Chapter #13

CONSTRUCT AND INCREMENTAL VALIDITY OF THE SLOVAK VERSION OF TRAIT EMOTIONAL INTELLIGENCE QUESTIONNAIRE – ADOLESCENT'S SHORT FORM

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ABSTRACT

The study analyzes construct (convergent and discriminant) and incremental validity of trait emotional intelligence (EI) of the Slovak version of Trait Emotional Intelligence Questionnaire -Adolescent's Short Form (TEIQue-ASF) created by K.V. Petrides (2009) adapted to the Slovak conditions by Kaliská, Nábělková and Salbot (2015). The research sample consisted of 307 high school students (average age: 17.7 /SD=.46/). The validation tools: Ten-Item Personality Inventory -TIPI (Gosling, Rentfrow, & Swann, 2003), Type D-personality - DS14 (Denollet, 2005), State-Trait Anxiety Inventory - STAI (adapted by Muller, Ruisel, & Farkaš, 1980), Rosenberg's Self-esteem Scale - RSS (Rosenberg, 1965), Scale of Emotional Habitual Subjective Well-being - SEHP (Džuka & Dalbert, 2002) were used to examine trait EI construct and incremental validity by correlation and regression analyses. The results proved that high trait EI is positively correlated to personality and affect-related variables of self-confidence, emotional stability and extraversion and positive emotional state of mind (convergent validity) and negatively correlated to trait anxiety, type D-personality, self-depreciation and negative emotional state of mind (discriminant validity). Trait EI significantly predicts 2.8% of unique variance in trait anxiety after controlling for three variables supporting convergent validity and 1.2% of unique variance in trait anxiety after controlling for the variables supporting discriminant validity of trait EI in a sample of the Slovak high school adolescents.

Keywords: trait emotional intelligence, construct validity, incremental validity, TEIQue-ASF, adolescents.

1. INTRODUCTION

The psychological construct of emotional intelligence (EI) has a short history (since 1990s). One of its predecessors can be seen in Gardner's theory of multiple intelligences (1993) and the other in Thorndike's social intelligence (1920). For the first time, the EI model was defined in relation to other constructs (intelligence and emotions) in 1990, in the study "*Emotional Intelligence*" by Salovey and Mayer. Since then there has been going on a constant debate referring to its scientific meaningfulness, for the term intelligence should be reserved only for cognitive abilities.

These controversies have contributed to the formation of 3 approaches to EI investigation. The first approach presents EI as ability measurable by maximum performance tests, with Mayer and Salovey as its main representatives. Criticism of the EI model as ability (e.g., Mathews, Zeidner, & Roberts, 2004; Petrides, 2011) is pointing at problems to assess subjective nature of emotional experience and intrapersonal elements, of its scoring objectivity and of psychometric properties adequacy. The second approach links

EI with personality traits and abilities (so-called mixed models of EI, such as, Neubauer's, Freudenthaler's, Bar-On's and Goleman's models). Afterwards the concept of trait EI is being formed as the third model, where EI can be assessed by self-report measures and is defined as a personality trait closely connected to one's emotional functioning showing how people perceive their own emotional abilities and emotional dispositions (Cooper's, Sawaf's, Weisinger's, Higg's and Dulewicz's models or Petrides' model).

Trait EI, analyzed in this study, is explained by its authors, K. V. Petrides and A. Furnham (2001, 2009) as a constellation of self-perceived abilities and behavioral dispositions linked to emotions, bringing along qualitatively various behavioral and experiencing styles (Petrides, Pita, & Kokkinaki, 2007). It is explained as emotion-related self-perceptions and dispositions located at the lower levels of personality hierarchies (Petrides & Furnham, 2001). The model is being also referred to as trait emotional self-efficacy (Petrides & Furnham, 2001) or emotional self-competence (Kaliská & Nábělková, 2015).

