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Incremental Validity of the Trait Emotional Intelligence Questionnaire–Short Form (TEIQue–SF)

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This study examined the incremental validity of the adult short form of the Trait Emotional Intelligence Questionnaire (TEIQue–SF) in predicting 7 construct-relevant criteria beyond the variance explained by the Five-factor model and coping strategies. Additionally, the relative contributions of the questionnaire’s 4 subscales were assessed. Two samples of Canadian university students completed the TEIQue–SF, along with measures of the Big Five, coping strategies (Sample 1 only), and emotion-laden criteria. The TEIQue–SF showed consistent incremental effects beyond the Big Five or the Big Five and coping strategies, predicting all 7 criteria examined across the 2 samples. Furthermore, 2 of the 4 TEIQue–SF subscales accounted for the measure’s incremental validity. Although the findings provide good support for the validity and utility of the TEIQue–SF, directions for further research are emphasized.

Trait emotional intelligence (trait EI) integrates affective aspects of personality (Petrides, Pita, & Kokkinaki, 2007) and is largely distinct from human cognitive ability (e.g., Derksen, Kramer, & Katzko, 2002; Ferrando et al., 2010; Petrides, Frederickson, & Furnham, 2004; Warwick & Nettelbeck, 2004). The construct has been formally defined as “a constellation of emotional self-perceptions and dispositions located at the lower levels of personality hierarchies” (Petrides, Pérez-González, & Furnham, 2007, p. 26). Providing comprehensive coverage of affect-related traits, trait EI has relevance to virtually all psychological assessment applications, such as in clinical (Hansen, Lloyd, Stough, & Saklofske, 2009; M. M. Smith, Saklofske, & Nordstokke, 2014), physical health (Keefer, Parker, & Saklofske, 2009), occupational (Di Fabio & Saklofske, 2014; Furnham, 2009), and educational contexts (Parker, Saklofske, Wood, & Collin, 2009; Vesely, Saklofske, & Nordstokke, 2014). However, one major criticism concerning the conceptualization of EI as a personality construct revolves around its overlap with higher order personality dimensions, such as the Big Five personality traits (e.g., Zeidner, Roberts, & Matthews, 2004). This criticism concerns both the magnitude of associations as well as the number of correlations with higher order personality dimensions. As a consequence, some have suggested that a trait-based EI conceptualization might be redundant with these established trait taxonomies (Landy, 2005; Schulte, Ree, & Carretta, 2004) or represents an aggregate of socially desirable traits (Zeidner et al., 2004).

Generally speaking, trait EI’s associations with broad personality factors are theoretically defensible and fundamental to its conceptualization. Describing a specific trait dimension that is characterized by its emotional content, the construct is most appropriately integrated within existing personality

taxonomies, rather than being independent of them (Vernon, Villani, Schermer, & Petrides, 2008). Across samples, Neuroticism and Extraversion have been identified as the strongest Five-factor model correlates of the Trait Emotional Intelligence Questionnaire (TEIQue; Petrides, 2009) with coefficients averaging .66 and .52 to .60, respectively (Saklofske, Austin, & Minski, 2003; Siegling, Furnham, & Petrides, 2015). This finding fits the underlying theory, as these two dimensions have been said to encompass emotion-related personality traits (Watson, 2000). Conscientiousness ($r = .38-.41$), Agreeableness ($r = .27-.28$), and Openness ($r = .23-.26$) also correlate significantly, but less strongly, with global trait EI (Siegling, Furnham, et al., 2015). The major implication of these findings is that trait EI is conceptualized as an affective dimension of personality, distributed across the Big Five domains (De Raad, 2005; Petrides & Furnham, 2001). Therefore, relationships with multiple higher order factors are built within the construct.

In terms of magnitude, the associations of trait EI with higher order factors are consistent with those between lower order traits (e.g., Big Five facets) and higher order factors (Paunonen, 1998; Paunonen & Ashton, 2001). Despite the amount of overlap, the larger spectrum of lower order traits has considerable utility and reliably predicts incremental criterion variance beyond the Big Five across a wide range of criteria (Paunonen, 1998; Paunonen & Ashton, 2001). These narrow traits have sometimes outperformed the Big Five in terms of unique variance explained when the number of predictors was controlled (Paunonen & Ashton, 2001). Although trait EI does not qualify conceptually or empirically as a facet of any higher order personality factor and is substantially broader than facet-level traits, a sizable part of its variance is unaccounted for by established personality constructs (Petrides et al., 2010). In fact, a distinct trait EI factor has been isolated in personality factor space (De Raad, 2005; Petrides, Pita, et al., 2007).

Because trait EI is distinct from the traditionally narrow traits (e.g., facets of any particular higher order factor) in terms of breadth, it is critical to address any concerns related

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to its incremental validity and utility, rather than extrapolating from the evidence attesting to the general utility of lower order traits. Although there are a number of scales that measure trait EI (Siegling, Saklofske, & Petrides, 2014), this investigation examines the incremental validity of the Trait Emotional Intelligence Questionnaire–Short Form (TEIQue–SF; Petrides, 2009). Fundamental to this aim is a careful consideration of the existing evidence of the measure’s incremental validity.

