Contents lists available at ScienceDirect

Personality and Individual Differences

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

Testing and validating the trait emotional intelligence questionnaire (TEIQue) in a German-speaking sample

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ARTICLE INFO

Article history: Received 18 February 2008 Received in revised form 14 July 2008 Accepted 22 July 2008 Available online 28 August 2008

Keywords: Trait emotional self-efficacy Personality Life satisfaction Somatic complaints TEIQue

1. Introduction

Over the past 15 years, emotional intelligence (EI) has received considerable attention within scientific research. Petrides and Furnham (2001) in order to reduce misconceptions and to organize the burgeoning EI literature, have emphasized a clear distinction between trait EI (or "trait emotional self-efficacy") and ability EI (or "cognitive-emotional ability"). While the latter concerns actual emotion-related cognitive abilities (referring to maximum-performance) and must be measured by maximum-performance tests, trait EI encompasses affect-related behavioural tendencies and self-perceived abilities (referring to typical-performance) best measured through self-report.

Trait El is defined as a constellation of emotion-related self-perceptions and dispositions located at the lower levels of personality hierarchies (Petrides, Furnham, & Mavroveli, 2007). The sampling domain of the trait El framework comprises 15 distinct components, which have been derived by Petrides and Furnham (2001) via content analysis of salient models of El including those of Bar-On (1997), Goleman (1995), and Salovey and Mayer (1990) and cognate constructs such as alexithymia, affective communication, emotional expression, and empathy. Table 1 presents a brief description of these components, which provide comprehensive coverage of personality facets relating to affect (cf. Petrides, Pita, & Kokkinaki, 2007). In view of the conceptual shortcomings of

ABSTRACT

The trait emotional intelligence questionnaire (TEIQue) was tested and validated using a sample of 352 German-speaking participants. A detailed psychometric analysis provided evidence in support of the reliability of the TEIQue (at the facet, factor and global levels) and the robustness of its proposed four-factor structure. Using a subsample of 150 participants, the associations between the TEIQue and a series of relevant constructs (Big Five, life satisfaction, somatic complaints) were examined, which also included data on other trait EI measures. Overall, the TEIQue showed theoretically expected relationships to all other constructs and incremental validity in the prediction of life satisfaction and somatic complaints over and above the Big Five as well as all other trait EI measures combined.

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early self-report El measures (most of which were developed without a clear theoretical framework, overlooking core facets of the construct's sampling domain or purporting to measure El as a cognitive ability; for a critical overview see Pérez, Petrides, & Furnham, 2005), Petrides and colleagues (Petrides, 2001; Petrides & Furnham, 2003) embarked on the development of the trait emotional intelligence questionnaire (TEIQue), predicated on their trait El framework and theory.

The TEIQue consists of 153 items (rated on a seven-point Likert scale) and 13 facets, organised under four-factors: well-being, self-control, emotionality, and sociability (see Table 1). Two additional facets (adaptability, self-motivation) contribute directly to the global trait El score (for detailed psychometric analyses of the TEIQue see Mikolajczak, Luminet, Leroy, & Roy, 2007; Petrides, in press).

Regarding the validation of trait El, Petrides and colleagues (Petrides & Furnham, 2001; Petrides, Pita, et al., 2007) have demonstrated the isolation of an oblique trait El factor in both Eysenckian and Big Five factor space. Consequently, trait El is providing evidence of its discriminant validity *vis-à-vis* well-established personality dimensions. In addition, there is accumulating evidence of the incremental validity of trait El measures (beyond the Big Five and the Giant Three) in predicting a wide range of criteria (e.g., life satisfaction, emotional reactivity, coping styles, depression, loneliness, rumination, and personality disorders). That applies particularly to the TEIQue (e.g., Mikolajczak et al., 2007; Petrides, Pérez-González, & Furnham, 2007; Petrides, Pita, et al., 2007) but also to other trait El questionnaires, such as Salovey, Mayer, Goldman, Turvey, and Palfai (1995) TMMS (e.g., Bastian, Burns, & Nettelbeck, 2005), Schutte et al.





