

## Validation of the Serbian adaptation of the Trait Emotional Intelligence Questionnaire-Child Form (TEIQue – CF)

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This study investigated trait EI in childhood in a Serbian population by validating a Serbian adaptation of the Trait Emotional Intelligence Questionnaire – Child Form (TEIQue-CF). All 606 participants ( $M_{\text{age}} = 10.33$ ,  $SD = 1.55$ ) completed the TEIQue-CF, the Reading the Mind in the Eyes Test (revised version), and the Guess Who peer assessment. Data on academic achievement and truancy were also obtained. The Serbian TEIQue-CF demonstrated robust psychometric properties with satisfactory internal consistencies and extensive evidence of validity in relation to criteria such as emotion recognition, academic grades, truancy rates, and peer ratings. Factor analyses suggested a two-factor solution for the total sample, but a unifactorial structure for the two groups of younger children aged 8 to 9 and 10 to 11. Overall, the results corroborate the validity of the Serbian adaptation and the theoretical and practical importance of the construct of trait EI in children.

*Keywords:* trait emotional self-efficacy, TEIQue-CF (Serbian adaptation), psychometric properties, academic performance, emotion recognition

Trait emotional intelligence (trait EI) refers to a constellation of emotional perceptions assessed via questionnaires and rating scales (Petrides, Pita, & Kokkinaki, 2007). Essentially, the construct concerns people’s perceptions of their emotional abilities, which is why it has also been labelled as “trait

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emotional self-efficacy". Trait EI is an extensively researched construct with a large nomological network (Petrides et al., 2016) and strong evidence of incremental validity over the higher-order personality dimensions and the Big Five (Andrei, Siegling, Aloe, Baldaro, & Petrides, 2016). The criterion validity of trait EI has been demonstrated through associations with important outcomes in different domains, such as psychopathology, mental health and general well-being (Martins, Ramalho, & Morin, 2010; Petrides, Hudry, Michalaria, Swami, & Sevdalis, 2011; Riley & Schutte, 2003; Sinclair & Feigenbaum, 2012), marital relationships (Malouff, Schutte, & Thorsteinsson, 2014), and work-related variables (Ahmetoglu, Leutner, & Chamorro-Premuzic, 2011; Akhtar, Boustani, Tsivrikos, & Chamorro-Premuzic, 2015; Mikolajczak, Menil, & Luminet, 2007; Schutte & Loi, 2014; Siegling, Nielsen, & Petrides, 2014).

Despite the attention that trait EI has received in adult populations, and a separate line of research focusing specifically on children, the construct remains comparatively significantly under-explored in younger age groups. The present study seeks to contribute towards addressing this imbalance in the literature by presenting data from a large sample of children and validating the leading trait EI measure in this age group for use in the Serbian context.

### **Measurement of trait EI in children**

In adults, trait EI is comprehensively measured via the Trait Emotional Intelligence Questionnaire (TEIQue; Petrides, 2009), which comprises 15 facets organized into four broad factors: well-being, self-control, emotionality and sociability. Its various versions, forms and translations have been thoroughly psychometrically evaluated and extensively used in research internationally (see Aluja, Blanch, & Petrides, 2016; Freudenthaler, Neubauer, Gabler, Scherl, & Rindermann, 2008; Jolić Marjanović & Altaras Dimitrijević, 2014; Martskvishvili, Arutinov, & Mestvirishvili, 2013; Stamatopoulou, Galanis, & Prezerakos, 2016).

Currently, there are only few self-report measures of emotional intelligence for children in middle school and early adolescence. Some of these instruments, such as the Emotional Quotient-inventory: Youth Version (EQ-i: YV) (Bar-On & Parker, 2000) and the Trait Meta-Mood Scale for Elementary School Children (TMMS-C) (Rockhill & Greener, 1999) are based on the adult versions of the respective instruments and rely on the idea that the construct remains unaltered across major developmental stages. Others, such as the Children's Emotion Management Scales (CEMS): Anger and sadness (Zeman, Shipman, & Penza-Clyve, 2001) assess only specific emotions rather than general emotional perception. The Trait Emotional Intelligence Questionnaire-Child Form (TEIQue-CF; Mavroveli, Petrides, Shove, & Whitehead, 2008), the leading trait EI measure in children, is exclusively based on trait EI theory, unlike the previously mentioned instruments. Importantly, the TEIQue-CF is based on a sampling domain that has been specifically developed for children, rather than on an expedient adaptation of the adult sampling domain, which would have been unsuitable for children.