THE TEIQue

Although trait EI provides an interpretive framework for the majority of EI measures, which assess typical behavior (Petrides & Furnham, 2001), the TEIQue is among the few measures to systematically assess this personality construct comprehensively. Underlying the TEIQue is a broad construct representation of 15 facets, derived through a content analysis of salient EI models. The measure was then developed by creating items representing each of these facets. In addition to yielding a global trait EI score, four oblique factors have been extracted from the facet scores. These and their constituent facets are Well-Being (self-esteem, trait happiness, and trait optimism), Self-Control (emotion regulation, stress management, and low impulsiveness), Emotionality (emotion perception, trait empathy, emotion expression, and relationships), and Sociability (assertiveness, emotion management, and social awareness; Petrides, 2009). However, the label Well-Being is somewhat misleading, as it connotes the susceptibility and plasticity of a person’s current state of mind rather than typical or average states of well-being. Given its constituent facets, an alternative, and perhaps more appropriate label for this TEIQue–SF factor might be “trait positivity.” For example, items on this scale include “I generally believe that things will work out fine in my life,” and “I feel good about myself.” Two facets (adaptability and self-motivation) have not been included in any of the four factors but contribute directly to the global score.

In addition to global composite and subscale scores, the full form of 153 items provides scores on each of the 15 facets, with approximately 10 items allocated per facet. The TEIQue’s factor structure has been replicated across cultures and languages, using translations of the full form (e.g., Freudenthaler, Neubauer, Gabler, Scherl, & Rindermann, 2008; Martskvishvili, Arutinov, & Mestvirishvili, 2013; Mikolajczak, Luminet, Leroy, & Roy, 2007). A short form, the TEIQue–SF, is a 30-item measure of global trait EI, and subscale scores satisfying the minimum standard for reliability can be derived and have been frequently used in research (e.g., Arora et al., 2011; Siegling, Saklofske, Vesely, & Nordstokke, 2012).

Research comparing the TEIQue to other self-report EI measures has distinguished it in terms of strong psychometric properties, particularly criterion and incremental validity (Freudenthaler et al., 2008; Gardner & Qualter, 2010; Martins, Ramalho, & Morin, 2010). For example, Gardner and Qualter (2010) found that the TEIQue explained the most variance in a range of construct-relevant criteria when its effects were examined concurrently with two other widely used trait EI measures. In that study, the TEIQue also excelled in evidence for its incremental validity vis-à-vis the Big Five, compared to

the other two measures. Considering these findings, the TEIQue would appear to represent the global trait EI factor most accurately.

INCREMENTAL VALIDITY OF TEIQue SCORES

A recent review of the TEIQue’s incremental validity retrieved 20 peer-reviewed articles (23 studies), including more than 100 incremental-validity analyses (Andrei, Siegling, Baldaro, & Petrides, 2015). In these studies, the TEIQue global composite and subscales were examined as predictors of a multitude of construct-relevant criteria beyond that accounted for by broad personality factors (i.e., Big Five or Eysenck’s Giant Three) and other emotion-related constructs (e.g., alexithymia, social desirability, and exposure to stress). The findings provided support for the incremental validity of the TEIQue, which predicted additional criterion variance in 78% of the analyses reported. Contrary to the concern that trait EI’s incremental effects are mainly attributable to predictor–criterion overlap in item content and common method bias (Zeidner, Matthews, & Roberts, 2012), the TEIQue scores explained incremental variance in nonoverlapping criteria, such as cortisol secretion during stress states (Mikolajczak, Luminet, & Menil, 2006), actual–ideal body weight discrepancy (Swami, Begum, & Petrides, 2010), and performance under pressure (Laborde, Lautenbach, Allen, Herbert, & Achtnzein, 2014).

When evaluated against the Five-factor model, the percentage of analyses in which the TEIQue predicted incremental criterion variance was only slightly higher when either brief or moderately long scales (84%) were used to measure the Big Five (75%; Andrei et al., 2015). Further, the TEIQue predicted seven out of nine criteria where the Giant Three, assessed with the relatively long Eysenck Personality Profiler (Eysenck & Eysenck, 1975), were used as additional predictors.

By way of comparison, the TEIQue–SF has been evaluated in eight studies. Incremental variance explained by the TEIQue–SF has ranged from .01 to .18 and was significant in 13 (81%) of the 16 analyses conducted (Andrei et al., 2015). Personality measures of the Five-factor or Giant Three models were used as additional predictors in 15 analyses, either alone or together with other variables, such as gender, age, or cognitive ability. However, almost all analyses involving personality scales were limited on some aspect of the study design, such as using brief personality measures, including only some of the Big Five domains, or focusing on overlapping criteria. Only one study included nonoverlapping criteria (emotional labor and burnout) and assessed all Big Five domains using a measure of moderate length (Mikolajczak, Menil, & Luminet, 2007).

In each study of the TEIQue full form in which the analyses were conducted at the subscale level, at least one of the four TEIQue subscales predicted incremental criterion variance (Freudenthaler et al., 2008; Mikolajczak et al., 2006; Mikolajczak, Menil, et al., 2007; Mikolajczak, Roy, Verstrynge, & Luminet, 2009; Swami et al., 2010). Notably, in most cases, it was either the Well-Being or Self-Control subscale (or both) that showed significant predictive effects. The Sociability factor had a significant effect in one of these five studies, predicting somatic and stress-induced psychological symptoms

beyond alexithymia and optimism (Mikolajczak et al., 2006). Emotionality did not reach significant predictive effects in any of the studies. Given the smaller number of items per subscale (6–8) and, thus, lower reliabilities, it should not necessarily be assumed that similar results would be obtained with the TEIQue-SF.