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^{0191-8869/\$ -} see front matter \circledcirc 2008 Elsevier Ltd. All rights reserved. doi:10.1016/j.paid.2008.07.014

Table 1

Descriptives for the TEIQue facets, factors and global scale (N = 352)

Facets	Items	М	SD	Alpha	High scorers perceive themselves as
Adaptability	9	4.44	.82	.81	flexible and willing to adapt to new conditions
Assertiveness	9	4.85	.84	.72	forthright, frank and willing to stand up for their rights
Emotion expression	10	4.88	1.32	.92	capable of communicating their feelings to others
Emotion management	9	5.07	.81	.71	capable of influencing other people's feelings
Emotion perception	10	5.10	.84	.77	clear about their own and other people's feelings
Emotion regulation	12	4.29	.90	.81	capable of controlling their emotions
Impulsiveness (low)	9	4.48	.86	.68	reflective and less likely to give in to their urges
Relationships	9	5.60	.72	.60	capable of having fulfilling personal relationships
Self-esteem	11	5.03	.89	.84	successful and self-confident
Self-motivation	10	4.85	.72	.63	driven and unlikely to give up in the face of adversity
Social awareness	11	4.94	.81	.79	accomplished networkers with excellent social skills
Stress management	10	4.46	.89	.73	capable of withstanding pressure and regulating stress
Trait empathy	9	5.50	.72	.72	capable of taking someone else's perspective
Trait happiness	8	5.82	1.10	.92	cheerful and satisfied with their lives
Trait optimism	8	5.05	1.13	.86	confident and likely to 'look on the bright side' of life
Factors	Items	М	SD	Alpha	Included facets
Well-being	27	5.30	.92	.94	Self-esteem, trait happiness, trait optimism
Self-control	31	4.41	.69	.86	Emotion regulation, stress management, impulsiveness
Emotionality	38	5.27	.69	.90	Emotion perception, emotion expression, trait empathy, relationships
Sociability	29	4.95	.70	.88	Social awareness, emotion management, assertiveness
Global trait El		4.96	.57	.96	All 15 facets

(1998) AES (e.g., Saklofske, Austin, & Minski, 2003), and Bar-On's (1997) EQ-i (e.g., Petrides, Pérez-González, et al., 2007).

Freudenthaler and Neubauer (2005) have demonstrated that affect-related behaviours can be assessed not only as personality traits in the traditional manner through self-report, but also by conceptually related, but sufficiently distinct, typical-performance measures of emotional management. These performance-based indicators of trait El components also showed incremental validity in predicting criteria, such as life satisfaction and depression (Freudenthaler, Neubauer, & Haller, 2008).

In sum, the findings suggest that trait El is a distinct, compound construct, integrating variance that is presently scattered across the higher-order dimensions of personality, as well as variance that lies outside these dimensions (Petrides, Pérez-González et al., 2007; Petrides, Pita, et al., 2007).

Within this field of research, much progress has been achieved by the development and validation of the TEIQue. Numerous studies across different countries have made substantial contributions in relation to a painstaking validation of this multifactorial inventory. However, most of them have mainly focused on the TEIQue's global trait EI scale. In contrast, little attention has been paid to the investigation of the proposed TEIQue factors. Even though Mikolajczak et al. (2007) have recently replicated the four-factor structure of the TEIQue in a French-speaking sample and have also demonstrated the construct validity of these factors in relation to demographic variables, the Big Five and cognate constructs (see also Greven, Chamorro-Premuzic, Arteche, & Furnham, 2008; Mikolajczak, Luminet, & Menil, 2006), no other relevant studies have been published so far. In addition, the examination of the TEIQue's relations to other trait EI measures is still outstanding. Consequently, existing research does not provide any direct evidence of the TEIQue's potential superiority in predicting theoretically relevant criteria (beyond the Big Five) in comparison to other trait EI measures.

1.1. The present study

This study aims to test the robustness of the TEIQue's reliability and validity using a German-speaking sample and also to extend previous research by addressing those limitations which have been outlined above. More specifically, we seek to

- (1) Assess the internal reliability of the TEIQue variables.
- (2) Examine the proposed four-factor structure of the TEIQue.