We have been interested in this comprehensive model of trait EI for more than seven years. It consists of 15 facets (13 of them forming 4 factors: emotionality, sociability, well-being and self-control and 2 independent facets /adaptability and self-motivation/ stand by themselves) forming the global level of trait EI (more detailed characteristics of the factors in Petrides & Furnham, 2001; Petrides, 2009; Kaliská & Nábělková, 2015). Petrides also created questionnaires to measure trait EI (*Trait Emotional Intelligence Questionnaire – TEIQue*) for three developmental stages (children, adolescents, and adults) of two forms (short and long form). In Slovakia, the satisfactory psychometric properties of full and short forms of Slovak *TEIQue* versions were evidenced (Nábělková, 2012; Kaliská & Nábělková, 2015; Kaliská, Nábělková, & Salbot, 2015, and others). For short forms of TEIQue, created from the original full versions, the author recommends to assess only the global level of trait EI.

Ever since the beginning of EI research studies, construct and incremental validity has been verified in numerous studies. The study on British adult population (e.g. Petrides, Pérez-Gonzáles, & Furnham, 2007) has shown that trait EI is related to measures of rumination, life satisfaction, depression, dysfunctional attitudes, and coping (N=166; 354; $AM_{ace}=22.17$, /SD=4.27/) and most relationships remained statistically significant (p \leq .01) even after controlling for Big Five variance. Trait EI is as well related to depression and nine distinct personality disorders (N=212) even after controlling for positive and negative affectivity (mood). Another study on French adult population (N=740 participants, $AM_{age}=25.5$, (SD=11.31/) proves that trait EI predicted depression, anxiety, and social support as well as future state affectivity and emotional reactivity in neutral and stressful situations (Mikolajczak, Luminet, Leroy, & Roy, 2007); and there was proved the incremental validity to predict emotional reactivity over and above social desirability, alexithymia, and the Five-factor model of personality. The study of Siegling, Vesely, Saklofske, Frederickson, & Petrides (2015) on Canadian university students (N/1/=645, N/2/=444; AM_{age}=22.6, /SD=5.4/) supports that trait EI predicts 7 construct-relevant criteria beyond the variance explained (from .8% to 3.8% in Sample 1 and 10.1% to 32.6% in Sample 2) by the Five-factor model and coping strategies.

A complex review and meta-analysis were conducted to examine the incremental validity of TEIQue by 24 articles reporting 114 incremental validity analyses (Andrei, Siegling, Aloe, Baldaro, & Petrides, 2016) proving that TEIQue explains incremental variance in criteria pertaining to different areas of functioning, beyond higher order personality dimensions and other emotion-related variables. The latest (Van der Linden et al., 2016) meta-analytical study (a total sample of k=142, data sources /N=36,268/)

analyzes the relationship between the general factor of personality and trait EI. The general factor of personality is explained as a substantive higher-order personality factor there. The study suggests that the general factor of personality viewed as a social effectiveness factor might be very similar (r =.85) because of their large overlap (Van der Linden et al., 2016). Our previous studies confirm satisfactory reliability and validity (construct /its convergent and discriminant character/, incremental, criterion) of the Slovak adult versions of the TEIQue long and short forms (e.g., Nábělková, 2012; Kaliská, Nábělková, & Salbot, 2015).

The investigation of the construct, criterion or incremental validity of self-report measures of trait EI, is usually based on the adult's forms. The adolescent's forms of trait EI (especially Trait Emotional Intelligence Questionnaire – Adolescent's Short Form – TEIQue-ASF) have been subject to relatively few researches comparing to its adult counterpart. TEIQue-ASF was assessed for incremental validity in two studies of preadolescents. In these studies, the incremental validity of TEIQue-ASF was used to explain variance in somatic complaints, controlling for depression in a Dutch sample (Mavrovelli, Petrides, Rieffe, & Bakker, 2007), and in teacher-rated academic achievement, controlling for cognitive ability, personality, and self-concept in a Spanish sample (Ferrando et al., 2010). The construct validity of TEIQue-AF (adolescent's long form) in a Slovak adolescent's sample (N=169; $AM_{age} = 16.8$, /SD=0.9/) was proved in relation to social intelligence and general g-factor intelligence potential (Kaliská, 2015) and the short form of TEIQue-ASF in a Slovak adolescent sample (N=216, $AM_{age} = 17.2$, /SD=1.1/) in relation to Big Five factors (Kaliská & Kaliský, 2016). One of the latest studies by Siegling, Vesely, Saklofske, Frederickson and Petrides (2015) verified the incremental validity of TEIQue-ASF in all socioemotional criteria (depression, somatic complaints, and peer-rated social competence), controlling for seven coping strategies and demographics in a Dutch high school students sample (N=282) by reanalyzing data presented by Mavroveli et al. (2007) and in academic achievement, controlling for cognitive ability and gender (N=357-491) in a sample of British preadolescents using unpublished data from Frederickson, Petrides and Simmonds' (2012). It proved the additional criterion variance explained by the TEIQue-ASF ranged from 1.7% (somatic complaints) to 6.3% (depression). That is why a complex multidimensional verification of construct and incremental validity of the Slovak version of trait EI for adolescents has become the major empirical objective of this study.