As such, this investigation examined the incremental validity of the TEIQue-SF over and above the Big Five in relation to anxiety, stress, and amotivation (Sample 1), as well as depression, anxiety, stress, and life satisfaction (Sample 2). Coping strategies (task, emotion-oriented, and avoidance coping) were also assessed and controlled as an additional set of predictors in Sample 1. To our knowledge, coping strategies have only been examined as criteria, but not (perhaps more appropriately) as concurrent predictors with any TEIQue form. They are more narrow trait-like attributes that are linked to higher order personality traits and to some extents to trait EI (Mavroveli, Petrides, Rieffe, & Bakker, 2007; Saklofske, Austin, Mastoras, Beaton, & Osborne, 2012). Furthermore, coping is implicated in a diverse range of clinical and nonclinical criteria (Endler & Parker, 1994) and, therefore, constitutes a competing set of variables beyond which the TEIQue-SF should demonstrate its predictive capacity.

This study also examined if only some of the four TEIQue-SF subscales are mainly responsible for the incremental effects of the global composite, as has been found for the full form. Even though subscale scores do not jointly represent a given construct as well as the total composite, assessing their individual contributions to the composite's incremental validity is important in that it enables the differentiation of predictive and nonpredictive elements (Siegling, Petrides, & Martskvishvili, 2015). Subscale scores possess specific variance that is unrelated to the construct underlying a given measure and could account for some of the criterion variance. For this reason, they are prone to yield overestimates of the measure's incremental validity, whereas the global composite might generally yield the best representation of the construct variance. However, using subscale scores to represent a construct and examine its explanatory and predictive effects could be a better option if a measure contains redundant or even extraneous elements (Siegling, Petrides, et al., 2015), as the explanatory power of the composite is likely compromised by these nonpredictive elements (G. T. Smith, Fischer, & Fister, 2003). In this case, subscale scores might be able to estimate the construct's criterion and incremental validity more accurately.

METHOD

Participants and Procedure

Samples 1 ($N = 645$, 71.5% female) and 2 ($N = 444$, 72.3% female) were made up of undergraduate students recruited from numerous disciplines at a large western Canadian university. The mean age was 22.6 years ($SD = 5.4$, range = 18–61) for Sample 1 and 21.8 years ($SD = 4.2$, range = 18–50) for Sample 2. Proportions of different ethnicities in Sample 1 were 65.0% White, 15.7% Asian, and 5.4% Indian; 13.9% were from other backgrounds. Ethnic background information was not collected from Sample 2. However, 93.6% of the participants in Sample 2 specified their first language as English

and 3.8% as an Asian language. The data for these two samples were collected concurrently through anonymous online surveys after receiving approval from the institutional review boards for research with human subjects.

Measures

The internal reliabilities reported for each measure derive from the corresponding sample to which the scale was administered, as indicated.

The TEIQue-SF (Petrides & Furnham, 2006) includes 30 items, taken in pairs from each of the 15 facets of the full form. Whereas global trait EI is the average score of all 30 items, the four subscale scores can be derived from 26 of these items: Well-Being (6 items), Self-Control (6 items), Emotionality (8 items), and Sociability (6 items). The remaining 4 items belong to two “stand-alone” facets (adaptability and self-motivation), which contribute directly to the global score without contributing to any of the factors. Participants indicate their responses on a 7-point Likert scale, ranging from 1 (*completely disagree*) to 7 (*completely agree*). Cronbach's alpha values for both samples were, respectively, .88 and .87 for global trait EI, .86 and .86 for Well Being, .67 and .77 for Self-Control, .69 and .68 for Emotionality, and .73 and .72 for Sociability.

Sample 1 measures.

Predictors:

Big Five Inventory (BFI; John & Srivastava, 1999). This scale assesses the Big Five personality traits: Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. Respondents indicate the degree to which 44 brief descriptive statements apply to them on a 5-point Likert scale, ranging from 1 (*disagree strongly*) to 5 (*agree strongly*). Cronbach's alpha values were .85 for Neuroticism, .86 for Extraversion, .81 for Openness, .80 for Agreeableness, and .81 for Conscientiousness. John and Srivastava (1999) reported the BFI scales converged highly with other Big Five instruments and evidenced discriminant validity among its five scales.

Coping Inventory for Stressful Situations (Endler & Parker, 1994). This revised version of the original scale includes 48 items, measuring how people cope during difficult, stressful, or upsetting situations. The items are responded to on a 5-point Likert scale, ranging from 1 (*not at all*) to 5 (*very much*). The three general coping scales and their Cronbach's alpha values are Task- (.90), Emotion- (.90), and Avoidance-Oriented Coping (.84). Structural, convergent, criterion, and concurrent validity are reported in Endler and Parker (1994).

Criteria:

Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983). Respondents indicate the frequency of specific feelings and thoughts in response to external and challenging events during the past month (10 items), using a 5-point Likert scale, ranging from 0 (*never*) to 4 (*very often*). The Cronbach's alpha value was .87. Cohen et al. (1983) reported evidence of good criterion and predictive validity, such as moderate to strong correlations with depressive and physical symptomatology and significant correlations with visits to health centers.