- (3) Assess the TEIQue's relations to other trait EI measures (the TMMS and an inventory for the assessment of intra- and interpersonal emotion-related skills described below). We also considered it informative to assess the associations between emotion-related self-perceptions (TEIQue) and criteria-based evaluations of typical behaviour in emotional situations (measured by the TEMT described below).
- (4) Confirm the TEIQue's relations to the Big Five. Based on trait EI theory and related research findings, the TEIQue variables are hypothesized to be strongly associated with neuroticism and extraversion, and less so with conscientiousness, openness and agreeableness (e.g. Petrides, 2001; Petrides, Pita, et al., 2007; Vernon, Villani, Schermer, & Petrides, in press).
- (5) Test the TEIQue's criterion validity in relation to life satisfaction (representing a cognitive evaluation of one's life circumstances) and somatic complaints (an indicator of failure to cope with stress). Both were chosen for their theoretical relevance to trait EI, which is expected to have a direct impact on the cognitive evaluation of one's life circumstances (e.g., Petrides, Pita, et al., 2007) and to protect against stress (e.g., Mikolajczak et al., 2006).
- (6) Explore the TEIQue's incremental validity beyond a combination of the Big Five and other measures of trait emotional intelligence.

For these purposes, the TEIQue was adapted into German following the guidelines of the International Test Commission (Hambleton, 2001). The items were first translated into German and then back-translated into English by small teams thus combining experts in the field of emotions with bilingual translators at the universities of Graz and Nottingham. Based on these draft versions, the development of the German TEIQue was finalized in a series of expert group meetings.

2. Method

2.1. Participants and procedure

The overall sample consisted of 352 undergraduates (233 females), whose age ranged from 18 to 44 years (M = 22.35, SD = 4.43). 196 students (154 females) were used as a pilot sample to test the psychometric properties of the German TEIQue. A preliminary analysis of this data set yielded promising findings concerning both the internal reliability and the proposed factor structure. Accordingly, the TEIQue was administered to another subsample of 156 undergraduates (65% psychology students), along with a series of other measures (see below). Six participants were excluded from the analyses of TEIQue's relations to other measures because of missing values. The remaining 150 participants (76 females) ranged in age from 18 to 43 years (M = 23.49, SD = 3.96). There were no sex differences on age and field of study.

2.2. Measures

2.2.1. Trait El measures

Apart from the TEIQue, two other self-report measures were administered. First, the Trait Meta-Mood Scale (TMMS; German version by Otto, Döring-Seipel, Grebe, & Lantermann, 2001), which includes 30 items assessing three subscales: 'attention to feelings' (α = .87), 'clarity of feelings' (α = .92), and 'mood repair' (α = .84).

Second, the self-report emotional ability scale (SEAS; Freudenthaler & Neubauer, 2005, in preparation), which encompasses six subscales for the measurement of self-assessed emotional abilities as well as two composite scales for the measurement of self-assessed intra- vs interpersonal emotional abilities. The intrapersonal SEAS scale includes 15 items ($\alpha = .83$) concerning the perception, control and regulation of one's own emotions. The interpersonal SEAS scale includes 17 items ($\alpha = .87$) concerning the perception and regulation of others' emotions. In previous studies (Freudenthaler & Neubauer, 2005; Uidl, 2004; Zormann, 2005), the SEAS scales displayed largely expected convergent and discriminant relations to peer-ratings of emotional abilities, to the subscales of other trait El inventories, and to self-assessed interpersonal competencies and the Big Five.

In addition, the typical-performance emotional management test (TEMT; Freudenthaler & Neubauer, 2005) was administered, which consists of two scales for the assessment of typical-performance in managing emotions in the self (18 items, $\alpha = .72$) and in others (24 items, $\alpha = .70$). In both scales, short descriptions of emotional situations are presented, followed by four response alternatives. Participants were instructed to choose the alternative that best described their typical behaviour in a given situation. The correctness of the answers was determined by a panel of ten experts who rated the adequacy of the four behavioural alternatives (from 1 to 4) in each situation.

2.2.2. Personality

The Big Five were measured using the well-established NEO-FFI by Costa and McCrae (German version; Borkenau & Ostendorf, 1993). The internal consistencies of the five scales ranged between .73 and .89 in the present study.

