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The Incremental Validity of the Trait Emotional Intelligence Questionnaire (TEIQue): A Systematic Review and Meta-Analysis

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ABSTRACT

A criticism leveled against the conceptualization of emotional intelligence (EI) as a personality trait is that it overlaps considerably with the higher order personality dimensions and, therefore, has weak utility. To investigate this criticism, a systematic review and meta-analysis were conducted to synthesize the literature examining the incremental validity of the 2 adult self-report forms of the Trait Emotional Intelligence Questionnaire (TEIQue). Twenty-four articles reporting 114 incremental validity analyses of the TEIQue were reviewed according to the studies' methodological features. Additionally, data from 18 studies (providing 105 effect sizes) were pooled in a meta-analysis. Results suggest that the TEIQue consistently explains incremental variance in criteria pertaining to different areas of functioning, beyond higher order personality dimensions and other emotion-related variables. The pooled effect size was relatively small, but statistically and practically significant ($\Delta R^2 = .06$, $SE = .0116$; 95% CI [.03, .08]). The number of covariates controlled for, the form of the TEIQue, and the focus on higher order personality dimensions versus other individual-difference constructs as baseline predictors did not affect the effect size. Analyses conducted at the factor level indicated that the incremental contribution is mainly due to the well-being and self-control factors of trait EI. Methodological issues and directions for future research are discussed.

Researchers refer to emotional intelligence (EI) as a set of abilities or perceptions concerning the way individuals identify, make use of, deal with, and process emotions. The distinction between trait EI (or trait emotional self-efficacy) and ability EI (or cognitive-emotional ability) takes into consideration the psychometric distinction between measures of typical and maximal performance (e.g., Ackerman & Heggestad, 1997; Cronbach, 1949), with particular emphasis on its implications for the conceptualization of emotion-related individual differences (Petrides & Furnham, 2000, 2001). Although distinct constructs, ability and trait EI are not mutually exclusive, and their bifurcation is now widely recognized within the scientific literature (e.g., Austin, 2010; Neubauer & Freudenthaler, 2005). However, debate persists in the field on how best to conceptualize and operationalize ability and trait EI in terms of their construct domains (e.g., Fiori, 2009; Ybarra, Kross, & Sanchez-Burks, 2014).

Even as an expanding body of evidence keeps highlighting the importance of EI as a predictor in several domains of functioning (e.g., Malouff, Schutte, & Thorsteinsson, 2014; Martins, Ramalho, & Morin, 2010), many authors have ascribed to EI conceptual redundancy, questioning the overall utility of the construct (e.g., Antonakis, 2004; Conte, 2005; Harms & Credé, 2010; Schulte, Ree, & Carretta, 2004; Van Rooy, Alonso, & Viswesvaran, 2005). For instance, MacCann, Matthews, Zeidner, and Roberts (2003) maintained that trait EI overlaps substantially with the Big Five and often fails to account for criterion

variance over and above them, whereas Joseph and Newman (2010) described trait EI as an "umbrella term for a broad array of constructs that are connected only by their non-redundancy with cognitive intelligence" (p. 55). Similarly, Schlegel, Grandjean, and Scherer (2013) maintained that trait EI might be redundant with existing social and emotional effectiveness constructs, concluding that future research should provide evidence for its overall distinctiveness and incremental validity.

To address systematically concerns about the uniqueness and utility of trait EI, this study examines evidence of criterion validity, focusing particularly on the incremental validity of one of the construct's most commonly used and comprehensive measures. The trait EI literature provides researchers with a wide range of self-report measures (for a recent review, see Siegling, Petrides, & Saklofske, 2015), showing substantial variation in their representations of the underlying construct. For this and other reasons specified in subsequent sections, the focus of this article is exclusively on studies in which trait EI is measured through the Trait Emotional Intelligence Questionnaire (TEIQue; Petrides, 2009). Prior to this endeavor, it will be important to take a closer look at the TEIQue and its theoretical framework.

Trait EI

Trait EI represents a constellation of emotional perceptions located at the lower levels of personality hierarchies

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Table 1. The sampling domain of trait emotional intelligence in adults (Petrides, 2009).

Factors	Facets	High scorers perceive themselves as
Well-being		
	Trait optimism	Confident and likely to "look on the bright side" of life
	Trait happiness	Cheerful and satisfied with their lives
	Self-esteem	Successful and self-confident
Sociability		
	Emotion management (others)	Capable of influencing other people's feelings
	Assertiveness	Forthright, frank, and willing to stand up for their rights
	Social awareness	Accomplished networkers with excellent social skills
Emotionality		
	Trait empathy	Capable of taking someone else's perspective
	Emotion perception (self and others)	Clear about their own and other people's feelings
	Emotion expression	Capable of communicating their feelings to others
	Relationships	Capable of having fulfilling personal relationships
Self-control		
	Emotion regulation	Capable of controlling their emotions
	Impulsiveness (low)	Reflective and less likely to give in to their urges
	Stress management	Capable of withstanding pressure and regulating stress
Auxiliary facets		
	Self-motivation	Driven and unlikely to give up in the face of adversity
	Adaptability	Flexible and willing to adapt to new conditions

(Pérez-González & Sanchez-Ruiz, 2014; Petrides, Pita, & Kokkinaki, 2007). Essentially, it concerns people's perceptions of their emotional abilities comprehensively encompassing the affective aspects of personality. To generate an accurate representation of the personality dimensions covered by trait EI, a content analysis of prominent EI models (i.e., Bar-On, 1997; Goleman, 1995; Salovey & Mayer, 1990) and related personality constructs, such as alexithymia, well-being, and empathy, was undertaken (Petrides & Furnham, 2001). Only the core elements common to more than a single model of EI were retained, with singular facets unique to individual conceptualizations excluded. This systematic method gave rise to the current trait EI sampling domain, which is shown in Table 1. Trait EI theory offers a way to redefine EI models that are operationalized via self-report questionnaires to link them, and the measures based on them, to scientific theories of psychology (Petrides, 2011). Therefore, it provides an appropriate and systematic framework for the interpretation of results obtained with self-report measures of EI.

Given the conceptualization of EI as part of the major personality taxonomies, rather than as independent of them, numerous studies have examined the extent to which trait EI overlaps with the higher order personality dimensions in the Eysenckian Giant Three (Eysenck, 1994) and Big Five (Costa & McCrae, 1992) personality trait models. On the one hand, correlational investigations (e.g., Austin, Farrelly, Black, & Moore, 2007; Collins, Freeman, & Chamorro-Premuzic, 2012; Petrides et al., 2010; Van der Linden, Tsaousis, & Petrides, 2012) and behavioral-genetic studies (Petrides, Vernon, Schermer, & Veselka, 2011; Vernon, Villani, Schermer, & Petrides, 2008) support the claim for inclusion of trait EI into personality hierarchies. On the other hand, the large magnitude (Cohen, 1988) of the associations between trait EI and personality dimensions, particularly Neuroticism and Extraversion, feeds into arguments about the construct's redundancy. It has indeed been maintained that trait EI does not add substantially to the prediction of psychological phenomena over the basic personality dimensions (e.g., Schulte et al., 2004). Others have attributed the predictive validity of trait

EI inventories to their overlap with facets of higher order traits relevant to the outcomes being considered (Harms & Credé, 2010). A systematic investigation of the incremental validity of trait EI, particularly beyond higher order personality dimensions such as the Big Five, constitutes a useful step for establishing its theoretical and practical utility.

The TEIQue

The TEIQue items were created to represent the 15 facets of trait EI, yielding roughly 10 items per facet for the full form of 153 items. In contrast to many self-report measures of EI (Siegling, Nielsen, & Petrides, 2014), which leave much to be desired theoretically as well as psychometrically (Conte, 2005; Matthews, Zeidner, & Roberts, 2004), the TEIQue is characterized by a strong theoretical and psychometric basis.