Overall Anxiety Severity Impairment Scale (Norman, Cissell, Means-Christensen, & Stein, 2006). Respondents indicate their experiences of anxiety and fear over the past

week on a 5-item scale. All items have a response range of 0 (*no, none*) to 4 (*constant, extreme, or all the time*). Cronbach's alpha value of this scale was .85. The measure has demonstrated structural, convergent, and discriminant validity, as well as test-retest reliability (Norman et al., 2006).

Academic Motivation Scale—College Version (Vallerand et al., 1992). Only the Amotivation (lacking any motivation) subscale from this measure was used, as it is more emotion-laden than the various intrinsic and extrinsic motivation subscales, as is the case with the other criteria assessed here. This subscale consists of 4 items that yielded a Cronbach's alpha of .89 in this sample. Respondents indicate the extent to which various reasons for going to college presently apply to them. A 7-point Likert scale ranging from 1 (*does not correspond at all*) to 7 (*corresponds exactly*) is used to specify the level of endorsement of each statement. Vallerand et al. (1992) provided evidence to support the scale's structural validity and test-retest reliability.

Sample 2 measures.

Predictors:

Big Five Mini-Markers (Saucier, 1994). Based on the lexical approach to measuring personality (Goldberg, 1992), this measure includes 40 adjective markers that map onto the Big Five factor structure (8 items per factor). On a 9-point Likert scale, ranging from 1 (*extremely inaccurate*) to 9 (*extremely accurate*), respondents indicate the extent to which each adjective represents them. Cronbach's alpha values were .84 for Emotional Stability, .84 for Extraversion, .80 for Intellect, .87 for Agreeableness, and .83 for Conscientiousness. The scale labels, Emotional Stability and Intellect, are used in place of Neuroticism and Openness, respectively, but the underlying constructs are essentially the same in each case (e.g., Emotional Stability is the inverse of Neuroticism). Validity evidence, such as desirably low interscale correlations, was presented in Saucier (1994).

Criteria:

Depression, Anxiety, and Stress Scales—21 (Lovibond & Lovibond, 1995). Depression, anxiety, and stress, all experienced over the past week, are measured with 7 items per scale. The items have a 4-point Likert scale with a response range of 0 (*never*) to 3 (*almost always*). Internal consistencies were .89 for Depression, .82 for Anxiety, and .85 for Stress. The scale developers demonstrated structural validity evidence and the scale's advantages over other measures of anxiety and depression (Lovibond & Lovibond, 1995).

Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985). Five items with a 7-point Likert scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*), yield a global life-satisfaction score. Cronbach's alpha for this scale was .87. Construct validity, such as convergent and criterion validity, as well as temporal stability, has been demonstrated (Diener et al., 1985; Pavot, Diener, Colvin, & Sandvik, 1991).

Statistical Analysis

Bivariate correlations between the variables of each sample were computed. Hierarchical regression analysis was performed for each of the criteria examined in the two samples. The analyses were conducted in a way that evaluated the incremental effects of both the TEIQue-SF subscales and the

global composite, although the effects of these two levels of scores were examined independently, by removing one (i.e., subscales) before entering the other (i.e., global trait EI). Specifically, the criteria assessed in Sample 1 were regressed on the Big Five and the three coping strategies (Step 1), and subsequently on either the four TEIQue-SF subscales (Step 2a) or on global trait EI (Step 2b). The analyses conducted for the Sample 2 criteria were similar, except that the Big Five were the only predictors other than the TEIQue-SF scores. The Big Five were entered at Step 1 and the two types of TEIQue-SF scores independently at Step 2, again with the subscale scores (Step 2a) entered and removed before entering the global composite (Step 2b).

RESULTS

Intercorrelations between the study variables are shown in Table 1. Most correlations were within a weak-to-moderate range of $r < .70$, and correlations of TEIQue-SF scores with the Big Five and the criteria were in the expected direction. Although none of the associations was dramatically high, multicollinearity was assessed in the regression analyses.

Regression analysis summaries for the Sample 1 criteria are shown in Table 2. Of the predictors entered at Step 1 (Big Five and coping strategies), Neuroticism, Task Coping, and Emotional-Oriented Coping were the only significant predictors of stress. As expected, task coping had a significant negative beta weight that was modest, and emotion-oriented coping had a significant positive beta weight that was moderate. Together, the predictors at Step 1 explained 55.8% of the variance in stress. Finally, the TEIQue-SF subscales and the global composite were entered and examined separately at Step 2. When examining the four TEIQue-SF subscales as predictors at Step 2a, two of them emerged as additional predictors of stress; both the Well-Being and Self-Control subscales showed negative and smaller incremental effects. The global composite, which replaced the four TEIQue-SF subscales in the equation at Step 2 (shown as 2b), also had an incremental effect that was significant and negative.

Both the block of subscales (Step 2a) and the global composite (2b) increased the variance in stress explained marginally by 2.3% and 1.4%, respectively. Simultaneously, the beta weights for Neuroticism dropped to .25 (Step 2a) and .29 (Step 2b), suggesting that some of the stress variance linked to this predictor was more efficiently covered by the TEIQue scores. The beta weights of the two significant coping strategies remained relatively stable at either Step 2a or 2b.