2.2.3. Life satisfaction and somatic complaints

Life satisfaction and somatic complaints were assessed by two scales from the Freiburger Persönlichkeits-Inventar (FPI, Fahrenberg, Hampel, & Selg, 1984). The life satisfaction scale consists of 12 items (α = .84) measuring global satisfaction with life. The somatic complaints scale includes 12 items (α = .68) referring to various physical symptoms and bodily sensations.

3. Results

3.1. Internal reliability of the TEIQue

Twelve of the 15 facets had solid internal reliabilities (between .71 and .91; Table 1). However, another three (impulsiveness, relationships, and self-motivation) displayed alphas below .70. The

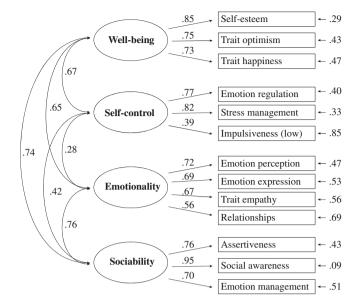


Fig. 1. CFA of the theoretical four-factor structure of the TEIQue (N = 352).

internal consistencies at the factor level were excellent, varying between .86 and .94. The same was the case for global trait EI (α = .96).

3.2. Factor structure of the TEIQue

The theoretical factor structure of the TEIQue, on which the a priori scoring key is based (see Table 1), was confirmed by a CFA, allowing for correlated errors (see Fig. 1). The model fit was acceptable to good: χ^2 (54, N = 352) = 147.78, CFI = .95, SRMR = .049 and RMSEA = .07. The factor loadings were high in all cases, ranging between $\lambda = .56$ and $\lambda = .95$, except for impulsiveness ($\lambda = .39$). Correlated errors were modelled between the following pairs of facets: happiness and optimism ($\theta = .21$), happiness and relationships ($\theta = .12$), assertiveness and empathy ($\theta = -.15$), assertiveness and social awareness ($\theta = -.12$), assertiveness and relationships ($\theta = -.17$). All of them are theoretically plausible, considering, for instance, that happiness may often be associated with verbal aggression, which leads to negative overlap with facets like empathy, social awareness, and relationships.

In addition to the CFA, we examined the degree of convergence between the present data set and the theoretical factor structure by correlating the factor scores derived from a data-driven principal component EFA¹ (derived via the statistical regression method) with the factor scores derived from the a priori scoring key. The zeroorder correlations were .95 for well-being, .97 for self-control, .95 for emotionality and .96 for sociability. The high compatibility between the scoring key and the German factor solution demonstrates that the German and UK factors (as well as the French, which were tested in the same way) are essentially identical.

3.3. Relations of the TEIQue to other trait EI measures

Global TElQue scores as shown in Table 2 demonstrate moderate to strong correlations with all subscales of the other trait El inventories. At the factor level, well-being was particularly associ-

¹ The EFA yielded four factors with eigenvalues greater than one (explaining 70.8% of the variance). The four promax-rotated factors (k = 4) were readily identifiable as the proposed TEIQue factors.

Table 2

Zero-order correlations between the TEIQue (factor and global scores) and the other variables in the study (N = 150)

Variables	Trait El	Well-being	Self-control	Emotionality	Sociability
TMMS-attention	.27**	.19*	12	.50**	.16*
TMMS-clarity	.46**	.31**	.19*	.58**	.28**
TMMS-repair	.68**	.79**	.48**	.36**	.42**
SEAS-intrapersonal	.57**	.47**	.67**	.26**	.38**
SEAS-interpersonal	.62**	.33**	.33**	.59**	.65**
TEMT-intrapersonal	.55**	.40**	.42**	.36**	.55**
TEMT-interpersonal	.35**	.20*	.20*	.40**	.35**
Neuroticism	76**	77**	67**	30**	63**
Extraversion	.58**	.56**	.09	.50**	53**
Openness	.30**	.13	.10	.35**	.30**
Agreeableness	.27**	.28**	.13	.39**	.00
Conscientiousness	.50**	.39**	.41**	.29**	.43**
Life satisfaction	.67**	.76**	.52**	.37**	.40**
Somatic complaints	34**	36**	44**	01	25**

^{*} p < .05.