The TEIQue-CF comprises nine facets, presented in Table 1: adaptability, affective disposition, emotion expression, emotion perception, emotion regulation, impulse control, peer relations, self-esteem and self-motivation that represent the sampling domain of trait EI. Previous research (Mavroveli, 2008) pointed out that each facet comprehensively covers the corresponding theoretical construct.

Table 1

*Descriptions and examples of TEIQue-CF facets (Mavroveli et al., 2008)*

Facet	Relates to self-perceptions of	Example of item
Adaptability	Adaptation to new situation and people	"I find it hard to get used to a new school year"
Affective disposition	Frequency and intensity of emotion experience	"I am a very happy kid"
Emotion expression	Effectiveness of emotion expression	"I always find the words to show how I feel"
Emotion perception	Accuracy of perception of their own and other people's emotions	"It is easy for me to understand how I feel"
Emotion regulation	How well one can control their emotions	"I can control my anger"
Impulse control	Self-control	"I do not like waiting to get what I want"
Peer relations	Quality of relations with peers	"I listen to other children's problems"
Self-esteem	Self-worth	"I feel great about myself"
Self-motivation	One's drive and motivation	"I always try to become better at school"

English, Italian and Greek translations of the TEIQue-CF have so far been evaluated and studies have concluded that it is a reliable and valid measure of trait EI (Cronbach alphas ranging between .80 and .89; Babalis, Tsoli, Artikis, Mylonakou-Keke, & Xanthakou, 2013; Mavroveli et al., 2008; Mavroveli & Sánchez-Ruiz, 2011; Russo et al., 2012) with satisfactory temporal stability during a 3-month interval ( $r = .79$ ; Mavroveli et al., 2008). However, some facets (e.g., adaptability and emotion perception) have consistently demonstrated slightly lower than desirable reliability values, especially in younger children (Mavroveli & Sánchez-Ruiz, 2011; Russo et al., 2012).

Due to the fact that the child and adult versions of the TEIQue are based on different sampling domains, differences in their factor structure are to be expected. A limited number of studies in children have examined the factorial structure of trait EI, as operationalized via the TEIQue-CF and have suggested that trait EI in early and middle childhood is, by and large, unifactorial (Mavroveli, 2008; Russo et al., 2012). However, in both these studies, there were some indications for the possible existence of a second, less well-differentiated, factor. Overall, further research is needed in order to fully determine the factor structure of trait EI in children.

Research on closely related constructs, such as self-concept (Marsh & Ayotte, 2003) and various personality traits (Soto, John, Gosling, & Potter, 2008), has revealed that children's self-perceptions tend to become more differentiated and better organized with age. As children grow older and enter adolescence (about 12 years), they gain the capacity to perceive different self-aspects and to organize those elements into a coherent picture (Soto et al., 2008). These developments echo cognitive and identity-related changes taking place during the transition between late childhood and adolescence (Erickson, 1994; Miller, 2010).

### **The validity of trait EI in children**

Studies using child samples have generally demonstrated that trait EI is involved in important life domains, such as psychopathology (Davis & Humphrey, 2012; Frederickson, Petrides, & Simmonds, 2012; Mehmood & Gulzar, 2014; Gugliandolo, Costa, Cuzzocrea, Larcan, & Petrides, 2015; Mavroveli, Petrides, Rieffe, & Bakker, 2007) and special education needs (Mavroveli & Sánchez-Ruiz, 2011). The present study explores the role of the construct in academic achievement, peer relations, and school maladjustment, specifically truancy.

Existing results from child and adolescent samples suggest the presence of a mild positive effect of trait EI on scholastic achievement across educational levels (Perera & DiGiacomo, 2013). A direct relationship has been reported in several studies involving primary-aged children and adolescents (Di Fabio & Palazzeschi, 2009; Ferrando et al., 2011; Mavroveli et al., 2008; Parker et al., 2004; Qualter, Gardner, Pope, Hutchinson, & Whiteley, 2012; Siegling, Veseley, Saklofske, Frederickson, & Petrides, 2015). Gender-specific effects have also been reported in some studies (Andrei, Mancini, Mazzoni, Russo, & Baldaro, 2015; Costa & Faria, 2015; Mavroveli & Sánchez-Ruiz, 2011; Qualter et al., 2012), although they seem to be subject- or grade-specific, rather than universal. As regards age effects, younger children seem to benefit more from high trait EI scores than older peers, although there is variation in this set of findings too (e.g., Costa & Faria, 2015; Petrides, Frederickson, & Furnham, 2004) and cognitive ability has been proposed as a moderator of the relationship between trait EI and academic performance (Mavroveli & Sánchez-Ruiz, 2011; Petrides et al., 2004).