Both the set of TEIQue-SF subscales and the global composite had predictive effects on anxiety beyond the Big Five and coping strategies entered at the preceding steps. This time, Neuroticism, Openness, and (again) two of the coping strategies predicted anxiety at Step 1, together explaining 46% of the anxiety variance. As expected, the effect of either of the two types of TEIQue-SF scores was negative, although only the Well-Being subscale had a significant beta weight at Step 2a. The increase in anxiety variance predicted was only .01 at either Step 2a or 2b. However, as was observed for stress, the effect of Neuroticism on anxiety decreased considerably.

All Big Five factors except for Extraversion and Emotion-Oriented Coping were significant predictors of amotivation at Step 1, explaining 19.8% of the variance. The global

TABLE 1.—Intercorrelations between study variables.

Variable	1	2	3	4	5	6	7	8	9	10	11
Sample 1 ^a											
1. N	—										
2. E	-.32***	—									
3. O	-.09*	.19***	—								
4. A	-.32***	.18***	.11**	—							
5. C	-.22***	.19***	.04	.22***	—						
6. TC	-.34***	.27***	.17***	.18***	.40***	—					
7. EOC	.65***	-.23***	-.11**	-.28***	-.29***	-.16***	—				
8. AC	.07	.23***	.07	.03	-.09*	.15***	.26***	—			
9. Stress	.67***	-.25***	-.09*	-.23***	-.21***	-.30***	.67***	.09*	—		
10. Anxiety	.60***	-.23***	-.03	-.24***	-.23***	-.16***	.61***	.07	.64***	—	
11. Amotivation	.15**	-.10***	-.12**	-.19***	-.37***	-.19***	.30***	.10*	.27***	.26***	—
TEIQue-SF	-.67***	.52***	.27***	.45***	.47***	.45***	-.60***	.06	-.60***	-.52***	-.36***
Well-Being	-.57***	.46***	.16***	.38***	.35***	.40***	-.51***	.12***	-.56***	-.46***	-.34***
Self-Control	-.75***	.19***	.13**	.29***	.33***	.34***	-.59***	-.13***	-.59***	-.52***	-.19***
Emotionality	-.30***	.37***	.26***	.51***	.31***	.23***	-.32***	.16***	-.27***	-.29***	-.27***
Sociability	-.43***	.54***	.24***	.13**	.28***	.30***	-.39***	-.01	-.36***	-.30***	-.18**
Sample 2 ^b											
1. ES	—										
2. E	.18***	—									
3. I	.11*	.21***	—								
4. A	.30***	.18***	.25***	—							
5. C	.23***	.12**	.11*	.21***	—						
6. Depression	-.40***	-.28***	-.04	-.22***	-.25***	—					
7. Anxiety	-.38***	-.17***	-.03	-.10*	-.14**	.65***	—				
8. Stress	-.57***	-.15**	-.07	-.18***	-.10*	.68***	.69***	—			
9. Life satisfaction	.32***	.28***	.04	.24***	.16**	-.57***	-.38***	-.36***	—		
TEIQue-SF	.55***	.51***	.32***	.40***	.34***	-.58***	-.48***	-.51***	.56***	—	
Well-Being	.48***	.39***	.23***	.41***	.28***	-.65***	-.47***	-.47***	.69***	.69***	—
Self-Control	.64***	.15**	.13**	.20**	.25***	-.40***	-.46***	-.56***	.33***	.33***	.35***
Emotionality	.24***	.45***	.30***	.48***	.17**	-.28***	-.23***	-.21***	.35***	.35***	.35***
Sociability	.27***	.53***	.30***	.09	.15*	-.31***	-.27***	-.30***	.26**	.26**	.26**

Note. Due to missing data points, amotivation in Sample 1 does not include data from 5 participants. N = Neuroticism; E = Extraversion; O = Openness; A = Agreeableness; C = Conscientiousness; TC = Task Coping; EOC = Emotion-Oriented Coping; AC = Avoidance Coping; TEIQue-SF = Trait Emotional Intelligence Questionnaire-Short Form; ES = Emotional Stability; I = Intellect.

^aN = 645. ^bN = 444. *p < .05. **p < .01. ***p < .001.

composite and the same subscale had a predictive effect, albeit both were larger than in the prediction of anxiety. At Steps 2a and 2b of the analysis for amotivation, Openness and Agreeableness lost their significant effects, whereas the beta of Emotion-Oriented Coping remained relatively stable in magnitude.

Intercorrelations between the Sample 2 variables are shown in the bottom half of Table 1. The TEIQue-SF scores also showed the expected pattern of associations with the Big Five and the criteria examined in this sample. Most of the correlation coefficients were significant and within a weak-to-moderate range in terms of magnitude, whereas none of them were strong ($r > .70$). Multicollinearity was also examined in this sample, given the consistent intercorrelations between personality and TEIQue-SF scores.

The Sample 2 regression results are shown in Table 3. At least one, and in most cases two, of the TEIQue-SF subscales added to Big Five factors in predicting the criteria examined. Specifically, Well-Being predicted all four criteria, Self-Control predicted anxiety and stress, and Emotionality predicted life satisfaction. These significant beta weights were all in the expectable direction, relative to the criterion predicted. Replacing the TEIQue-SF subscales at Step 2, the global composite showed consistent predictive effects in the same direction as the significant subscales.