2. OBJECTIVE

We concentrated on the investigation of construct (convergent and discriminant) and incremental validity of trait EI of the adolescent's short form in regard to trait anxiety, type D-personality as a distressed personality type consisting of negative affectivity (the tendency to experience negative emotions) and social inhibition (the tendency to inhibit self-expression in social interaction), self-esteem (consisting of self-confidence and self-depreciation), the emotional component of habitual subjective well-being (comprising four positive: pleasure, body vigour, joy and happiness and six negative emotional state of mind: anger, guilt, shame, fear, pain, and sadness) and Big Five personality factors (extraversion, agreeableness, conscientiousness, emotional stability, openness to experience).

Three hypotheses were stated: trait EI will be correlated positively to self-confidence, positive emotional state of mind, emotional stability and extraversion (H1); trait EI will be correlated negatively to trait anxiety, negative emotional state of mind, self-depreciation and type D-personality (H2); trait EI will predict trait anxiety over and above positive and negative personality and emotion-related variables also in the Slovak adolescent's trait emotional intelligence questionnaire – its short form (H3).

3. METHODS

3.1. Research sample

Our research was carried out by convenience sampling including 307 adolescents, high school students (2 grammar schools, 2 vocational high schools, 2 sport grammar schools) in the age 16 to 19 (AM_{age} =17.7 /SD=.46/) from central Slovak region. There were 199 (64.8%) girls and 108 (35.2%) boys. The research sample was obtained by targeted and occasional sampling as a part of professional orientation testing. Either the parental or individual (18-year-old ones do not need parental approval) informed consent was signed voluntarily two weeks before testing.

3.2. Research methods

Trait EI was assessed by the short Slovak version of the TEIQue-ASF (Trait Emotional Intelligence Ouestionnaire-Adolescent's Short Form) created by K.V. Petrides (2009) adapted by Kaliská, Nábělková and Salbot (2015) to the Slovak conditions. The instrument consists of 30 items answered by a seven-point Likert scale (1 - completely disagree to 7 -completely agree). Reliability estimate in the sense of inner consistency (for the whole sample: a=.83; .83 for females; .81 for males) reaches highly acceptable values. To operationalize the trait EI validity we used Ten-Item Personality Inventory (TIPI; Gosling, Rentfrow, & Swann, 2003; /for extraversion: a=.56; for agreeableness: a=.60; for conscientiousness: a=.57; for emotional stability: a=.71; for openness to experience: a=.47/), The type D-personality (DS14; Denollet, 2005; /for the whole sample: a=.87; .87 for females; .88 for males/), Rosenberg's Self-esteem Scale (RSS; 1965 /for self-confidence: the whole sample: a=.76; .79 for females; .69 for males; for self-depreciation: the whole sample: a=.69; .68 for females; .72 for males /), Scale of Emotional Habitual Subjective Well-being (SEHP; Džuka & Dalbert, 2002; /for positive emotional state of mind: the whole sample: a=.76; .75 for females; .79 for males; for negative emotional state of mind: for the whole sample: a=.68; .63 for females; .75 for males/) and The State-Trait Anxiety Inventory to measure trait anxiety (STAI, adapted in Slovakia by Muller et al., 1980; /for the whole sample: a=.89; .90 for females; .88 for males/). The testing lasted up to 40 minutes.

3.3. Results

The basic descriptive indicators for global trait EI and its factors assessed by TEIQue-ASF questionnaire and for other validation variables of this research sample are presented in Table 1.