School adaptation, especially in the early years of education, can be challenging, as children draw on a range of resources to adapt to their school environment. Trait EI has been positively linked to adaptive school behaviours, such as nominations from peers and teachers for positive social attributes, like leadership and kindness (Mavroveli, Petrides, Rieffe, & Bakker, 2007; Mavroveli et al., 2008; Mavroveli, Petrides, Sangareau, & Furnham, 2009; Petrides, Sangareau, Furnham, & Federickson, 2006). In contrast, it has been negatively linked to maladaptive behaviours, such as aggression, delinquency and bullying (Mavroveli & Sánchez Ruiz, 2011; Santesso, Dana, Schmidt, & Segalowitz, 2006).

An important link has been discovered between trait EI and absenteeism (Mavroveli et al., 2008; Petrides et al., 2004). These studies reported that high trait EI children tend to have fewer unauthorized absences and are less likely to have been expelled from school due to antisocial behaviour than their low trait EI peers. This effect suggests a positive trait EI influence on school adaptation and conformity during childhood (Mavroveli et al., 2007, 2009).

High trait EI pupils are better at identifying facial expressions of emotion compared to their low trait EI peers, an advantage which persists even after controlling for non-verbal IQ and peer-rated social competence (Mavroveli et al., 2009; Petrides & Furnham, 2003). However, a study conducted by Agnoli et al. (2012) failed to demonstrate an association between trait EI and emotion recognition, as operationalized via the Karolinska Directed Emotional Face System (KDEF; Ludqvist, Flykt, & Ohman, 1998).

### **The present study**

The main aim of the present study was to perform a comprehensive validation of the Serbian adaptation of the TEIQue-CF. Specifically, we wanted to explore the instrument's internal consistency, its factor structure in middle and late childhood, and its criterion and incremental validity in relation to various criteria and baseline predictors. Based on trait EI theory and previous research, we proposed the following hypothesis:

- H1: With respect to the factor structure of the TEIQue-CF, we expected it to be unifactorial, but due to the paucity of relevant studies we were eminently open to other outcomes.
- H2: Children with high trait EI scores will show better emotion recognition than their low trait EI peers.
- H3: Trait EI will be positively related to GPA, language (Serbian), and Maths grades, even when controlling for age and gender.
- H4: Trait EI will be inversely related to unauthorized absences, even when controlling for age and gender.
- H5: Trait EI will be positively related to peer-rated prosocial characteristics (e.g., sympathetic, co-operative, and leader) and negatively related to antisocial behaviours (e.g., bully).
- H6: Trait EI will incrementally predict peer-rated social competence over and above age and emotion recognition.

## **Method**

### **Participants**

The overall sample comprised 606 participants (290 girls, 24 not stated), ranging in age from 8 to 13 years ( $M = 10.33$ ,  $SD = 1.55$ ). With respect to developmental differences, there were three age groups: the first included 8 and 9 year-olds (198), the second 10 and 11 year-olds (214), and the third 12 and 13 year-olds (170). All participants attended one of five primary schools in Belgrade. Participants who skipped more than 15 items in the TEIQue-CF were excluded from the analysis (8 participants out of 614).

## Measures

**Trait Emotional Intelligence Questionnaire–Child Form (TEIQue-CF).** The TEIQue-CF consists of 75 items responded to on a 5-point Likert-type scale, ranging from Completely Disagree to Completely Agree (Mavroveli et al., 2008). In the present study, participants were administered the Serbian translation of the TEIQue-CF. The instrument was first translated into Serbian by two independent translators. Subsequently, the two translations were synthesized into one version, which was back-translated by a bilingual translator. Following additional guidance from the developers (Mavroveli et al., 2008), a final version was obtained. Prior to the main study, the instrument was administered to a pilot sample of 39 children (20 girls) aged 9 to 11 in order to ensure comprehensibility of the translation. Pupils were asked to put their hand up if they did not understand particular items. No such items were identified, even when children were asked again after completing the questionnaire.