The criterion variance explained by the Big Five at Step 1 ranged from 15.7% for anxiety to 32.4% for stress. Emotional Stability was a significant predictor of all four criteria at Step 1, and Extraversion predicted all but one of the criteria (stress); Agreeableness and Conscientiousness only predicted life satisfaction and stress, respectively, and their betas were relatively weak. Criterion variance explained by the TEIQue-SF subscales was similar to that explained by the significant Big Five predictors for depression (23.4%) and anxiety (14.8%), whereas the variance explained approximately twice as much of the variance in life satisfaction (32.6%) compared with the Big Five. The incremental variance linked to the global composite came close to that of the TEIQue-SF subscales in predicting anxiety and stress, whereas it was much smaller in the case of depression and life satisfaction. Of note, the beta weights for the Big Five fell below an absolute value of .13 (Step 2a) or .17 (Step 2b) across criteria, except in the case of Emotional Stability predicting stress.

When comparing the amount of incremental variance explained between the subscale scores and the global composite, a few relatively small differences were found. In all cases where the criterion variance differed between subscale and global scores, the block of subscale scores explained more variance than global trait EI. For the criteria assessed in Sample 1, the difference was negligible (<1.2%). The difference

TABLE 2.—Hierarchical regression analyses predicting Sample 1 criteria with the Big Five and coping strategies (Step 1) and either the TEIQue-SF subscales (Step 2a) or global trait emotional intelligence (Step 2b).

Predictor	Stress			Anxiety			Amotivation		
	β	Tolerance	VIF	β	Tolerance	VIF	β	Tolerance	VIF
(Step 1)									
N	.36***	.50	2.01	.35***	.50	2.01	-.13*	.50	2.00
E	.00	.78	1.27	-.03	.78	1.27	.01	.79	1.27
O	.01	.93	1.07	.06	.93	1.07	-.07*	.93	1.07
A	.03	.86	1.17	-.02	.86	1.17	-.08*	.86	1.16
C	.05	.76	1.32	-.06	.76	1.32	-.28***	.75	1.34
TC	-.13***	.71	1.41	.06	.71	1.41	-.06	.70	1.43
EOC	.45***	.50	2.00	.39***	.50	2.00	.25***	.50	1.99
AC	-.03	.81	1.23	-.07*	.81	1.23	.04	.81	1.23
(Step 2a)									
N	.25*	.32	3.12	.29***	.32	3.12	-.16*	.32	3.09
E	.02	.59	1.69	-.03	.59	1.69	.07	.59	1.68
O	.02	.88	1.13	.06*	.88	1.13	-.06	.88	1.13
A	.06	.68	1.48	.02	.68	1.48	-.01	.68	1.48
C	.08*	.70	1.42	-.04	.70	1.42	-.24***	.70	1.43
TC	-.09***	.68	1.47	.07*	.68	1.47	-.04	.67	1.49
EOC	.39***	.46	2.20	.36***	.46	2.20	.19***	.46	2.19
AC	-.01	.76	1.32	-.05	.76	1.32	.08*	.76	1.32
Well-Being	-.21***	.44	2.26	-.09*	.44	2.26	-.24***	.45	2.25
Self-Control	-.11***	.38	2.63	-.08	.38	2.63	.04	.38	2.62
Emotionality	.01	.54	1.87	-.05	.54	1.87	-.09	.54	1.85
Sociability	.02	.53	1.88	.04	.53	1.88	.02	.54	1.86
(Step 2b)									
N	.29***	.42	2.36	.31***	.42	2.36	-.22***	.43	2.34
E	.05	.68	1.47	.00	.68	1.47	.08	.68	1.47
O	.04	.89	1.12	.07*	.89	1.12	-.04	.89	1.12
A	.06*	.79	1.27	.00	.79	1.27	-.03	.79	1.26
C	.09***	.67	1.48	-.04	.67	1.48	-.21***	.67	1.50
TC	-.11***	.69	1.45	.07*	.69	1.45	-.03	.68	1.46
EOC	.40***	.46	2.19	.36***	.46	2.19	.18***	.46	2.18
AC	-.02	.80	1.25	-.06	.80	1.25	.06	.80	1.25
TEIQue-SF	-.22***	.28	3.61	-.13*	.28	3.61	-.31***	.28	3.57

Note. N = 645. The TEIQue-SF subscale scores were removed after Step 2a, prior to entering global trait emotional intelligence on its own at Step 2b. Due to missing data points, the amotivation criterion does not include data from 5 participants. TEIQue-SF = Trait Emotional Intelligence Questionnaire-Short Form; VIF = variance inflation factor; N = Neuroticism; E = Extraversion; O = Openness; A = Agreeableness; C = Conscientiousness; TC = Task Coping; EOC = Emotion-Oriented Coping; AC = Avoidance Coping.
* $p < .05$. ** $p < .01$. *** $p < .001$.

TABLE 3.—Hierarchical regression analyses predicting Sample 2 criteria with the Big Five (Step 1) and either the TEIQue-SF subscales (Step 2a) or global trait emotional intelligence (Step 2b).