		Min	Max	AM	SD	Mdn	Skewness	Kurtosis
TEIQue- ASF (N=307)	Global trait EI	2.73	6.23	4.93	.64	4.97	512	.325
	Well-being	2.33	7.00	5.32	.98	5.50	877	.433
	Emotionality	1.63	6.63	5.07	.78	5.13	589	.721
	Self-control	1.50	6.50	4.48	.89	4.50	569	.326
	Sociability	2.00	6.83	4.83	.95	4.83	374	144

Table 1. Descriptive indicators of all variables in a sample of the Slovak adolescents (N=307).

STAI (N=264)	Trait anxiety	24.00	$\begin{array}{c} 74.0\\ 0 \end{array}$	43.77	9.49	43.00	.496	046
DSIV (N=264)	Type D personality	4.00	47.0 0	22.31	9.22	22.00	.225	299
TIPI (N=254)	Extraversion Agreeableness Conscientiousness Emotional stability Openness to Experience	.00 .00 .00 .00 .50	6.00 6.00 6.00 6.00 6.00	3.24 3.86 4.02 3.51 4.17	1.23 1.10 1.24 1.29 1.06	3.50 4.00 4.00 3.50 4.50	166 600 529 527 501	299 .547 .048 454 125
SEHP (N=304)	Positive state of mind Negative state of mind	1.25 1.33	6.00 5.17	4.29 2.80	.80 .62	4.38 2.67	606 .708	.423 .967
RSS (N=263)	Self-confidence Self-depreciation	7.00 4.00	$24.0 \\ 0 \\ 16.0 \\ 0$	18.50 10.01	3.06 2.77	19.00 10.00	746 .098	.699 675

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Min – minimum, Max – maximum, AM – mean, SD – standard deviation, Mdn – median

Referring to the Slovak percentile norms for the late adolescence (norm sample N = 387; $AM_{age} = 16.6$; /SD= 0.5/ in Kaliská, Nábělková, & Salbot, 2015, p. 49), it can be concluded that the global trait emotional intelligence level (AM=4.93) of this research sample is reaching the 63rd percentile.

Statistical analysis of skewness and kurtosis proves the normal distribution of the analyzed variables therefore the relation estimate was carried out using parametric correlation analysis. Pearson's correlation coefficient (r) enables to determine the direction and strength of relations between variables presented in Table 2 and Table 3.

correlation analysis between variables.						
r	1	2	3	4	5	6
1 Global trait EI	1					
2 Trait anxiety	638****	1				
3 Type D personality	665	$.665^{***}$	1			
4 Extraversion	.385***	212***	491***	1		
5 Agreeableness	.165**	091	158*	057	1	
6 Conscientiousness	.282***	281***	173**	077	.266***	1
7 Emotional stability	.415***	630***	391***	.048	.202***	.241***
8 Openness to Experience	.193**	076	272***	.323***	.032	.013
9 Positive state of mind	.680***	616***	614***	.401***	.184**	.200***
10 Negative state of mind	538***	.677***	.513***	067	090	255***
11 Self-confidence	.583***	618****	524***	.131*	.161**	.287***
12 Self-depreciation	458***	.563***	.439***	190**	.075	109
$p < .05, \ ^{**}p < .01, \ ^{***}p < .01$						

Table 2.Correlation analysis between variables.

r	7	8	9	10	11	12
1 Global trait EI						
2 Trait anxiety						
3 Type D						
personality						
4 Extraversion						
5 Agreeableness						
6 Conscientiousness						
7 Emotional stability	1					
8 Openness to	.003	1				
Experience	.005	1				
9 Positive state of	.362***	.168**	1			
mind	.502	.100	1			
10 Negative state of	563***	020	454***	1		
mind			***	***		
11 Self-confidence	.463***	.217***	.559	524	1	
12 Self-depreciation	348***	126	382***	.491***	499	1
$p^* < .05, p^* < .01, p^* < .01$	001					

Table 3.Correlation analysis between variables.

According to the correlation analysis it can be stated that global level of trait EI was negatively strongly correlated to negative emotional factors of personality (anxiety, type D-personality, negative emotional state of mind and self-depreciation) – supporting discriminant validity, and positively strongly correlated to positive emotional state of mind and self-confidence and moderately to emotional stability (in the original theory as neuroticism) and extraversion as personality factors of Big Five model – supporting the convergent validity.