**Reading the Mind in the Eyes Test – revised version (RMET).** The RMET (Baron-Cohen, Wheelwright, Hill, Raste, & Plumb, 2001) was used to assess the ability to recognize feelings and mental states. It consists of 28 photographs of human eyes and the task is to choose from four given words that which best describes the feelings or mental state of the person in the picture. The RMET showed moderate reliabilities in the total sample ( $\alpha = .61$ ) as well as in the different age groups of 8–9, 10–11, and 12–13 year-olds ( $\alpha = .64$ ,  $\alpha = .64$ , and  $\alpha = .67$ , respectively).

**Guess Who peer assessment technique.** The Guess Who peer assessment technique (Coie & Dodge, 1988; Coie, Dodge, & Coppotelli, 1982) is based on unlimited nominations and proportional scores. In this study, there were three prosocial (“is sympathetic”, “cooperates” and “is a leader”) and one antisocial (“is a bully”) behavioural descriptions. Children were asked to nominate all classmates who they thought fit each of these descriptions. The resultant scores were standardized for class and gender. An overall score of social competence was created for each participant by summing up nominations for prosocial descriptions and subtracting nominations for the antisocial description.

### Archival data.

**Academic achievement.** Academic achievement was operationalized via school grades in Serbian (native language) and mathematics as well as a general point average (GPA). Grades were standardized across schools to account for the fact that participants attended five different schools.

**Unauthorized absences.** Our index of unauthorized absences also included cases of exclusion due to inappropriate behaviour.

In order to avoid limitations of common method variance (Matthews, Zeidner, & Roberts, 2007; Stone & Lemanek, 1990), we chose to use non-self-report criteria (emotion recognition, peer perceptions, school grades and truancy levels) for validating the Serbian adaptation of the TEIQue-CF.

## Procedure

A letter explaining the aims and rationale of the study was sent to head-teachers and psychologists in each school. Informed consent was obtained from all parents. All participants were given oral and written instructions regarding the procedure. They filled out the questionnaires individually in the classrooms under supervision. The testing session lasted approximately 45 minutes. Additional demographic data were obtained from the school records.

## Results

### Internal consistencies

Descriptive statistics, internal consistencies, and gender differences on the TEIQue-CF are presented in Table 2 for the total sample and Table 3 for the three different age groups.

Table 2  
*TEIQue-CF Descriptive Statistics, Distributional Properties, Reliabilities and Gender Differences*

	Total sample					Total (N = 606)	Boys (N = 292)	Girls (N = 290)	Gender differences F(1,580)
	N° of items	Cronbach α	Skewness	Kurtosis	KS				
Facets									
Adaptability	8	.56	-.219	-.438	1.67*	3.74±.66	3.72 ±.69	3.76 ±.64	.58
Affective disposition	8	.77	-.813	.507	2.27**	3.97±.75	3.98 ±.75	3.94 ±.75	.27
Emotion expression	8	.64	.021	-.238	1.4*	3.28±.70	3.21 ±.71	3.33 ±.69	4.37*
Emotion perception	8	.44	-.016	-.151	1.25	3.70±.55	3.73 ±.55	3.67 ±.53	1.58
Emotion regulation	8	.59	-.366	-.120	1.72**	3.65±.66	3.59 ±.69	3.71 ±.65	4.76*
Impulse control	8	.67	-.065	-.326	1.31	3.13±.76	3.16 ±.80	3.11 ±.72	.54
Peer relations	12	.56	-.628	.553	2.15**	3.96±.48	3.92 ±.50	4.01 ±.46	4.55*
Self-esteem	7	.68	-.514	.03	1.73**	3.87±.67	3.88±.68	3.88 ±.68	.00
Self-motivation	8	.66	-.895	.966	2.54**	4.18±.59	4.15 ±.61	4.21 ±.57	1.14
TEIQue-CF total score	75	.87	-.361	.230	1.09	3.73±.38	3.71 ±.39	3.75 ±.37	1.25

Note. KS = Kolmogorov-Smirnov. α = Cronbach's alpha coefficient. \*  $p < .05$ , \*\*  $p < .01$ .

Table 3  
*Internal Consistencies for the TEIQue-CF and its Nine Facets Ages 8-9, 10-11 and 12-13 and age differences*