Thirteen of the 15 facets load on four oblique factors: well-being, self-control, emotionality, and sociability, whereas the remaining two, namely adaptability and self-motivation, contribute directly to the global trait EI score, without going through any specific factor (see Table 1). Answers to the items are provided on a 7-point scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The solid psychometric basis of the TEIQue instruments is reflected in the cross-cultural stability of its four-factor structure, which has been replicated in several languages (e.g., Andrei, Smith, Surcinelli, Baldaro, & Saklofske, 2015, Italian adaptation; Freudenthaler, Neubauer, Gabler, Scherl, & Rindermann, 2008, German adaptation; Jolić-Marjanović & Altaras-Dimitrijević, 2014, Serbian adaptation; Martskvishvili, Arutinov, & Mestvirishvili, 2013, Georgian adaptation; Mikolajczak, Luminet, Leroy, & Roy, 2007, French adaptation; Petrides, 2009, English original). The full TEIQue provides scores on global trait EI, four factors, and 15 facets.

The Trait Emotional Intelligence Questionnaire—Short Form (TEIQue—SF; Petrides & Furnham, 2006) consists of 30 items, which were taken from the full form (two per facet) and are responded to on the same 7-point Likert scale. The psychometric properties of the TEIQue—SF have been scrutinized through item response theory analysis (Cooper & Petrides,

2010). This instrument is primarily intended to measure global trait EI, although factor scores achieving the minimum standards for reliability can be derived and have been used in various studies (e.g., Arora et al., 2011). In contrast to the full form, facet scores cannot be computed from the TEIQue−SF.

A large body of literature attests to the criterion validity of the TEIQue instruments for a wide range of outcomes. For example, the measures have been linked to the use of adaptive coping strategies (Laborde, You, Dosseville, & Salinas, 2012), symptoms of borderline personality disorder (Sinclair & Feigenbaum, 2012), reactions to stress (Mikolajczak, Menil, & Luminet, 2007), and relationships satisfaction (Smith, Heaven, & Ciarrochi, 2008). Moreover, both primary and meta-analytic studies have consistently shown that, compared to other self-report measures of EI, the TEIQue has superior psychometric properties and greater validity, including incremental validity (Di Fabio & Saklofske 2014; Freudenthaler et al., 2008; Gardner & Qualter, 2010; Martins et al., 2010). In a recent meta-analysis, Martins and colleagues (2010) analyzed 80 studies investigating the relationships between EI and health, and found that TEIQue was the strongest predictor of physical, psychosomatic, and mental health, compared to all other trait and ability EI measures against which it was compared. However, that meta-analysis focused on direct, rather than incremental effects (Martins et al., 2010). At the same time, emerging evidence suggests that some TEIQue facets, all of which fall under the emotionality and sociability factors, might actually underestimate the construct's predictive power at the global-composite level (Siegling, Petrides, & Martskvishvili, 2015; Siegling, Vesely, & Saklofske, 2013).

This review: Incremental validity of TEIQue scores

The often criticized overlap between trait EI and personality in combination with the lack of a systematic review or meta-analysis of the construct's incremental criterion validity provide the rationale for this work. Incremental validity over related attributes is pivotal to the exploration of any psychological construct. Although previously conceptualized in different ways (for a review of definitions, see Hunsley & Meyer, 2003), we view incremental validity as the degree to which a measure's scores increase the accuracy of prediction of pertinent criteria, relative to other conceptually relevant predictors. Despite a growing body of research on trait EI in children and adolescents (e.g., Andrei, Mancini, Trombini, Baldaro, & Russo, 2014; Mavroveli & Sanchez-Ruiz, 2011; Siegling, Vesely, Saklofske, Frederickson, & Petrides, 2015), our focus is on studies in which the adult forms of the TEIQue were used.

This review was guided by two objectives: (a) to provide a systematic evaluation of the quality of studies investigating the incremental validity of the TEIQue, and (b) to provide a comprehensive quantitative account of the incremental predictive contribution of the third- (i.e., global trait EI composite) and second-order (i.e., factor) levels of the instrument. The focus was on incremental validity relative to a variety of additional predictors, including higher order factors, lower order constructs, and demographic variables. First, the relevant studies are reviewed with reference to their research designs, population samples, predictors other than trait EI, and criteria used. Second, a quantitative assessment of findings concerning the

incremental validity of the TEIQue is conducted through a series of meta-analyses.

Method

Literature search

The literature search was aimed at identifying studies that have explored the incremental validity of trait EI by means of the TEIQue. Two inclusion criteria were applied to select eligible studies: (a) focus on adult samples (18 years and older), and (b) use of the TEIQue. The literature search focused solely on empirical investigations published in peer-reviewed journals to maintain a high standard for the methodological rigor of the studies reviewed and to maximize the validity of conclusions drawn.

Papers were identified by conducting searches in the PsycINFO, PsycArticles, Scopus, and Web of Knowledge databases, using the following terms individually: TEIQue, TEIQue−SF, Trait Emotional Intelligence Questionnaire, and Trait Emotional Intelligence Questionnaire−Short Form. Queries were limited to human subjects and the English language. An article not included at the time in electronic databases (Siegling, Vesely, Petrides & Saklofske, 2015) was also inspected. Based on these searches, which were performed in December 2014, a total of 24 articles reporting 114 analyses on the incremental validity of the TEIQue were included in the review. The article selection process is depicted in Figure 1.

In line with the study aims, the focus was on the 114 statistical analyses examining the incremental validity of the TEIQue. For this purpose, analyses performed using the TEIQue's global composite score are treated separately from those performed at the level of the four factor scores. For analyses using the global composite, results from the TEIQue and the TEIQue−SF are integrated, as the two forms provide near-identical estimates of global trait EI (Petrides et al., 2010). Analyses performed at the factor level will be examined separately for the full and short forms because the factor scores derived from the TEIQue−SF
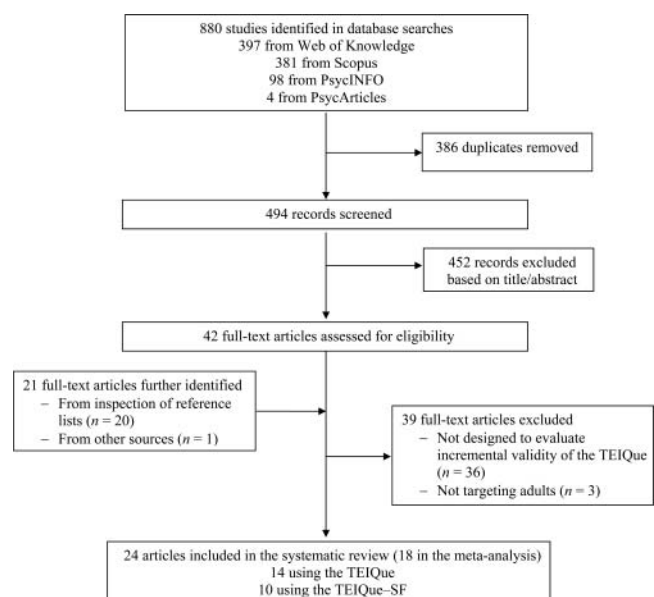

Figure 1. Flow diagram of review process.

tend to have lower reliability levels compared to those of the full form (Petrides et al., 2010). Additionally, for studies conducted at the factor level, our focus is both on the specific contribution provided by each factor and on the variance explained by the four factors as a block. By including analyses conducted at the factor level in this review, we can examine the relative contributions of the four TEIQue factors in explaining incremental variance. Throughout the article, the symbol n is used to refer to subsets of the total number of analyses having specific features in common (data collected from students, focus on the Big Five, etc.).