** p < .01.

ated with 'mood repair'. In addition, well-being and self-control were more strongly related to self-assessments of intrapersonal emotional abilities as measured by the SEAS scales. The same was the case for their associations with the corresponding TEMT scales. In contrast, emotionality and sociability showed stronger associations with self-assessments of interpersonal emotional abilities. Among the TEIQue factors, emotionality showed the highest correlations with 'attention to feelings' and 'clarity of feelings'.

3.4. Relations of the TEIQue to the Big Five

In line with the conceptualization of trait EI as a constellation of affect-related personality dispositions, global TEIQue scores showed a very strong negative correlation with neuroticism and a strong positive correlation with extraversion (Table 2). They also correlated significantly with the other three personality dimensions.

Even though the correlation patterns between each TEIQue factor and the Big Five were broadly similar, there were some noteworthy differences. Whereas well-being and sociability showed strong associations with both neuroticism and extraversion, the other two TEIQue factors were substantially correlated either with neuroticism or extraversion. The fact that openness was only significantly correlated with emotionality and sociability provides further support for the convergent and discriminant validity of the TEIQue factors. The same holds for the pattern of correlations between the TEIQue factors and agreeableness (Table 2).

3.5. Relations of the TEIQue to criterion measures

The global TEIQue score showed a strong positive correlation with life satisfaction and a moderate negative correlation with somatic complaints (Table 2). In line with the hypothesis that emotional states affect the cognitive evaluation of one's life circumstances, well-being was most highly associated with life satisfaction. Nevertheless, substantial correlations were also found between the other TEIQue factors and life satisfaction. Self-control showed the strongest negative association with somatic complaints. Well-being and sociability were also associated with a lower frequency of somatic complaints.

3.6. Hierarchical regression analyses

To examine the incremental validity of the TEIQue and the other trait EI measures beyond personality, we conducted a series of separate hierarchical regression analyses entering the five personality

Table 3

 R^2 values for the first (NEO-FFI) and second (trait EI measures) steps of the hierarchical regressions (N = 150)

Criterion measures	Step 1	Step 2				
		TEIQue	TMMS	SEAS	TEMT	
Life satisfaction Somatic complaints	.62** .27**	.08*** .06*	.04 ^{**} .02	.00 .01	.01 .05*	

^{*} p < .05. ** p < .01.

traits in the first step, and the subscales/factors of the trait EI measures as a block in the second step.² Results are summarised in Table 3, showing the contributions of the Big Five (Step 1) and the R^2 change attributable to the subscales/factors of the trait EI measures. Among the trait EI measures, the TEIQue showed the best predictive capability in the presence of the Big Five, incrementally explaining between 6% (somatic complaints) and 8% (life satisfaction) of criterion variance. Apart from the TEIQue, the TMMS was a reliable predictor of life satisfaction and the TEMT of somatic complaints.

Finally, we examined the TEIQue's incremental validity in predicting life satisfaction and somatic complaints over and above a combination of the Big Five and all other trait EI measures, entered together as a block in the first step of two hierarchical regression analyses. For life satisfaction, a total of 72% of the variance was accounted for (R^2 = .72; *F*(16, 149) = 20.98, *p* < .01), with the TEIQue factors explaining 5% (*p* < .01) of the unique variance. For somatic complaints, a total of 40% of the variance was accounted for (R^2 = .40; *F*(16, 149) = 5.51, *p* < .01), with the TEIQue factors explaining 6% (*p* < .05) of the unique variance.³

4. Discussion

This paper provides conclusive evidence that the TEIQue represents a reliable and valid inventory for the comprehensive measurement of trait EI. It also presents important additional findings concerning the TEIQue's construct and incremental validity *vis-à-vis* both the Big Five and other trait EI measures.

The internal consistencies of the German TEIQue's twenty variables (15 facets, four factors, and global score) were generally excellent and similar to those reported for the original TEIQue (Petrides, in press) and its various translations (e.g., French: Mikolajczak et al., 2007; Greek: Petrides, Pita, et al., 2007). Most important, the four-factor structure of the TEIQue was replicated, thereby adding another in a growing list of countries (including Belgium, Canada, China, Greece, Spain, Norway, Croatia, Australia, and the UK) wherein the four-factor structure has been recovered (Petrides, 2005). It appears that the structure of emotion-related selfperceptions emerges, virtually identical, in datasets from countries all over the world. More broadly, these data provide evidence in support of Hans Eysenck's point about the universality of personality (Barrett, Petrides, Eysenck, & Eysenck, 1998).