Facets	Age						Age groups differences F (2,579)	Bonferroni post hoc test Mean differences		
	8-9 N = 198		10-11 N = 214		12-13 N = 170			8-9: 10-11	8-9: 12-13	10-11: 12-13
	α	M ± SD	α	M ± SD	α	M ± SD				
Adaptability	.52	3.71 ±.68	.59	3.74 ±.66	.64	3.78 ±.65	.41	-.03	-.06	-.04
Affective disposition	.70	4.03 ±.83	.76	3.99 ±.71	.84	3.85 ±.81	2.97	.04	.18	.14
Emotion expression	.59	3.27 ±.71	.64	3.29 ±.69	.68	3.25 ±.7	.15	-.01	.03	-.03
Emotion perception	.38	3.71 ±.55	.47	3.73 ±.55	.43	3.65 ±.53	.95	-.01	.06	.07
Emotion regulation	.56	3.74 ±.68	.59	3.66 ±.64	.64	3.53 ±.68	4.47*	.08	.21*	.13
Impulse control	.63	3.40 ±.73	.62	3.14 ±.72	.70	2.65 ±.75	25.21**	.25*	.54*	.29*
Peer relations	.56	3.97 ±.5	.59	3.99 ±.48	.55	3.93 ±.45	.71	-.01	.04	.06
Self-esteem	.63	4.05 ±.66	.68	3.88 ±.66	.70	3.67 ±.68	14.25**	.16*	.37*	.21*
Self-motivation	.68	4.29 ±.64	.59	4.22 ±.51	.70	4.00 ±.57	11.47**	.06	.28*	.22*
TEIQue-CF total score	.87	3.80 ±.39	.85	3.75 ±.35	.88	3.63 ±.38	10.14**	.05	.17*	.12*

Note. α – Cronbach's alpha coefficient. \*  $p < .05$ , \*\*  $p < .01$ .

Facet scores showed minor deviations from normality (see Table 2). In contrast, total TEIQue-CF scores were fully normally distributed as indicated by non-significant Kolmogorov-Smirnov tests. The total TEIQue-CF scores showed satisfactory levels of internal consistency in the total sample, as well as in the three age groups. Most facets showed satisfactory internal consistencies, although adaptability and emotion perception did not reach acceptable levels in either the total sample or the three different age groups (Tables 2 and 3). Regarding gender differences, girls scored higher on emotion expression, emotion regulation, and peer relations (see Table 2), although effect sizes were low ( $\eta^2_p = .007 - .008$ ).

There were significant differences in trait EI scores across the three age groups. Specifically, there was a difference in total TEIQue-CF scores ( $\eta^2_p = .03$ ), with the youngest group scoring highest. Age differences also emerged for the facets of emotion regulation ( $\eta^2_p = .02$ ), self-motivation ( $\eta^2_p = .04$ ), self-esteem ( $\eta^2_p = .05$ ) and impulse control ( $\eta^2_p = .08$ ; see Table 3).

### Factor Analysis

In order to evaluate the factor structure of the TEIQue-CF, the nine facets, whose inter-correlations are presented in Table 4, were subjected to a principal components analysis in the total sample. Based on the Kaiser eigenvalue criterion ( $k > 1$ ) and Scree plot, two factors were extracted and rotated to simple structure via Direct Oblimin with Kaiser normalisation. The two obtained factors explained 49.98% of variance. Table 5 presents the factor loadings for this solution.

Table 4  
*TEIQue-CF facets correlation matrix*

Facets	1	2	3	4	5	6	7	8
Adaptability								
Emotion expression	.20**							
Emotion perception	.23**	.34**						
Self-motivation	.22**	.17**	.3**					
Self-esteem	.16**	.31**	.31**	.34**				
Impulse control	-.02	.12**	.2**	.43**	.11**			
Peer relations	.35**	.27**	.27**	.37**	.37**	.12**		
Emotion regulation	.1*	.2**	.21**	.41**	.27**	.37**	.36**	
Affective disposition	.15**	.24**	.24**	.38**	.44**	.35**	.34**	.46**

Note. \*  $p < .05$ , \*\*  $p < .01$ .

Table 5  
*Factor Loadings of the TEIQue-CF in the Total Sample (N = 606)*

Facet	Factor loadings	
	Socioemotionality	Emotion Control
Peer relations	.698	
Adaptability	.662	
Emotion expression	.626	
Self-esteem	.621	
Emotion perception	.606	
Impulse control		-.769
Emotion regulation		-.739
Self-motivation		-.705
Affective disposition		-.699
Eigenvalues	3.23	1.27
% of variance explained	35.85	14.13
KMO	.80	
Bartlett's test	$\chi^2 = 1149.885$	$p < .01$

*Note.* Extraction Method = Principal Component Analysis. Rotation Method = Direct Oblimin with Kaiser Normalisation.