Coding of studies

Studies were coded by the first author for the following key features: reference information (authors and publication year), sample size and composition, study design (cross-sectional, longitudinal, experimental), TEIQue form used (full vs. short), level of analysis (global vs. factor level of the TEIQue), baseline measures (personality taxonomies such as Big Five vs. isolated constructs), length of the measure used to operationalize higher order personality dimensions (i.e., short-, medium-, and long-size scales: ≤ 10 items, $10-60$ items, and > 60 items, respectively), number of predictors included in each statistical model, statistical information used to derive an effect size, and criterion variables and their domain. With respect to the last feature, in an effort to integrate research findings, criteria were clustered into the four major domains of affect, behavior, cognition, and desires (the ABCDs of individual differences) and somatic health, where applicable. Regarding statistical analyses, overall, 63 analyses reported the ΔR^2 coefficients for trait EI, with values ranging from .02 ($p < .01$) for alcohol abuse (Gardner & Qualter, 2010) to .33 ($p < .01$) for life satisfaction (Siegling, Vesely, Petrides, et al., 2015). Statistics were converted to ΔR^2 where possible ($n = 42$). In those cases where statistical information required to calculate an effect size was missing, study authors were contacted to provide it. In those cases where relevant information was unavailable, it was coded as missing (7% of cases). Given the lack of information required to compute the effect size (i.e., trait EI change in R^2), nine analyses were discussed in the qualitative review only and were not included in the ensuing meta-analysis.

In addition, to confirm coding accuracy, 50% of the studies were fully coded by an independent rater. Across all codes, levels of interrater reliability were high (90%−100% agreement), and discrepancies were resolved by discussion prior to conducting the analyses.

Meta-analytic procedure

Our analyses were based on current and appropriate meta-analytic techniques. Both random-effects and mixed-effects models were examined. All computations were conducted in R (R Core Team, 2012). In our meta-analysis, dependence of effects occurs because multiple outcomes have been measured on the same subjects. To model this type of dependence, we relied on the method developed by Hedges, Tipton, and Johnson (2010) using the 'Robumeta' (Fisher & Tipton, 2014) and 'Metafor' packages (Viechtbauer, 2010). Meta- regression analyses were

conducted to examine differences due to study characteristics. Weighted mean effects, standard errors, I^2, H, and R^2_{Meta}, for moderator analysis (Aloe, Becker, & Pigott, 2010) are presented for each analysis. Publication bias was formally assessed via Egger's regression test (Egger, Smith, Schneider, & Minder, 1997) and the funnel plot (Sterne & Egger, 2001).

Effect sizes

The trait EI change in R^2 (ΔR^2), or proportion of criterion variance due to a predictor or block of predictors, was used as the effect size. The variance of each ΔR^2 was estimated using formula 19 from Alf and Graf (1999). When studies did not directly report change in R^2, but sufficient information to estimate the semipartial correlation was available, we used procedures developed in Aloe and Becker (2012) to estimate semipartial correlations (r_{sp}), which were subsequently transformed into changes in R^2 (i.e., $\Delta R^2 = r_{sp}$).

Results

A summary of study characteristics and findings is shown in Tables 2 and 3.

Methodology of studies

Samples

Sample size. Sample sizes ranged from 28 (Laborde, Lautenbach, Allen, Herbert, & Achtzehn, 2014) to 645 participants (Siegling, Vesely, Petrides, et al., 2015). No study reported power calculations. Therefore, to perform a retrospective examination of the adequacy of the number of participants for each analysis, post hoc analyses for linear multiple regressions were run through the software G*Power 3.1 (Faul, Erdfelder, Buchner, & Lang, 2009). These yield estimates of the power achieved by each analysis, given α error probability, sample size, number of predictors, and effect size (Faul et al., 2009). A power of .80 is conventionally deemed to be satisfactory (Cohen, 1988). Hence, analyses achieving a $1 - \beta$ error probability lower than 80% were considered to be underpowered. Results indicated that 84.2% of calculations had a power above .90, whereas 8.8% of calculations were underpowered. With regard to the latter, in 6.1% of cases (Furnham & Christoforou, 2007; Laborde et al., 2014; Mikolajczak, Roy, Verstrynge, & Luminet, 2009; Petrides, Pérez-González, & Furnham, 2007) power was in a medium range (i.e., .60−.80), whereas in 2.6% of cases it dropped below this range (Gardner & Qualter, 2010; Mikolajczak, Menil, & Luminet, 2007). In the remaining 7.0% of cases, missing data prevented the calculation of post hoc power analyses (Mikolajczak, Luminet, et al., 2007; Mikolajczak, Luminet, & Menil, 2006; Mikolajczak, Petrides, Coumans, & Luminet, 2009; Petrides, Pita, & Kokkinaki, 2007).

Sample characteristics. Most samples reported a higher percentage of females than males (82.5% of analyses; Chamorro-Premuzic, Bennett, & Furnham, 2007; Furnham & Christoforou, 2007; Furnham & Petrides, 2003; Gardner & Qualter, 2010; Laborde et al., 2014; Mikolajczak et al., 2006;

Table 2. Summary of studies examining the incremental validity of trait emotional intelligence using the full form of the Trait Emotional Intelligence Questionnaire (TEIQue; n of analyses = 82).

Authors (year)	Design	N[a]	Sample composition[a]	Predictors (measure)[b]	Criteria (measure)	Incremental contribution of the TEIQue global score (ΔR^2)[c]	Incremental contribution of the TEIQue factors (ΔR^2)[c]
Freudenthaler, Neubauer, Gabler, Scherl, & Rindermann (2008)	Cross-sectional	150	German students (76 female, M age = 23.24, SD = 3.96)	Big Five (NEO—FFI)	Somatic complaints (FPI)		Yes (.06)
					Life satisfaction (FPI)		Yes (.08)
				Big Five (NEO—FFI), trait EI (TMMS, SEAS and TEMT)	Somatic complaints (FPI)		Yes (.06)
					Life satisfaction (FPI)		Yes (.05)
Gardner & Qualter (2010)	Cross-sectional	310	Mixed community and student U.K. sample (236 female, M age = 36.70, SD = 12.05)	Age, gender, Big Five (IPIP)	Aggression (AQ)		
					Physical	No	
					Verbal	No	
					Anger	No	
					Hostility	Yes (.08)	
					Loneliness (SELSA—S)		
					Social	Yes (.17)	
					Family	Yes (.14)	
					Romantic	Yes (.11)	
					Eating disorders (EDDS)	No	
					Alcohol abuse (SAAST)	Yes (.02)	
					Happiness (SHS)	Yes (.09)	
					Life satisfaction (SWLS)	Yes (.17)	
				Trait EI (SEIS and MEIA)	Aggression (AQ)		
					Physical	Yes (.02)	
					Verbal	No	
					Anger	Yes (.14)	
					Hostility	Yes (.19)	
					Loneliness (SELSA—S)		
					Social	Yes (.08)	
					Family	Yes (.06)	
					Romantic	Yes (.04)	
					Eating disorders (EDDS)	Yes (.10)	
					Alcohol abuse (SAAST)	Yes (.07)	
					Happiness (SHS)	Yes (.22)	
					Life satisfaction (SWLS)	Yes (.19)	

(*continued*)

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Table 2. Summary of studies examining the incremental validity of trait emotional intelligence using the full form of the Trait Emotional Intelligence Questionnaire (TEIQue; n of analyses = 82). (Continued)