The four TEIQue factors displayed a psychologically meaningful pattern of convergent and discriminant relations to self-assessed intra- and interpersonal emotional abilities measured by the SEAS. In addition, substantial associations between the TEIQue and the TMMS were found only between those factors and subscales that

² The analysis had to be conducted at the factor level because, among the trait EI measures, only the TEIQue yields a global score. In addition, this procedure was used to overcome the inherently biased comparisons in incremental validity studies that pitch a single degree of freedom for trait EI against multiple degrees of freedom for personality.

³ Additional details for the hierarchical regression analyses are available from the first author upon request.

are conceptually related. In contrast to the low and often non-significant correlations between trait El and ability El measures (e.g., O'Connor & Little, 2003; Warwick & Nettelbeck, 2004), the TEIQue largely displayed moderate associations with the TEMT scales. The overlap between self-reports and performance-based measures of affect-related behavioural tendencies further corroborates the construct validity of the TEIQue.

The TEIQue variables also correlated in theoretically congruent ways with the Big Five. As expected, the strongest associations were found with neuroticism and extraversion. This is in line with trait EI theory, which views the construct as encompassing the emotion-related aspects of personality, many of which have been conceptualized as constituent facets of the basic dimensions of neuroticism and extraversion (Vernon, Villani, Schermer, & Petrides, in press). Even though some of the obtained correlations were high, the present findings accord well with those of other studies (e.g., Petrides, Pita, et al., 2007; Vernon et al., in press). In addition, a recent meta-analysis of over three dozen independent data sets (Petrides, Furnham, et al., 2007) yielded a variance overlap between trait EI and the Big Five in the order of approximately 65% (range 50-80%). It is not surprising that most of the trait EI construct's variance overlaps with the Big Five, given that the main function of higher-order personality traits is to summarize variance in the traits lower down the hierarchy. Neither is this problematic, considering that trait EI has been shown to represent a distinct, compound trait located at the lower levels of personality hierarchies (Petrides, Pita, et al., 2007).

Regarding criterion validity, the TEIQue appears to be a reliable predictor of both criteria. The obtained correlations echo those of previous studies, where global trait EI was a strong correlate of life satisfaction (e.g., Petrides, Pérez-González, et al., 2007; Petrides, Pita, et al., 2007) and a moderate correlate of somatic complaints (e.g., Mavroveli, Petrides, Rieffe, & Bakker, 2007; Mikolajczak et al., 2006). With one exception, all TEIQue factors were associated with both criteria. The lack of a correlation between emotionality and somatic complaints accords well with recent findings by Mikolajczak et al. (2006). Overall, these results suggest that our appraisal of our circumstances and our reactions to emotionally laden life events may be partly filtered through our perceptions of our emotional abilities (Petrides, Pita, et al., 2007).

Even in the presence of the Big Five, three of four trait EI measures led to improvements in the prediction of at least one criterion measure. In accordance with other studies, the TMMS showed incremental validity in predicting life satisfaction (e.g., Bastian et al., 2005; Extremera & Fernández-Berrocal, 2005). The TEMT emerged as a useful instrument for the prediction of somatic complaints. This suggests that managing emotions appropriately facilitates resistance to stress and may, consequently, protect against stress-related somatic complaints (Mikolajczak et al., 2006; Saklofske et al., 2003). Among the trait EI inventories, the TEIQue was the most powerful predictor of both criteria, accounting for variance in both life satisfaction and somatic complaints that could not be accounted for by the Big Five or the other trait EI inventories.

Accordingly, these findings provide support for the TEIQue's superiority in predicting relevant criteria in comparison to other, less comprehensive, trait EI inventories. However, the evidence obtained here is restricted to two criteria and requires replication and extension with broader samples and a wider range of self-assessed and objectively measured life outcomes. Nevertheless, this study makes an important contribution in the measurement of trait EI by providing evidence in support of both the construct's universality (Barrett et al., 1998) and its ability to predict important criteria over and above other personality variables.

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