Adaptability, emotion expression, emotion perception, peer relations and self-esteem loaded on the first factor. Similar factor loadings were found in a sample of older children in the UK (Mavroveli, 2008), so we decided to use the same factor label – Socioemotionality. Affective disposition, emotion regulation, impulse control and self-motivation loaded on the second factor. We labelled this factor Emotion Control, again following Mavroveli (2008), even though, in that study, affective disposition did not load on this factor. The two factors intercorrelated at  $r = -.31$ .

Age-specific factor analyses were also performed, yielding similar results. In 8 to 9 year-olds, a two-factor solution was identified as most appropriate using the Kaiser eigenvalue ( $k > 1$ ) and Scree plot criteria, explaining 52.42% of variance. The same two-factor solution was found in 12 to 13 year-olds, explaining 50.39% of variance. However, in the middle age group of 10 to 11 year-olds, using the same criteria, a three-factor solution was identified, explaining 58.95% of variance. The factor loadings from these analyses are presented in Table 6. The factors were rotated to simple structure using the Direct Oblimin algorithm. The two rotated factors correlated at  $r = -.32$  in the youngest group and  $r = -.29$  in the oldest group. In the middle group of 10 and 11 year-olds, where three factors had been extracted, the factor intercorrelations were as follows:  $r_{12} = .31$ ,  $r_{13} = .17$ , and  $r_{23} = .09$ .

Table 6

*Factor Loadings of the TEIQue-CF in the Groups 8-9 years (N = 198), 10-11 (N = 214) and 12-13 (N = 170)*

	Factor loadings						
	Socioemotionality			Emotion Control			Third factor
	Age			Age			Age
	8-9	10-11	12-13	8-9	10-11	12-13	10-11
Facets							
Emotion perception	.674	.764	.609				
Emotion expression	.649	.642	.553				
Adaptability	.593	.642	.667				
Peer relations	.685		.703				.678
Self-esteem	.665		.722				.625
Emotion regulation				-.784	.724	-.717	
Impulse control				-.738	.632	-.798	
Affective disposition				-.733	.736	-.637	
Self-motivation				-.724	.715	-.674	
Eigenvalues	3.46	1.05	3.2	1.25	2.97	1.34	1.28
% of variance explained	38.48	11.65	35.53	13.94	33.02	14.86	14.28

*Note.* Extraction Method = Principal Component Analysis. Rotation Method = Direct Oblimin with Kaiser Normalisation

We retained the labels Socioemotionality and Emotion Control for the two main factors that emerged across the different age groups, since the factor loadings they comprised were very similar to those in the total sample. Because the third factor that emerged only in the group of 10 to 11 year-olds had not previously been identified in validations of the TEIQue-CF, we decided to cross-check the results of the Kaiser eigenvalue criterion and Scree plot by means of Parallel Analysis (PA). We applied O'Connor's (2000) syntax in the total sample with the following input characteristics: 9 variables, 606 participants, 1000 replications and a 95th percentile threshold. The same criteria were used for the age subsamples. The results of the PA confirmed a two-factor solution in the total sample, but suggested a unifactorial solution for the younger groups (8 to 9 and 10 to 11 year-olds). A two-factor solution remained the best fit for the oldest age group (12 to 13 year-olds).

In conclusion, the parallel and factor analyses jointly indicate that a two-factor solution may be more appropriate for the current Serbian adaptation of TEIQue-CF in older children, whereas a unifactorial solution may be more appropriate for younger children.

## Correlations

As can be seen in Table 7, there was a weak positive correlation between trait EI and the RMET, this relationship remained significant even after controlling for age and gender ( $r = .14, p < .01$ ). This finding supports hypothesis H2, viz., that trait EI will be positively related to emotion recognition.

Table 7  
Correlations of TEIQue-CF and RMET, School Grades, Unauthorized Absences and Peer-rated Social Competence

	1	2	3	4	5	6	7	7.1	7.2	7.3
1. Trait EI										
2. RMET	.11**									
3. GPA	.25**	.15**								
4. Serbian	.21**	.17**	.78**							
5. Maths	.21**	.13**	.75**	.68**						
6. Unauthorized Absences	-.09*	-.03	-.24**	-.19**	-.15*					
7. Peer competence	.22**	.19**	.38**	.41*	.41*	-.10*				
7.1. Is sympathetic	.18**	.17**	.30**	.31*	.34**	-.03	.80**			
7.2. Co-operates	.19**	.17**	.36**	.36**	.37**	-.11**	.82**	.57**		
7.3. Is a leader	.13**	.09*	.23**	.25**	.23**	-.02	.53**	.20**	.28**	
7.4. Is a bully	-.13**	-.09*	-.21**	-.23	-.23**	.13**	-.70**	-.50**	-.47**	-.03

Note. \*  $p < .05$ , \*\*  $p < .01$ .