Authors (year)	N[a]	Design	Sample composition[a]	Predictors (measure)[b]	Criteria (measure)	Incremental contribution of the TEIQue global score (ΔR²)[c]	Incremental contribution of the TEIQue factors (ΔR²)[c]
Jolić-Marjanović & Altaras-Dimitrijević (2014)	254	Cross-sectional	Serbian adults (117 female, M age = 40.21, SD = 8.17)	Big Five (NEO—FFI)	Well-being (RSPWB-S)	Yes (.07)	
				Ability EI (MSCEIT), empathy (EQ-Short)	Well-being (RSPWB-S)	Yes (.25)	
Laborde, Lautenbach, Allen, Herbert, & Achtzehn (2014)	28	Experimental	German-speaking tennis players (13 female, M age = 23.88, SD = nr)	Age, somatic anxiety, cognitive anxiety, and self-confidence (CSAI—2)	Biological marker of emotion regulation (cortisol secretion)	Yes (.28)	
				Somatic anxiety, cognitive anxiety, and self-confidence (CSAI—2), biological marker of emotion regulation (cortisol secretion)	Performance under stress (number of errors in a tennis task)	No	
Mikolajczak, Luminet, Leroy, & Roy (2007)	nr	Experimental	nr	Condition (neutral vs. stressful), emotional stability and agreeableness (D5D), social desirability (MCSDS)	Emotional reactivity (questionnaire developed for this study)		Yes
Mikolajczak, Luminet, & Menil (2006)	100	Cross-sectional	French-speaking psychology students (85% female, M age = 18.36, SD = 2.47)	Mental status at baseline (BSI)	Psychological symptoms amid stress (BSI)		Yes
				Physical status at baseline (SMU-HQ), Alexithymia (TAS—20), optimism (LOT—R)	Somatic symptoms amid stress (PILL)		Yes
					Psychological symptoms amid stress (BSI)		Yes (.16)
					Somatic symptoms amid stress (PILL)		Yes (.12)
Mikolajczak, Petrides, Coumans, & Luminet (2009)[d]	118	Experimental	French-speaking students (51 female, M age = 18.70, SD = 1.04)	Condition (neutral vs. stressful), negative affect at baseline (PANAS), emotional stability, agreeableness, openness (D5D), alexithymia (TAS—20), social desirability (MCSDS)	Negative affect at follow-up (PANAS)	Yes	
				Condition (neutral vs. stressful), positive affect at baseline (PANAS), openness (D5D), alexithymia (TAS—20), social desirability (MCSDS)	Positive affect at follow-up (PANAS)	No	
				Alexithymia (TAS—20)	Negative affect at follow-up (PANAS)	Yes	
				Alexithymia (TAS—20)	Positive affect at follow-up (PANAS)	Yes	
				Social desirability (MCSDS)	Negative affect at follow-up (PANAS)	Yes	
				Social desirability (MCSDS)	Positive affect at follow-up (PANAS)	Yes	
Study 2	56	As above	French-speaking male students (M age = 20.18, SD = 2.02)	Condition (neutral vs. stressful), negative affect at baseline (PANAS), resilience (RSA)	Negative affect at follow-up (PANAS)	Yes	
Mikolajczak, Roy, Luminet, Fillée, & de Timary (2007)	56	Experimental	As above	Condition (neutral vs. stressful), interaction terms of condition with emotional stability, agreeableness, openness (D5D), and alexithymia (TAS—20)	Biological responses to stress (cortisol secretion)	Yes (.04)	
				Condition (neutral vs. stressful), emotional stability, agreeableness, openness (D5D), social desirability (MCSDS), condition × alexithymia (TAS—20)	Psychological responses to stress (PANAS)	Yes (.03)	

Study	Design	N	Sample	Measures	Outcome	
Mikolajczak, Roy, Verstrynge, & Luminet (2009)[e]	Experimental	62	Belgian psychology students (47 female, M age = 18.69, SD = 1.05)	Big Five (D5D), social desirability (MCSDS), depression (BDI), anxiety (STAI–T)	Attention deployment (visual dot probe task)	
Petrides, Pérez-González, & Furnham (2007)	Cross-sectional	200	U.K. students (125 female, M age = 22.86, SD = 6.17)	Big Five (NEO PI–R)	Coping (CSQ)	
					Rational	Yes
					Detached	No
					Emotional	Yes
					Avoidance	Yes
					Depression (CES–D)	Yes
					Dysfunctional attitudes (DAS)	Yes
Study 2	As above	154	U.K. students (124 female, M age = 21.99, SD = 6.03)	As above	Self-monitoring (RSMS)	
					Ability to modify self-presentation	Yes
					Sensitivity to emotional expression	Yes
					Aggression (AQ)	
					Physical	No
					Verbal	No
					Anger	No
					Hostility	Yes
Study 3		212	Spanish students (175 female, M age = 23.07, SD = 333)	Mood (PANAS)	Depression (BDI–II)	Yes
					Personality disorders (IPDE)	
					Paranoid	Yes
					Schizoid	Yes
					Schizotypal	Yes
					Borderline	Yes
					Dependent	Yes
					Avoidant	Yes
					Obsessive–compulsive	Yes
					Histrionic	Yes
					Antisocial	Yes
Petrides, Pita, & Kokkinaki (2007)	Cross-sectional	274	Greek students (182 female, M age = 25.45, SD = 5.85)	Giant Three (EPQ)	Life-satisfaction (SWLS)	Yes
					Rumination (ECQ)	Yes
					Coping strategies (CSQ)	
					Rational	Yes
					Detached	No
					Emotional	Yes
					Avoidant	No
				Big Five (TEXAII)	Life-satisfaction (SWLS)	Yes
					Rumination (ECQ)	Yes
					Coping strategies (CSQ)	
					Rational	Yes
					Detached	Yes
					Emotional	Yes
					Avoidant	No

Table 2. Summary of studies examining the incremental validity of trait emotional intelligence using the full form of the Trait Emotional Intelligence Questionnaire (TEIQue; n of analyses = 82). (*Continued*)

Authors (year)	Design	N[a]	Sample composition[a]	Predictors (measure)[b]	Criteria (measure)	Incremental contribution of the TEIQue global score (ΔR^2)[c]	Incremental contribution of the TEIQue factors (ΔR^2)[c]
Swami, Begum, & Petrides (2010)	Cross-sectional	108	British female students (M age = 23.94, SD = 4.28)	Body mass index as kg/m² (self-reported height and weight), impact of sociocultural influences on body image (SATAQ−3)	Actual-ideal weight discrepancy (PFRS)		Yes (.06)
					Body appreciation (BAS)		Yes (.25)
Uva et al. (2010)	Longitudinal	41	French inpatients (n = 41; 47.9% female, M age = 50.6, SD = 9.4)	Negative affect (PANAS)	Craving (OCD)	Yes	
van Leeuwen et al. (2014)	Cross-sectional	178	Dutch patients with vestibular schwannoma diagnosis (83 female, M age = 56.4)	Balance disorder, cranial nerve dysfunction, educational level	Quality of life (PANQUOL)	Yes	

Note. NEO−FFI = NEO−Five Factor Inventory; FPI = Freiburger Persönlichkeitsinventar; EI = emotional intelligence; TMMS = Trait Meta-Mood Scale; SEAS = Self-Report Emotional Ability Scale; TEMT = Typical-Performance Emotional Management Test; IPIP = International Personality Item Pool; AQ = Aggression Questionnaire; SELSA−S = Social Emotional Loneliness Scale for Adults−Short Form; EDDS = Eating Disorders Diagnostic Scale; SAAST = Self-Administered Alcoholism Screening Test; SHS = Subjective Happiness Scale; SWLS = Satisfaction with Life Scale; SEIS = Schutte Emotional Intelligence Scale; MEIA = Multidimensional Emotional Intelligence Assessment; RSPWB-S = Ryff's Scales of Psychological Well-Being Short; MSCEIT = Mayer−Salovey−Caruso Emotional Intelligence Test; EQ-Short = Empathy Quotient Short; CSAI−2 = Competitive State Anxiety−2; D5D = Description en Cinq Dimensions; MCSDS = Marlowe−Crowne Social Desirability Scale; BSI = Brief Symptom Inventory; SMU-HQ = Southern Methodist University Health Questionnaire; PILL = Physical Inventory of Limbic Languidness; TAS−20 = Toronto Alexithymia Scale; LOT−R = Life Orientation Test−Revised; PANAS = Positive and Negative Affect Schedule; RSA = Resilience Scale for Adult; BDI = Beck Depression Inventory; STAI−T = State Trait Anxiety Inventory; NEO PI−R = NEO Personality Inventory−Revised; CSQ = Coping Style Questionnaire; CES−D = Center for Epidemiologic Studies Depression Scale; DAS = Dysfunctional Attitudes Scale; RSMS = Revised Self-Monitoring Scale; BDI−II = Beck Depression Inventory−II; IPDE = International Personality Disorder Examination; EPQ = Eysenck Personality Questionnaire; ECQ = Emotion Control Questionnaire; TEXAII = Traits Personality Questionnaire; SATAQ−3 = Sociocultural Attitudes Toward Appearance Questionnaire−3; PFRS = Photographic Figure Rating Scale; BAS = Body Appreciation Scale; OCD = Obsessive−Compulsive Drinking Scale; PANQUOL = Penn Acoustic Neuroma Quality of Life Scale−Dutch Version.
[a]Sample size and features pertain to the incremental validity part of each study.
[b]Predictors are the covariates over which the TEIQue incrementally predicts the study criteria.
[c]Entries in this column are necessarily succinct and present only specific findings of interest. They are not intended as a summary of the original research articles, which interested readers are urged to consult. Incremental validity statistics were not provided in all studies.
[d]Data from this study were supplemented by communication with the first author. This communication resulted in effect sizes that were not reported in the original study.
[e]This study uses analyses of variance.