Predictor	Depression			Anxiety			Stress			Life satisfaction		
	β	Tolerance	VIF	β	Tolerance	VIF	β	Tolerance	VIF	β	Tolerance	VIF
(Step 1)												
ES	-.32***	.87	1.15	-.36***	.87	1.15	-.56***	.87	1.15	.24***	.87	1.15
E	-.20***	.92	1.09	-.11*	.92	1.09	-.05	.92	1.09	.22***	.92	1.09
I	.07	.90	1.11	.03	.90	1.11	.00	.90	1.11	-.08	.90	1.11
A	-.08	.84	1.19	.04	.84	1.19	-.01	.84	1.19	.14**	.84	1.19
C	-.15	.92	1.09	-.05	.92	1.09	.04	.92	1.09	.06	.92	1.09
(Step 2a)												
ES	-.11*	.54	1.85	-.09	.54	1.85	-.32***	.54	1.85	.03	.54	1.85
E	-.03	.63	1.60	.01	.63	1.60	.05	.63	1.60	.03	.63	1.60
I	.12*	.85	1.18	.08	.85	1.18	.04	.85	1.18	-.13***	.85	1.18
A	.05	.64	1.57	.12*	.64	1.57	.01	.64	1.57	-.07	.64	1.57
C	-.07*	.89	1.12	.01	.89	1.12	.09*	.89	1.12	-.02	.89	1.12
Well-Being	-.62***	.52	1.93	-.33***	.52	1.93	-.22***	.52	1.93	.74***	.52	1.93
Self-Control	.00	.48	2.08	-.25***	.48	2.08	-.25***	.48	2.08	-.05	.48	2.08
Emotionality	.00	.56	1.79	-.06	.56	1.79	.02	.56	1.79	.11*	.56	1.79
Sociability	-.02	.53	1.87	-.02	.53	1.87	-.08	.53	1.87	-.07	.53	1.87
(Step 2b)												
ES	-.10*	.67	1.49	-.16**	.67	1.49	-.40***	.67	1.49	.00	.67	1.49
E	.00	.72	1.39	.08	.72	1.39	.11*	.72	1.39	.00	.72	1.39
I	.16***	.86	1.16	.11*	.86	1.16	.06	.86	1.16	-.17***	.86	1.16
A	.01	.80	1.25	.12*	.80	1.25	.05	.80	1.25	.05	.80	1.25
C	-.06	.87	1.15	.03	.87	1.15	.10**	.87	1.15	-.03	.87	1.15
TEIQue-SF	-.56***	.44	2.27	-.53***	.44	2.27	-.43***	.44	2.27	.61	.44	2.27

Note. $N = 444$. The TEIQue-SF subscale scores were removed after Step 2a, prior to entering global trait emotional intelligence on its own at Step 2b. TEIQue-SF = Trait Emotional Intelligence Questionnaire-Short Form; VIF = variance inflation factor; ES = Emotional Stability; E = Extraversion; I = Intellect; A = Agreeableness; C = Conscientiousness.

* $p < .05$. ** $p < .01$. *** $p < .001$.

between subscales and composite in predicting the same criteria in Sample 2 was also small (2.6% for anxiety and 1.9% for stress). For the other two criteria assessed in Sample 2, the difference was larger (9.4% for depression and 16.4% for life satisfaction).

DISCUSSION

This study fits into an extensive line of research examining the incremental validity of TEIQue, much of which has been conducted using the full form (Andrei et al., 2015). Although it is clear from previous studies that the TEIQue has good construct validity (Freudenthaler et al., 2008; Gardner & Qualter, 2010; Martins et al., 2010), relatively few incremental validity studies have used the short form. All except one study examining the TEIQue-SF's incremental validity vis-à-vis higher order personality factors were limited on some aspect of their design, specifically the measurement of personality (e.g., using brief scales) or choice of criteria (overlapping in item content). Further, the subscale scores that can be derived from the TEIQue-SF have never been assessed for their relative predictive effects or for their contributions to the criterion and incremental validity. This study expands on the evidence for incremental validity of the TEIQue-SF global composite and provides initial evidence for the unique predictive effects of its subscales.

The results from the two samples presented here show that the TEIQue-SF consistently predicts incremental variance in construct-relevant criteria beyond established trait-like attributes, namely the Big Five (both samples) and coping strategies (Sample 1 only). These findings are consistent with some prior, although mostly limited, evidence gathered with this measure (e.g., Mikolajczak, Menil, et al., 2007) and the more general effects of lower order traits (Paunonen, 1998; Paunonen & Ashton, 2001). Incremental effects in terms of criterion variance explained ranged from 0.8% to 3.8% in Sample 1 and 10.1% to 32.6% in Sample 2. These effects are very much in line with previous results obtained with the full TEIQue when examined against personality scales of moderate length (Gardner & Qualter, 2010), as used here, or even a long personality measure (Petrides, Pérez-González, et al., 2007). Further, in Sample 1, the TEIQue-SF maintained its predictive effects not only after controlling for the Big Five, but also after including the major coping strategies as additional predictors.