Trait EI was positively related to overall GPA (Table 7) as well as to language (Serbian) and Maths grades, separately. The correlations remained significant even after controlling for age and gender ( $r_{(573)} = .22, p < .01$ ;  $r_{(573)} = .17, p < .01$ ; and  $r_{(573)} = .17, p < .01$ , respectively). These results support hypothesis H3, viz., that trait EI will be positively related to GPA, language (Serbian), and Maths grades.

Inspection of Table 7 shows that trait EI and unauthorized absences were negatively related in the total sample. However, after controlling for age and gender, this relationship became non-significant ( $r_{(576)} = -.063, p > .05$ ). Therefore, hypothesis H4, viz., that trait EI will be inversely related to unauthorized absences, was not fully borne out by the data.

As predicted in hypothesis 5, trait EI was positively related to overall peer-rated social competence (see Table 7). It was also significantly related to nominations on each of the four different behavioural descriptions: sympathetic ( $r_{(578)} = .18, p < .01$ ), bully ( $r_{(578)} = -.14, p < .01$ ), cooperative ( $r_{(578)} = .19, p < .01$ ), and leader ( $r_{(578)} = .13, p < .01$ ).

### Regression analysis

In order to test the incremental validity of trait EI in predicting peer competence over and above age and emotion recognition (Hypothesis H6), hierarchical regression analysis was performed with age and the RMET scores entered in Step 1 and global trait EI entered in Step 2. At Step 1, emotion recognition and age explained 3.9% of variance ( $F_{(2,581)} = 12.94; p < .001$ ;  $\beta_{\text{RMET}} = .197; t = 4.80; p < .001$ ;  $\beta_{\text{age}} = -.09; t = -2.28; p < .05$ ). At Step 2, with trait EI added to the equation, the model explained 7.3% variance in peer competence ( $F_{(3,581)} = 16.19; p < .001$ ). Trait EI explained an additional 3.5% of the variance and was a significant predictor in the model ( $\beta_{\text{TEI}} = .192; t = 4.7; p < .001$ ) along

with emotion recognition ( $\beta_{\text{RMET}} = .169$ ;  $t = 4.14$ ;  $p < .001$ ), but not age ( $\beta_{\text{RMET}} = -.06$ ;  $t = -1.35$ ;  $p = .18$ ). These results support our sixth and final hypothesis, viz., that trait EI will predict peer-rated social competence over and above age and emotion recognition.

## Discussion

This study explored the psychometric properties of the Serbian adaptation of the TEIQue-CF, with particular focus on its factor structure. It also investigated the criterion and construct validity of trait EI in relation to emotion perception, academic performance and truancy in the context of Serbian primary education.

The internal consistencies of the Serbian adaptation of the TEIQue-CF were satisfactory and comparable to those obtained across different versions and samples (Babalis et al., 2013; Mavroveli et al., 2008; Mavroveli & Sánchez-Ruiz, 2011; Russo et al., 2012). Similar to previous studies (Mavroveli & Sánchez-Ruiz, 2011; Russo et al., 2012), the facets of adaptability, emotion perception and emotion regulation showed lower than desirable internal consistencies. This replicated finding suggests that there is some instability in the items of those facets due to which minor modifications to the instrument may be desirable. In addition, the facet of peer relations showed lower reliabilities than in previous research, which suggests that some items may have drifted away from the original in the process of translation or may be inappropriate for the Serbian context. At the global level the reliability of the Serbian adaptation of the TEIQue-CF was very good across all samples and age groups.

The present study suggested that a two-factor structure might be more optimal for middle and late childhood, which is not supported by previous studies that have demonstrated that a unifactorial structure is better-suited for children of that age (Mavroveli, 2008; Russo et al., 2012). The two factors explained half of the total variance and were labelled Socioemotionality and Emotion Control, in line with previous labelling (Mavroveli, 2008). Socioemotionality refers to how children experience emotions and how good they believe they are at articulating them, as well as how good they are in understanding what others are feeling. Emotion Control refers to children's perceptions of their ability to manage and regulate their overall behaviour and, especially, their emotions. This factor also concerns children's prevailing affective disposition, positive or negative, and their need for achievement.