Table 3. Summary of studies examining the incremental validity of trait emotional intelligence using the Trait Emotional Intelligence Questionnaire–Short Form (TEI-Que–SF; n of analyses = 32).

Authors (year)	Design	N[a]	Sample composition[a]	Predictors (measure)[b]	Criteria (measure)	Incremental contribution for the TEIQue global score (ΔR^2)[c]	Incremental contribution for the TEIQue factors (ΔR^2)[c]
Andrei & Petrides (2013)	Cross-sectional	362	Community volunteers (140 female, M age = 33.69, SD = 11.92)	Mood (PANAS)	Somatic complaints (SCL)	Yes (.04)	
Chamorro-Premuzic, Bennett, & Furnham (2007)	Cross-sectional	112	Mixed student and community British sample (61 female, M age = 25.1, SD = 9.4)	Gender, age, and Big Five (TIPI)	Happiness (OHI)	Yes (.18)	
Furnham & Christoforou (2007)	Cross-sectional	120	Greek community sample (76 female, M age = 36.5, SD = 12.5)	Giant Three (EPQ), multiple happiness (MMHI)	Happiness (OHI)	Yes	
				Giant Three (EPQ), happiness (OHI)	Interpersonal happiness (MMHI)	Yes	
					Sensation seeking (MMHI)	No	
Furnham & Petrides (2003)	Cross-sectional	88	Undergraduate students (77 female, M age = 19.79, SD = .83)	Big Five (NEO–FFI)	Happiness (OHI)	Yes	
Mikolajczak, Menil, & Luminet (2007)	Cross-sectional	124	Nurses (85% female, M age = 39.4, SD = 9)	Big Five (D5D)	Emotional labor process (D-Quel)		
					Surface acting	Yes (.08)	
					Deep acting	Yes (.07)	
					Positive consonance	Yes (.04)	
					Negative consonance	No	
		49			Somatic complaints (PILL)	No	
					Burnout (MBI)	Yes (.08)	
Sanchez-Ruiz, Mavroveli, & Poullis (2013)	Cross-sectional	323	Cypriot university students (113 female, M age = 23, SD = 1.65)	Big Five (TIPI), cognitive ability (BRT), university majors	Academic performance (GPA)	Yes (.03)	
Siegling, Vesley, Petrides, & Saklofske (2015)	Cross-sectional	645	Canadian undergraduate students (71.5% female, M age = 22.6, SD = 5.4)	Big Five (BFI), coping strategies (CISS)	Perceived stress (PSS)	Yes (.01)	Yes (.02)
					Anxiety (OASIS)	Yes (.01)	Yes (.01)
					Amotivation	Yes (.02)	Yes (.03)
Study 2	As above	444	As above (72.3% female, M age = 22.6, SD = 5.4)	Big Five (BFMM)	Depression (DASS)	Yes (.14)	Yes (.23)
					Anxiety (DASS)	Yes (.12)	Yes (.14)
					Stress (DASS)	Yes (.08)	Yes (.09)
					Life satisfaction (SWLS)	Yes (.16)	Yes (.33)
Siegling, Nielsen, & Petrides (2014)[d]	Cross-sectional	96	Danish employee of a multinational company (25 female, M age = 37.09, SD = 7.73)	Age, gender, cognitive ability (in-house Wonderlic-type test), job tenure	Leadership (position held within the company)	Yes	
Singh & Woods (2008)	Cross-sectional	123	Community Indian sample (34 female, M age = 32)	Extraversion, conscientiousness, and neuroticism (BFI)	Job satisfaction (OJSQ)	Yes (.07)	
					Well-being (GWBQ)		
					Uptight	Yes (.09)	
					Worn out	Yes (.06)	
Weaving, Orgeta, Orrell, & Petrides (2014)	Cross-sectional	203	Dementia family caregivers (57.3% female, M age = 66.71, SD = 12.64)	Self-rated health (EQ-5D VAS), burden (RSS), depression (HADS), coping style (Brief COPE)	Anxiety (HADS)	Yes	

Note. PANAS = Positive and Negative Affect Schedule; SCL = Somatic Complaint List; TIPI = Ten Item Personality Inventory; OHI = Oxford Happiness Inventory; EPQ = Eysenck Personality Questionnaire; MMHI = Morris Multiple Happiness Inventory; NEO–FFI = NEO–Five Factor Inventory; D5D = Description en Cinq Dimensions; D-Quel = Dutch Questionnaire of Emotional Labour; PILL = Physical Inventory of Limbic Languidness; MBI = Maslach Burnout Inventory; BRT = Baddeley Reasoning Test; GPA = grade point average; BFI = Big Five Inventory; CISS = Coping Inventory for Stressful Situations; PSS = Perceived Stress Scale; OASIS = Overall Anxiety Severity Impairment Scale; BFMM = Big Five Mini-Markers; DASS = Depression, Anxiety, and Stress Scales; SWLS = Satisfaction With Life Scale; OJSQ = Overall Job Satisfaction Questionnaire; GWBQ = General Well-Being Questionnaire; EQ-5D VAS = EQ-5D Visual Analogue Scale; RSS = Relatives' Stress Scale; HADS = Hospital Anxiety and Depression Scale; Brief COPE = Brief Coping Orientations to Problems Experienced.
[a]Sample size and features pertain to the incremental validity part of each study.
[b]Predictors are the covariates over which the TEIQue incrementally predicts the study criteria.
[c]Entries in this column are necessarily succinct and present only specific findings of interest. They are not intended as a summary of the original research articles, which interested readers are urged to consult. Incremental validity statistics were not provided in all studies.
[d]In this study, 40 participants completed the TEIQue and 56 completed the TEIQue–SF.

Mikolajczak, Menil, & Luminet, 2007; Mikolajczak, Roy, et al., 2009; Petrides, Pérez-González, & Furnham, 2007; Petrides, Pita, & Kokkinaki, 2007; Siegling, Vesely, Petrides, et al., 2015; Swami, Begum, & Petrides, 2010; van Leeuwen et al., 2014; Weaving, Orgeta, Orrell, & Petrides, 2014). Moreover, with the exception of three analyses where an Indian sample was used (Singh & Woods, 2008), participants were primarily from Western cultural backgrounds (e.g., French, English, Canadian; 97.4%). Most analyses were performed on data collected from university students (57.9%), 26.3% of analyses were performed on data collected from a general population (Andrei & Petrides, 2013; Chamorro-Premuzic et al., 2007; Furnham & Christoforou, 2007; Gardner & Qualter, 2010; Jolić-Marjanović & Altaras-Dimitrijević, 2014; Singh & Woods, 2008), 7.9% from specific samples (i.e., nurses, 66.7%, Mikolajczak, Menil, & Luminet, 2007; tennis players, 22.2%, Laborde et al., 2014; employees of a multinational company, 1.1%, Siegling et al., 2014; dementia caregivers, 1.1%, Weaving et al., 2014), and 1.7% from clinical populations (Uva et al., 2010; van Leeuwen et al., 2014). Sample characteristics were not reported in Mikolajczak, Luminet, et al. (2007).

Study designs and statistical analyses

Analyses were mainly run on data derived from cross-sectional designs (88.6%). The remaining analyses, for which the full version of the TEIQue was always used, were performed on data from either experimental (10.5%; Laborde et al., 2014; Mikolajczak, Luminet, et al., 2007; Mikolajczak, Petrides, et al., 2009; Mikolajczak, Roy, Luminet, Fillée, & de Timary, 2007; Mikolajczak, Roy, et al., 2009) or longitudinal (0.87%; Uva et al., 2010) research designs.