Throughout the seven incremental validity analyses performed across the two samples, the global trait EI composite explained incremental variance in all criteria assessed. Consequently, at least one of the TEIQue-SF subscales explained criterion variance beyond the Big Five (both samples) and coping strategies (Sample 1 only). In agreement with previous research using the full form of the TEIQue (Freudenthaler et al., 2008; Mikolajczak et al., 2006; Mikolajczak, Menil, et al., 2007; Mikolajczak, Roy, Verstrynge, & Luminet, 2009; Petrides, Perez-Gonzalez, et al., 2007; Swami et al., 2010), it was mainly the Well-Being and Self-Control subscales that showed significant predictive effects; Well-Being had significant betas in all seven analyses conducted, whereas Self-Control reached significance in four analyses. Sociability did not reach significance in any of the analyses conducted, and the Emotionality subscale predicted incremental variance over the

Big Five only for life satisfaction (Sample 2), an effect that was relatively small.

Although of similar magnitude, the global composite explained somewhat less criterion variance than the block of subscales, as can be expected. The likely explanation is that the effects of the two nonpredictive subscales (Emotionality and Sociability) and the two predictive subscales (Well-Being and Self-Control) average out when combined into a global composite (G. T. Smith et al., 2003). The effects of subscales in multiple regressions are cumulative, whereby nonsignificant predictors do not decrement the overall variance explained. Consequently, they tend to account for more criterion variance than the composite of all items.

It could be argued that the use of "medium-sized" personality measures might facilitate the incremental effects observed for the TEIQue-SF scores. However, the BFI and the Mini-Markers scale used in our study resemble the TEIQue-SF in terms of items per subscale, and, therefore, we consider them well-suited for assessing the measure's incremental validity. Furthermore, the internal reliabilities of the domain scores derived from these measures are in line with the global TEIQue-SF score. Using longer measures for assessing the incremental validity of shorter measures seems unwarranted, although any significant effects would certainly speak to their validity. Lengthier personality measures seem more appropriate for validating full versions of questionnaires, where differences in item quantity between scales are less likely to make a difference. Research has shown that the full form of the TEIQue has incremental validity vis-à-vis the long NEO Personality Inventory-Revised (Costa & McCrae, 1992) in predicting construct-relevant criteria (Petrides, Pérez-González, et al., 2007). One can expect incremental effects of smaller magnitude, but there is no a priori reason why the TEIQue-SF should lose its incremental effects completely when lengthier measures are used to assess other predictors, particularly where the focus is on the total score.

Implications

Our findings add support to the psychometric properties of the TEIQue-SF and its contribution in assessing trait EI in adults. At least in cases where criteria are measured on a self-report basis, the TEIQue-SF seems to explain criterion variance at a level comparable to that of the full form. This finding, coupled with the high convergence of the two forms, supports the construct validity and utility of the TEIQue-SF. More generally, the findings indicate that even shorter versions of trait EI measures can have utility. They are often preferred over lengthier forms when practical and time constraints do not permit use of full versions or where short forms are more comparable to other measures used in a study.

The findings pertaining to the subscales are of interest, because the relative contributions of these scores to the composite's incremental effects have not been previously investigated for this TEIQue form. As stated earlier, subscale scores include specific variance unrelated to the construct and, therefore, they do not represent the construct as accurately as a composite derived from all items. Yet, subscale scores can reveal which elements of a construct explain its predictive effects. Research on the adult TEIQue version (full form) has shown that two of the four subscales (Emotionality and

Sociability) have not been particularly successful in predicting construct-relevant criteria beyond the other subscales. The findings reported here indicate that this pattern also applies to the TEIQue-SF, further attesting to the measure's congruence with the full form and validity. Until further refinements of the adult TEIQue forms are made, researchers using these measures are advised to examine their predictive effects at the subscale level. The consistently nonpredictive subscales (Emotionality and Sociability) are prone to comprising the effects of the global composite score, as the different amounts of variance explained by each type of score (global composite vs. factor) illustrates. In other words, they weaken the measure's incremental validity.

Limitations and Future Directions

A limitation of the results presented here is that all variables were based on self-report, possibly imposing common method effects and bias (e.g., through current mood states). Although some research suggests that both the TEIQue and TEIQue-SF can predict criteria based on a range of measurement formats (Mikolajczak, Roy, Luminet, Fillée, & de Timary, 2007; Sanchez-Ruiz, Mavroveli, & Poullis, 2013; Siegling, Nielsen, & Petrides, 2014; Swami et al., 2010), the incremental validity of both measures in predicting criteria based on measurement methods other than self-report needs to be investigated systematically. The same applies to other typical-performance EI scales, which are most appropriately interpreted through the trait EI framework (Petrides & Furnham, 2001).

It is worth stressing that the findings gathered here might yield an underrepresentation of the TEIQue's incremental validity. Although there is evidence that the TEIQue excels psychometrically over other trait EI measures in terms of construct validity (Freudenthaler et al., 2008; Gardner & Qualter, 2010; Martins et al., 2010), the 15 facets underlying the TEIQue instruments do not appear to yield an optimal representation of the construct. Some evidence is emerging that a few of the facets are redundant and unnecessarily compromise the measure's construct validity, including its criterion validity (Siegling, Petrides, et al., 2015). Not surprisingly, these redundancies are subsumed by the Emotionality and Sociability subscales, which also had negligible effects in this and previous investigations, as discussed. Future psychometric studies of the type presented here might yield even more promising results once refinements to the underlying construct representation are undertaken.

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