In addition to the above correlational analyses, two hierarchical four-step regression analyses were conducted to determine if trait anxiety as dependent variable could be predicted by variables supporting convergent validity and separately by variables supporting discriminant validity.

The first hierarchical four-step regression analysis was conducted to determine if trait anxiety as dependent variable could be predicted by variables supporting convergent validity: positive emotional state of mind entered at the first step, then by self-confidence entered at the second step, personality factors (emotional stability, extraversion and conscientiousness) entered at the third step and then global level of trait EI on its own entered at the fourth step as presented in Table 4.

	Trait anxiety					
	Step 1	$=143.403^{***}$, R ² adj. $=.393$				
	Step 2	$F_{change}(2,220)=5$	8.872^{***} , R ² adj. =.520, R ² change =.128			
	Step 3	0	2.051^{***} , R^2 adj. =.618, R^2 change =.102			
	Step 4	$F_{\text{change}}(6,220)=67.450^{***}, R^2 \text{ adj.} = .644, R^2 \text{ change}$ =.028				
	Beta	t	Partial correlations			
Positive state of mind (Step 1)	629	-11.975***	629			
Positive state of mind	390	-6.946***	426			
Self-confidence (Step 2)	431	-7.673***	461			
Positive state of mind	303	-5.497***	351			
Self-confidence	295	-5.497***	351			
Emotional stability	363	-7. 496***	455			
Extraversion	039	862	059			
Conscientiousness (Step 3)	029	640	044			
Positive state of mind	204	-3.511****	233			
Self-confidence	233	-4.330***	284			
Emotional stability	326	-6.874***	425			
Extraversion	.012	.270	.018			
Conscientiousness	006	132	009			
Trait EI (Step 4) *p < .05, **p < .01, ***	254	-4.152***	273			
p < .00, p < .01,	$P \leq .001$					

 Table 4.

 Hierarchical Regression Analysis – Convergent Validity Variables.

A four-step hierarchical regression was performed to investigate incremental influence of trait EI on trait anxiety with variables supporting convergent validity of trait EI. The positive emotional state of mind was entered at step 1, self-confidence as a part of self-esteem together at step 2, significant personality factors of Big Five together added at step 3 and trait EI on its own at step 4. At step 1, the model was statistically significant and positive emotions referring to positive state of mind (such as pleasure, body vigour, joy and happiness) predicted almost 40% of the variance in trait anxiety, then at step 2, the overall model was also statistically significant ($F_{change(2,220)=}58.872$; *** p < .001) with 52% of the variance in trait anxiety. At step 3 the overall model proved again high statistical significance ($F_{change(5,220)}$ =72.051; *** p < .001) with almost 62% of the variance in trait anxiety. The positive emotional state of mind and self-confidence together with personality factor of emotional stability (in the original theory as neuroticism) are negative predictors of trait anxiety. At the final step, trait EI, entered on its own, was again found to be a significant negative predictor of trait anxiety, over and above positive personality and emotion-related variables (as self-confidence, emotional stability and positive emotional state of mind). Trait EI predicted a significant 2.8% of unique variance in trait anxiety after

controlling for three variables supporting convergent validity of trait EI (self-confidence, personality factors of Big Five theory and experienced positive emotions reflecting positive state of mind) with remaining partial correlation of r = -.273.

Another hierarchical four-step regression analysis was conducted to determine if trait anxiety as dependent variable could be predicted by discriminant validity variables, as D-type personality entered at the first step, then by negative emotional state of mind entered at the second step, self-depreciation at the third step and then global level of trait EI on its own entered at the fourth step as presented in Table 5.

 Table 5.

 Hierarchical Regression Analysis – Discriminant Validity Variables.