With the exception of 1.7% of studies where analysis of variance (Mikolajczak, Roy, et al., 2009) and logistic regression (Siegling et al., 2014) were employed, all analyses were performed using multiple regression models. However, effect size indicators of the incremental contribution attributable to trait EI (e.g., ΔR^2 values) were not consistently reported across studies (see Tables 2 and 3).

Predictors

Analyses focused mainly on the global score of the TEIQue (83.3%), and on its factor scores (16.7%). Overall, 14.6% of analyses used higher order personality traits as baseline predictors, of which 12.7% focused on the Giant Three (Furnham & Christoforou, 2007; Petrides, Pita, & Kokkinaki, 2007) and 89.2% on the Big Five (Chamorro-Premuzic et al., 2007; Furnham & Petrides 2003; Jolić-Marjanović & Altaras-Dimitrijević, 2014; Mikolajczak, Menil, & Luminer, 2007; Mikolajczak, Petrides, et al., 2009; Mikolajczak, Roy, et al., 2007; Petrides, Pérez-González, & Furnham, 2007; Petrides, Pita, & Kokkinaki, 2007; Sanchez-Ruiz, Mavroveli, & Poullis, 2013; Siegling, Vesely, Petrides, et al., 2015; Singh & Woods, 2008). The remaining 35.1% of analyses were performed using lower order personality constructs, such as optimism and social desirability (e.g., Mikolajczak, Menil, & Luminer, 2007), or other variables, like body-mass index (Swami et al., 2010), and cognitive ability (Siegling et al., 2014) as baseline predictors.

Measures. Trait EI was measured via the current full TEIQue form in 71.1% of analyses (Gardner & Qualter, 2010; Jolić-Marjanović & Altaras-Dimitrijević, 2014; Mikolajczak, Luminet, et al., 2007; Mikolajczak, Petrides, et al., 2009; Mikolajczak, Roy, et al., 2007; Petrides, Pita, & Kokkinaki, 2007; Petrides, Pérez-González, & Furnham, 2007; Uva et al., 2010), whereas in 1.7% of studies, an earlier edition of the TEIQue full form, comprising 144 items, was used (Petrides, Pita, & Kokkinaki, 2007; Petrides, Pérez-González, & Furnham, 2007). Analyses were conducted at the factor level in 12.5% of cases (Freudenthaler et al., 2008; Mikolajczak et al., 2006; Mikolajczak, Luminet, et al., 2007; Mikolajczak, Roy, et al., 2009). Baseline predictors were operationalized through self-report, with the exception of emotion regulation, which was measured by means of biological markers (Laborde et al., 2014), and body-mass index, which was computed as kg/m^2 based on self-reported height and weight (Swami et al., 2010).

With respect to the Big Five, where analyses were conducted at the global level of the TEIQue, short- to medium-size scales (10−60 items) were preferred (59.0%). In 55.5% of these analyses, scores derived from the full form were employed. Where longer questionnaires to assess the Big Five were adopted, trait EI was always assessed through the full form of the TEIQue (32.8%; Petrides, Pita, & Kokkinaki, 2007; Petrides, Pérez-González, & Furnham, 2007). Inventories assessing the Big Five generally comprised short statements, whereas single-word items (i.e., adjectives) were the preferred item format in 21.3% of cases (Mikolajczak, Menil, & Luminet, 2007; Mikolajczak, Petrides, et al., 2009; Mikolajczak, Roy, et al., 2007; Siegling, Vesely, Petrides, et al., 2015). Likert-type rating scales were always used as the preferred response format. Regarding the Giant Three, the Eysenck Personality Questionnaire (EPQ; Eysenck & Eysenck, 1975) was employed, either in its 90-item (33.3% of analyses; Furnham & Christoforou, 2007) or 84-item (66.7% of analyses; Petrides, Pita, & Kokkinaki, 2007) versions. Regarding analyses at the factor level of the TEIQue, the Big Five were assessed by means of short questionnaires only (Freudenthaler et al., 2008; Mikolajczak, Luminet, et al., 2007; Mikolajczak, Roy, et al., 2009). In these cases, the full form of the TEIQue was used 46.1% of the time, whereas the TEIQue−SF was used 53.9% of the time (Siegling, Vesely, Petrides, et al., 2015). The Big Five were measured via the Big Five Mini-Markers scale (Saucier, 1994), which comprises adjective-based items (Siegling, Vesely, Petrides, et al., 2015), 30.8% of the time.

With respect to measures of other predictors, only when the Positive Affect and Negative Affect Scale (PANAS; Watson, Clark, & Tellegen, 1988) was used (13.2% of cases) were items presented in the form of single adjectives (Andrei & Petrides, 2013; Mikolajczak, Petrides, et al., 2009; Petrides, Pérez-González, & Furnham, 2007; Uva et al., 2010). When social desirability was included as a predictor (2.6% of cases), a dichotomous response format (i.e., true−false) was employed (Mikolajczak, Petrides, et al., 2009; Mikolajczak, Roy, et al., 2007). The remaining questionnaires used short statements as item structure combined with a Likert-type response format. In the two analyses where cognitive ability was controlled for, different maximum-performance measures were used; that is, the Baddeley Reasoning Test (Sanchez-Ruiz et al., 2013) and an in-house Wonderlic-type test (Siegling et al., 2014).

Criteria

Most analyses were performed on criteria from the domain of affect (48.2%), such as burnout, anxiety, and depression. Behavioral criteria, like alcohol abuse and eating disorders, were employed in 10.5% of cases (Gardner & Qualter, 2010; Laborde et al., 2014; Petrides, Pérez-González, & Furnham, 2007), whereas another 10.5% of analyses focused on cognitive criteria, like academic achievement and job and life satisfaction (Freudenthaler et al., 2008; Mikolajczak, Luminet, et al., 2007; Sanchez-Ruiz et al., 2013; Siegling, Vesely, Petrides, et al., 2015; Singh & Woods, 2008). Only 1.7% of analyses used desires as criteria, specifically craving (Uva et al., 2010) and sensation seeking (Furnham & Christoforou, 2007). Outcomes pertaining to somatic health were explored in 5.3% of cases (Freudenthaler et al., 2008; Mikolajczak et al., 2006). The remaining 23.7% of analyses focused on multifaceted criteria spanning two or more domains, such as personality disorders, leadership, and body image.

Measures. Most criteria were questionnaire-based (93.9%) having a similar item structure and response format to the TEIQue (i.e., Likert-type). An adjective-based measure, the PANAS, was used in 3.5% of cases (Mikolajczak, Petrides, et al., 2009; Mikolajczak, Roy, et al., 2007), and a dichotomous response format was used with measures of alcohol abuse (1.7% of cases; Gardner & Qualter, 2010) and personality disorders (7.9% of cases; Petrides, Pérez-González, & Furnham, 2007).

Alternative measurement methods were employed in 6.1% of cases. For 28.6% of these cases, a physiological index of reaction to stress (Mikolajczak, Roy, et al., 2007) and emotion regulation (Laborde et al., 2014) was employed, namely, cortisol secretion. Reaction to stress was also conceptualized as attention deployment and measured through a visual task (14.1% of cases; Mikolajczak, Roy, et al., 2009). Regarding behavioral criteria, performance under stress was operationalized through recording the number of errors in a sport task (14.1% of cases; Laborde et al., 2014). With respect to cognitive criteria, academic performance was operationalized as GPA scores derived from academic records (14.1% of cases; Sanchez-Ruiz et al., 2013). Leadership status was obtained from the human resources department of the participating company (14.1% of cases; Siegling et al., 2014). Last, actual and ideal weight discrepancy was computed by subtracting self-reported actual from self-reported ideal weight (14.1% of cases; Swami et al., 2010).