Age-specific factor analyses yielded a different number of factors in different age groups. In light of previous findings and the robustness of the PA technique (Hayton, Allen, & Scarpello, 2004), we accepted a one-factor solution for the youngest (8 to 9) and middle (10 to 11) groups and a two-factor solution for the oldest group (12–13 years) in line with Mavroveli et al. (2008). Notably, the two-factor solution also approached significance in the middle group. The increase in the number of trait EI factors in older children, in combination with the increase in the reliabilities of trait EI facets, accords well with key findings from the developmental psychology literature. This literature shows that through

developing cognitive capacity (Miller, 2010), children's ability to describe themselves becomes more precise and differentiated with time (Marsh & Ayotte, 2003; Soto et al., 2008). Thus, it can be concluded that, with age, children begin to separate their perceptions about experience of emotions from their perceptions about emotion control. This more nuanced and precise understanding of the emotional self is reflected in an additional factor in the TEIQue-CF and higher internal consistencies for its facets.

Boys and girls generally show similar emotional perceptions, as was previously observed (Mavroveli et al., 2008, 2007). Small effect differences did emerge, as in the Italian sample (Russo, 2012), on the facets of emotion expression, emotion regulation and peer relations, all in favour of girls. These factor-specific gender differences tend to be cancelled out at the total level (Mavroveli et al., 2009). However, repeated observation of gender differences in these facets, and in the relationship between trait EI and other constructs (Mavroveli & Sánchez-Ruiz, 2011; Petrides et al., 2006; Russo et al., 2012), suggests that girls may develop some aspects of trait EI more fully or earlier than boys, leading to different outcomes over time.

In line with hypothesis H2, trait EI was positively related to emotion recognition, as measured by Baron-Cohen et al.'s (2001) RMET. Albeit weak, possibly due to the fairly low internal consistency of the RMET, this association remained significant even after controlling for gender and age. This result replicates previous findings in the literature (Mavroveli et al., 2009; Petrides & Furnham, 2003).

Also in line with our third hypothesis and previous findings (Agnoli et al., 2012; Mavroveli et al., 2008; Mavroveli & Sánchez-Ruiz, 2011), we found that trait EI is positively related to academic achievement (operationalized via GPA), language (Serbian), and maths grades in primary school children. These associations did not vary across gender and age as in other studies (Mavroveli et al., 2008; Parker et al., 2004; Perera & DiGiacomo, 2013). With respect to truancy, we found a negative relationship (see also Mavroveli et al., 2008; Petrides et al., 2004), which, however, lost its significance after controlling for gender and age.

Last, high trait EI children were perceived as more prosocial than their peers, an effect that has been observed in several samples from different countries (Mavroveli et al., 2007; Mavroveli et al., 2009; Mavroveli & Sánchez-Ruiz, 2011; Petrides et al., 2006). Thus, high trait EI children were more frequently nominated by their classmates for being sympathetic, cooperative, and having leadership qualities than low trait EI children, who were more frequently described as bullies. Importantly, trait EI explained a significant amount of incremental variance in overall peer-rated social competence over and above age and emotion recognition (RMET).

However, another explanation for these results is that children who perceive themselves as highly emotionally able do not demonstrate more prosocial behaviours, but are merely more popular. Children may have rated their peers with high trait-EI positively because they were liked, regardless of

their actual prosocial behaviours. This relationship between trait EI, popularity, and prosocial behaviour should be further explored by measuring children's observable prosocial behaviour in addition to peer ratings.

As regards limitations, the cross-sectional and correlational nature of design prevents us from drawing any conclusions about the causal direction of effects. Consequently, the study does not shed new light on the mechanisms underlying the relationship between trait EI and the criteria examined in this study, which remain largely unknown (although see Petrides, 2010). Another limitation was the low reliability of four TEIQue-CF facets (adaptability, emotion perception, emotion regulation, and peer relations) and of the RMET, which was perhaps more consequential, since it was a criterion variable in the design. Finally, the validation of this version of the instrument would have been more thorough had we been able to also examine aspects of convergent and divergent validity. However, at the time of data collection there were no trait EI or Big Five measures validated for use with middle-school children in the Serbian context.

Despite the aforementioned limitations, the work reported herein is important for several reasons. First, it expands the nomological network of trait EI in children, including evidence of incremental validity. Second, it replicates previous findings regarding the multifaceted role of the construct in the field of child development and education. Third, it corroborates the validity of the Serbian adaptation of the TEIQue-CF. This opens up new paths and possibilities for the investigation of children's trait EI in a part of Europe whose cultural and historical characteristics provide a unique context for the exploration of the importance of emotional perceptions.

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