recent studies demonstrating its clear superiority in these respects (Freudenthaler et al., 2008; Gardner & Qualter, in press).

In conclusion, these findings further reinforce the necessity of conceptualizing the facets included in the multitude of EI models as a constellation of personality traits and incorporating them into scientific models of differential psychology. This is the case not only because these facets sound like personality traits ("empathy," "flexibility," "emotion control," etc.), but also because they consistently show very strong relationships with the higher-order dimensions "that underlie the bewildering array of trait terms that can be used to describe personality" (O'Connor, 2002, p. 188).

Beyond the theoretical value of these data, the results demonstrate the practical equivalence of the Dutch and English forms of the TEIQue-SF both internally and in relation to their associations with different criteria, such as the Big Five personality dimensions. More detailed investigations may involve formal psychometric tests of invariance, although, as noted in Petrides, Jackson, Furnham, and Levine (2003), practical equivalence is a necessary as well as sufficient condition for meaningful multi-group comparisons.

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