Summary of study findings

TEIQue scores predicted or explained incremental criterion variance in 84.2% of analyses. For analyses performed at the level of the global score, significant effects were observed in 81% of cases. The analyses investigating the incremental validity of the four trait EI factors controlling for higher order personality dimensions (11.0%), consistently reported significant results for both forms of the TEIQue (100% of cases; Freudenthaler et al., 2008; Mikolajczak, Luminet, et al., 2007; Mikolajczak, Roy, et al., 2009; Siegling, Vesely, Petrides, et al., 2015). The effects were due to the factors of well-being (53.8% of cases; Siegling, Vesely, Petrides, et al., 2015), self-control (30.8% of cases; Mikolajczak, Luminet, et al., 2007; Mikolajczak, Roy, et al., 2009; Siegling, Vesely, Petrides, et al., 2015), and emotionality (7.7% of cases; Siegling, Vesely, Petrides, et al., 2015), whereas 30.8% of analyses did not specify the unique contribution of each factor (Freudenthaler et al., 2008). Results from the analyses focusing on predictors other than higher order personality traits consistently revealed significant incremental contributions of the TEIQue factors (100%; Mikolajczak et al., 2006; Swami et al., 2010). Significant effects were attributable to self-control (66.7% of cases; Mikolajczak et al., 2006), well-being (50% of cases), and sociability (16.7% of cases; Mikolajczak et al., 2006).

Main analysis

The 18 studies available for meta-analysis included a total of 23 independent samples ($N = 4,404$) and 105 effect sizes. The change in R^2 for trait EI ranged from .00 to .33 with a median of .04, and showed a slightly positively skewed distribution. Specifically, ΔR^2 values were generally small, as they ranged from .00 to .10 in 78.3% of analyses. In 19.1% of cases, the effect size was medium (between .10−.25), and in 1.9% of analyses it was large (above .25). Considering that in many studies multiple variables were measured on the same sample and that several effect size estimates were associated with each study (i.e., the estimates were not statistically independent; Hedges et al., 2010), dependence of effects might have occurred. For this reason, we performed an overall analysis using Hedges and colleagues' (2010) robust standard errors to account for the dependence of effects. As shown in Table 4, the overall weighted average change in R^2 was .06 ($SE = .0116$), with a 95% CI from .03 to .08, under the random-effects model. There was a moderate degree of heterogeneity across samples ($\tau^2 = .0016$, $I^2 = 39.3\%$, $p < .01$), which was expected given their methodological diversity (Higgins, Thompson, Deeks, & Altman, 2003).

Moderator analysis

To examine differences due to study characteristics, meta-regression analyses were performed. The following potential moderators were fitted separately: sample composition, study design (cross-sectional, longitudinal, experimental), form of the TEIQue used (full vs. short), level of analysis for trait EI (global

Table 4. Results of meta-analysis.

Model		Estimate	SE	95% CI	I^2
Overall	Intercept	.06**	.0116	[0.03, 0.08]	39.3%
Moderator					
Length of personality questionnaire	Intercept (long size)	.01*	.0036	[0.00, 0.02]	11.75%
	Slope (medium size)	.04*	.0114	[0.01, 0.07]	
	Slope (short size)	.05	.0274	[−0.01, 0.12]	

*$p < .05$. **$p < .01$.

vs. factor level of the TEIQue), predictors (personality only, other variables only, personality and other variables together), focus on higher order personality dimensions (Big Five vs. Giant Three), length of the measure used to assess higher order personality dimensions (short-, medium-, long-size scales; ≤ 10 items, 10−60 items, and > 60 items, respectively), and number of predictors included in each statistical model. Given the limited number of studies per criterion, analyses were not conducted separately for each ABCD domain. Instead, criterion domain (i.e., affect, behavior, cognition, desires, and somatic health) was modeled as a moderator. Although we tested for nine potential moderators, we discuss here only one that explained significant variability among effect sizes (see Table 4).

Length of higher-order personality questionnaires. Three categories were included in this variable (long, $k = 25$; medium, $k = 8$; and short, $k = 39$). The length of the questionnaire used to assess higher order personality dimensions relates significantly to the size of the change in R^2 under the mixed-effects model, with studies using a short personality inventory reporting the largest change in R^2 and studies where a long questionnaire was employed reporting the smallest change in R^2. Overall, this moderator explained 75% of the between-studies variability.

Publication bias

Publication bias occurs because statistically significant results are more likely to be published than nonsignificant results. For the scatter plot, the study effect sizes were plotted against a measure of study size or precision. In the absence of publication bias, the plot is expected to look like a symmetrical inverted funnel, centered on the summary effect, and the intercept of the Egger's regression test should not significantly differ from zero. A statistically significant intercept provides evidence of funnel plot asymmetry, namely, for the presence of publication bias. Results from both the Egger's regression test and the funnel plot indicated that there were statistically significant asymmetries ($z = 4.78$, $p < .001$, and Figure 2). Accordingly, these results should be interpreted with some caution, as they might overestimate the underlying effects.
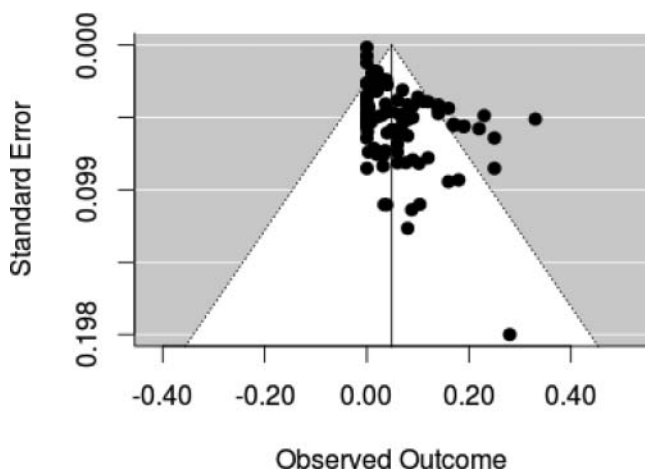

Figure 2. Funnel plot of effect sizes, showing statistically significant asymmetries across studies.

Discussion

This is the first systematic review and meta-analysis of the incremental validity of trait EI as operationalized through the TEIQue. To our knowledge, it is also the first meta-analysis on incremental validity in the field of EI more generally. We systematically identified and reviewed 24 articles covering a wide range of criteria, which were either primarily related to one of the ABCDs (i.e., affect, behavior, cognition, and desire) of individual differences or had a mixed conceptual core. Trait EI emerged as a statistically and practically significant incremental predictor of multiple psychological variables beyond the higher order personality dimensions (i.e., the Big Five or the Giant Three) and specific individual difference variables (e.g., alexithymia and social desirability). The overall meta-analytic effect size was .06.

Given the criticisms surrounding trait EI (e.g., Antonakis, 2004; Conte, 2005; Harms & Credé, 2010; Schlegel et al., 2013; Schulte et al., 2004; Van Rooy et al., 2005), it was imperative to enrich the literature of the field by systematically investigating the extent to which the construct has incremental predictive utility. Although small, the overall effect size confirms the distinctiveness and theoretical importance of trait EI.

In most cases, controlling for the influence of other predictors did not nullify the TEIQue's associations with the criteria. Indeed, around 80% of the 114 incremental validity analyses performed across the various studies yielded statistically significant effects. Although the pattern of these effects appeared inconsistent across psychological domains (i.e., affect, behavior, cognition, desire, and somatic health), it did not reach significance when modeled as a potential moderator. The fact that the TEIQue predicted 94% (43 out of 47) of the criteria within the domain of affect is in line with the theoretical nature of trait EI, which is primarily expected to predict phenomena related to individuals' emotional experience. For the same reason, trait EI can be expected to exert incremental predictive effects on behavioral variables with an affective basis, such as facial recognition of emotional expressions (Petrides & Furnham, 2003).

Even though the TEIQue has a multifactorial structure, the majority of studies reviewed here focused on the global level. Our review showed that, at the factor level, the predictive power of trait EI appears to be mostly due to its well-being and self-control factors, which tended to be the strongest incremental predictors in both the full and the short forms (Mikolajczak et al., 2006; Mikolajczak, Luminet, et al., 2007; Mikolajczak, Roy, et al., 2009; Siegling, Vesely, Petrides, et al., 2015; Swami et al., 2010). This finding is consistent with emerging evidence suggesting that some trait EI facets included under the emotionality and sociability factors might compromise the construct's predictive power at the global composite level (Siegling, Petrides, & Martskvishvili, 2015; Siegling et al., 2013).