	Trait anxiety						
	Step 1	F(1,259)	$=216.599^{***}$, R ² adj. $=.454$				
	Step 2	0	6.428^{***} , R ² adj. =.602, R ² change =.148				
	Step 3	0	$(0.950^{***}, R^2 adj. = .630, R^2 change)$ = .030				
	Step 4	$F_{change}(4,259)=8.572^{**}, R^2 adj. =.641, R^2 change =.012$					
	Beta	t	Partial correlations				
Type D-personality (Step 1)	.676	14.717***	.676				
Type D-personality	.446	9.772^{***}	.521				
Negative state of mind (Step 2)	.448	9.820***	.522				
Type D-personality	.392	8.618***	.474				
Negative state of mind	.375	7.997***	.447				
Self-depreciation (Step 3)	.206	4.577***	.275				
Type D-personality	.314	6.022^{***}	.353				
Negative state of mind	.340	7.124***	.407				
Self-depreciation	.185	4.127***	.250				
Trait EI (Step 4)	157	-2.928**	180				
*p < .05, **p < .01, **	*p < .001						

A four-step hierarchical regression was performed in order to investigate incremental influence of trait EI on trait anxiety with variables supporting discriminant validity of trait EI. Type D-personality was entered at step 1, negative emotional state of mind together at step 2, self-depreciation added at step 3 and trait EI on its own at step 4. At step 1, the model was statistically significant and type D-personality predicted 45% of the variance in trait anxiety, then at step 2, the overall model was also statistically significant ($F_{change(2,259)=}96.428$; **** p < .001) with 60% of the variance in trait anxiety. At step 3 the overall model proved again high statistical significance ($F_{change(3,259)=}20.950$; **** p < .001) with 63% of the variance in trait anxiety. All three variables supporting discriminant

validity of trait EI are positive predictors of trait anxiety. At the final step, trait EI was found to be a significant negative predictor of trait anxiety, over and above negative personality and emotion-related variables (type D-personality, self-depreciation and negative emotional state of mind). Trait EI predicted a significant 1.2% of unique variance in trait anxiety after controlling for type D-personality, self-depreciation from self-esteem concept and negative emotional state of mind (experiencing feelings of anger, guilt, shame, fear, pain, and sadness) with remaining partial correlation of r = -.180.

4. LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

We are aware of several limitations of our research and while describing them we suggest directions for future inquiry. For instance, to operationalize the trait EI validity we used several non-standardized methods, e.g., *Ten-Item Personality Inventory* (TIPI; Gosling, Rentfrow, & Swann, 2003) not reaching quite acceptable inner consistency reliability, then *The type D-personality* (DS14; Denollet, 2005 and *Scale of Emotional Habitual Subjective Well-being* (SEHP; Džuka & Dalbert, 2002). We still emphasize the importance of the trait EI validity verification by other methods because validity is one of the most important procedures for referring the credibility or believability of the research. Another limitation is the research sample size representing just one of the Slovak regions.

Nevertheless, we decided to study validity of the only instrument to assess trait emotional aspects of adolescents in Slovakia, and to provide psychometrically valid and reliable instrument for professional, prevention or intervention purposes. That is why the merits of our research can be seen especially as the contribution to the validation of the trait emotional intelligence construct and its instruments. Some further methodological limitations of the research can be overcome only by follow-up research correcting and expanding the obtained research results.

5. CONCLUSION

The aim of this subsequent and more complex study was to examine the relationship between trait EI and trait anxiety, trait D-personality, personality factors of Big Five theory, self-esteem and emotional habitual subjective well-being variables supporting construct and incremental validity of trait EI in a sample of the Slovak adolescents by the Slovak version of TEIQue-ASF. All three hypotheses were borne out by our data analysis. As stated in the H1, high level of global trait EI corresponds to higher levels of emotional stability, extraversion and conscientiousness out of Big Five theory, self-confidence out of self-esteem construct and positive emotional state of mind proving the convergent validity of trait EI. The H2 was also supported where higher level of trait EI is negatively correlated to trait anxiety, type D-personality, self- depreciation out of self-esteem construct and negative emotional state of mind proving the discriminant validity of trait EI. Convergent and discriminant validity are both considered subcategories of construct validity. Although it is clear from previous studies that the TEIQue (long form) assessed in a sample of adults has good construct and incremental validity (Mikolajczak et al., 2007; Petrides et al., 2007; Nábělková, 2012; Andrei et al., 2016), relatively few have used the short forms and even fewer in a sample of adolescents. Referring to H3, trait EI predicts level of trait anxiety over and above positive and negative personality and affect-related variables showing clear evidence of incremental validity of trait EI also in a sample of the Slovak high school adolescents by the short form of TEIQue-ASF in the Slovak conditions.

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