The results of our meta-analysis revealed that the incremental validity of the TEIQue remains significant, irrespective of baseline predictors. These findings further highlight the unique contribution of trait EI in explaining the variance of construct-relevant criteria. Of the 74 analyses focusing on higher order personality dimensions, more than 80% reported a significant incremental contribution for trait EI. Where the Big Five were concerned, significant contributions for trait EI were found for

89% of the affective criteria, 33% of the behavioral criteria, and 100% of the cognitive criteria (no criterion pertained to the domain of desire). Overall, the percentage of significant results was slightly higher if either short or medium-size scales were used to assess the Big Five, compared to long scales, as attested by the moderator analyses we performed. This issue should be considered by future studies addressing the incremental validity of trait EI, at least as far as the TEIQue is concerned.

As previously noted (Freudenthaler et al., 2008; Petrides, Pérez-González, & Furnham, 2007), we need to consider that the incremental validity analyses of trait EI at the global level against either the Giant Three or the Big Five are inherently biased. Whereas personality constructs comprise three or five different variables, trait EI at the global level represents only one. Based on this statistical advantage alone, higher order personality dimensions are much more likely than trait EI to be significantly associated with criterion variables. Keeping this statistical artifact in mind, it is possible that the real-world implications of trait EI are underestimated in many studies, unless the analyses are adjusted for unequal degrees of freedom.

This review reveals that the TEIQue shows solid incremental validity in the presence of other individual differences constructs, including cognitive ability, the basic dimensions of mood (i.e., positive and negative affectivity), alexithymia, and the higher order dimensions of personality. Previous research has shown that the full form of the TEIQue demonstrated superior incremental validity compared to other trait EI scales (Gardner & Qualter, 2010), even when the effects of the Big Five were controlled for (Freudenthaler et al., 2008).

Our review indicates that little interest has been directed toward cognitive abilities as baseline predictors over which to investigate incremental validity. Indeed, only two analyses in this review used cognitive ability as a baseline predictor (Sanchez-Ruiz et al., 2013; Siegling et al., 2014). The reason why IQ has been used in so few studies can be found in trait EI theory, which sees the construct as part of the realm of personality and, therefore, unrelated to cognitive abilities, as has been repeatedly confirmed in the literature (e.g., Andrei et al., 2014; F. J. Ferguson & Austin, 2010; Mikolajczak, Luminet, et al., 2007).

Methodological quality of the reviewed studies

Several specific methodological features of the reviewed studies should be considered when interpreting the results. Some concerns can be raised about sample compositions. Despite a substantial number of analyses conducted on data from the general population, most (61%) were based on university students in Western countries, who tend to be disproportionately healthy, young, and female. This should be taken into account when drawing conclusions from this review about the incremental validity of the TEIQue and of trait EI, more generally. If the interest lies in a particular group (e.g., adults in the workforce), results of studies using relevant samples should be examined separately. The tables presented in this article should serve as a useful starting point for this purpose.

With respect to measures, data came from the same source and were based on the same method. Predictor and criterion scores were consistently self-reported by participants, possibly resulting in common-method variance effects (e.g., through

mood states). Although there is evidence that trait EI can incrementally predict objectively assessed phenomena (Mikolajczak, Roy, et al., 2007; Siegling et al., 2014), the existing literature clearly overrelies on self-report questionnaires. That said, many psychological criteria of prime importance are subjective and can only be measured via self-report (e.g., life satisfaction).

Even though 70% of analyses in this review controlled for the effects of either the Giant Three or the Big Five, only 39% of them operationalized personality through long inventories (Furnham & Christoforou, 2007; Petrides, Pérez-González, & Furnham, 2007; Petrides, Pita, & Kokkinaki, 2007). The greatest concern with short measures of the Big Five resides in their lower level of predictive validity (Credé, Harms, Niehorster, & Gaye-Valentine, 2012), which leads to potential bias when they are used as controls in incremental validity analyses. Nonetheless, results from this review showed a consistent pattern of incremental prediction for trait EI, irrespective of the length of baseline measures.

Another issue pertains to the conceptual overlap between TEIQue facets and criteria (Zeidner, Matthews, & Roberts, 2012). Although the TEIQue's incremental contribution in outcomes like happiness might reflect substantial overlap between its content and the criterion (e.g., TEIQue well-being includes a facet of trait happiness), the instrument has been examined as a predictor of various criteria, such as actual—ideal weight discrepancy (Swami et al., 2010) and academic performance (Sanchez-Ruiz et al., 2013), which are conceptually and operationally orthogonal to it. Overall, however, criteria nonoverlapping with trait EI in terms of either conceptual content or measurement format were used in only 6% of the analyses reviewed.

Limitations

A limitation of this work is that it does not include unpublished material and, therefore, it is likely affected by publication bias, which reflects the tendency for significant results to be published more frequently than nonsignificant results (Rosenthal, 1979). The inclination to avoid publishing null results is a prevalent issue in the psychological literature (for a comprehensive discussion of publication bias problems in psychology, see, e.g., C. J. Ferguson & Heene, 2012). In that respect, the results reported here might represent an overestimation of the incremental explanatory effects of trait EI.

Another potential limitation concerns the plethora of variables that have been examined as criteria for trait EI. Several of these variables might not be theoretically relevant, but were nevertheless examined as criteria within the stream of research aimed at exploring the effects of a popular construct. For example, criteria such as attention deployment, eating disorders, craving, and sensation seeking are not conceptually proximal to trait EI. Had we explicitly focused on theoretically relevant criteria, the effect sizes observed would have been considerably higher.

This review should be considered in light of its restricted focus on studies using adult samples. Nevertheless, growing evidence attests to the incremental validity of the adolescent TEIQue form beyond various baseline constructs, including the Big Five and coping styles (e.g., Andrei et al., 2014; Mavroveli & Sanchez-Ruiz, 2011; Siegling, Vesely, Petrides, et al., 2015).

Implications for future research

Several specific directions for future research can be outlined. Although most studies possessed sufficient statistical power and demonstrated the incremental validity of the TEIQue, a priori power calculations and values for incremental validity coefficients (e.g., ΔR^2) should be computed and reported more systematically. In addition, future studies are urged to address the problem of common-method biases by integrating data from different sources, such as family members, peers, and colleagues, and using objective outcome measures, particularly for behavioral criteria, such as aggression. Common-method variance would have served artificially to attenuate or inflate the observed relationships (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003), thus creating a need for new research simultaneously considering both procedural and statistical remedies.

Further directions for assessing the predictive utility of the TEIQue should look to new study populations and settings. Although a considerable proportion of research has focused on nonstudent samples and has been conducted in real-life contexts, it would be desirable to expand the types of samples and settings, simultaneously aiming to remedy the other limitations discussed in this review. Particularly worthwhile would be studies conducted in ecologically valid contexts, on diverse sets of samples, and seeking to avoid common-method and common-source biases. For instance, there exist few studies that are conducted outside the laboratory and that are based on nonstudent samples using methodologically diverse measures for predictors and criteria.

Future investigations should also aim to expand our understanding of the relative utility of the 15 trait EI facets. Indeed, this review showed that the bulk of trait EI effects were mainly due to its intrapersonal-oriented factors, namely well-being and self-control. Perhaps not all of the TEIQue facets contribute equally to the predictive utility of the total composite (Siegling, Petrides, & Martskvishvili, 2015). At the same time, even though sociability and emotionality did not emerge as strong predictors in our meta-analysis, it is reasonable to expect that they will assume salience when examined in relation to criteria that are more social in nature.

Concluding remarks

The qualitative and quantitative results of this review suggest that trait EI is a key individual differences construct, putting to rest the assertion that it is redundant with basic personality dimensions. An umbrella construct comprehensively encompassing the emotion-related aspects of personality allows for easier prediction of domain-coherent criteria as well as for straightforward explanations of their variance, which would otherwise require awkward combinations of the Big Five personality factors. Even though certain methodological patterns across the studies reviewed might impose limitations to the generalizability of the results, the confident conclusion is that trait EI reliably accounts for substantial variation in a wide range of criteria that is not accounted for by other constructs.

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