



Trait emotional intelligence questionnaire full-form and short-form versions: Links with sport participation frequency and duration and type of sport practiced

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ABSTRACT

The main aim of this paper was to investigate further the relationship between trait emotional intelligence (trait EI) and sport participation, and more particularly its association with the amount of sport participation and the type of sport practiced (individual vs. team). A secondary aim was to investigate whether similar results would be obtained with the full-form (TEIQue-FF) and the short-form (TEIQue-SF) of the trait emotional intelligence questionnaire. A total of 972 athletes were asked to fill out the TEIQue-FF and TEIQue-SF, as well as information related to sport participation. Results showed that almost all dimensions of the TEIQue-FF and TEIQue-SF were significantly positively related to the amount of sport participation (for both frequency and duration). No differences emerged according to the type of sport, suggesting that trait EI plays an equally important role in both individual and team sports. Although large correlations were found between the TEIQue-SF and TEIQue-FF and similar results were obtained with both scales when combined with outcome criteria, the trait EI scores obtained with the TEIQue-SF are systematically higher than those obtained with the TEIQue-FF. Finally, future research should focus on longitudinal studies to investigate further the relationship between trait EI and sport participation.

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1. Introduction

Sport participation plays an important role in public health (Haskell et al., 2007), and therefore understanding the factors that trigger sport participation is crucial. Personality factors have been shown to be linked to sport participation in a bi-directional relationship (Allen & Laborde, 2014), suggesting that personality may influence sport participation and sport participation may, in turn, influence personality development (Allen, Magee, Vella, & Laborde, 2016). A relevant theoretical foundation for such a relationship concerns evolutionary benign personality traits, as identified by the general factor of personality (Rushton, Bons, & Hur, 2008). From this perspective, an adaptive personality would be assumed to associate with healthy lifestyle decisions that promote adaptation and surviving (Rushton et al., 2008) and socially adaptive coping (Hengartner, van der Linden, Bohleber, & von Wyl, 2016). In other words, an individual with a healthy personality would be expected to engage in healthy activities. Among the personality traits that may

predispose people to engage in healthy activities, trait emotional intelligence (trait EI) has been shown to be related to the way people participate in sport (Laborde, Dosseville, & Allen, 2016). Trait EI represents a constellation of emotional perceptions assessed via questionnaires and rating scales (Petrides, Pita, & Kokkinaki, 2007). Interestingly, people with a high score on the general factor of personality are expected to have higher levels of emotional intelligence (Rushton et al., 2008). To a certain extent, emotional intelligence as a self-reported concept consists of basic personality traits as identified within the big five conceptualization (Petrides et al., 2010), traits which have been found to relate to sport participation (Allen & Laborde, 2014). Two main aspects of sport participation are the amount of time spent participating in sports, in terms of frequency and duration, and the type of sports practiced; although their relationship with trait EI is unclear. Therefore, the main aim of this paper is to clarify the relationship between trait EI and these aspects of sport participation.

Although many operationalizations of trait EI exist, in this paper we focus on the trait EI operationalization by Petrides (2009b) as it has shown the best psychometric properties (Petrides, 2009a) and the most connections to real life outcomes, specifically in the sport domain (Laborde, Dosseville and Allen, 2016). Trait EI is measured by the trait

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emotional intelligence questionnaire (TEIQue; Petrides, 2009b), and is available in short-form (TEIQue-SF) and full-form (TEIQue-FF) versions. Using the short-form of a questionnaire may represent a time economy in research protocols, whilst recent construct and concurrent validity analyses (Laborde, Allen, & Guillén, 2016) have shown that the TEIQue-SF is a viable alternative to the TEIQue-FF. However, no studies currently exist that compare the associations between TEIQue-SF and TEIQue-FF, respectively, and outcome criteria, which represent an important step to further establish the construct validity of the TEIQue. The secondary aim of this study, therefore, was to address this gap.

As shown by a recent review, trait EI has been linked to several aspects of sport performance (Laborde, Dosseville and Allen, 2016). For example, it has been linked to performance satisfaction (Laborde, Dosseville, Guillén, & Chávez, 2014), to the use of more adaptive coping strategies (Laborde, Dosseville, Guillén and Chávez, 2014; Laborde, You, Dosseville, & Salinas, 2012), and to more optimal biological reactions of athletes while facing stress, through heart rate variability (Laborde, Brüll, Weber, & Anders, 2011; Laborde, Lautenbach, & Allen, 2015) and cortisol (Laborde, Lautenbach, Allen, Herbert, & Achtzehn, 2014) measures.

However, further research is needed to clarify the associations between trait EI and both the amount and type of sport participation, as personality, through motivational mechanisms, may influence the tasks and activities individuals engage in as well as how long they persist with those tasks (Mount, Barrick, Scullen, & Rounds, 2005). Regarding the amount of sport participation, it is not the amount of practice in years that is of interest, as this has shown no relationship with trait EI (Laborde, Dosseville, Guillén and Chávez, 2014), but rather the amount of time people actually spend participating in sports, in terms of frequency and duration. To the best of our knowledge, only one study (Guillen & Laborde, 2014) has considered the frequency and duration of sport participation together with personality dimensions, specifically examining the relationship between positive personality variables (i.e., hope, optimism, perseverance and resilience) and both practice frequency (i.e., days per week) and practice duration (i.e., practice time per session in min and practice time per week in min). Guillen and Laborde showed that practice duration, but not practice frequency, had a relationship with the personality variables investigated, specifically that practice time per session was positively linked to hope, persistence, and resilience whilst practice time per week was positively linked to persistence. To the best of our knowledge, the amount of sport practice has not yet been related to trait EI, however, as trait EI possesses conceptual similarities to the dimensions of hope, persistence, and resilience (Petrides, 2009b), we would expect a similar positive relationship between trait EI and the amount of sport practice, in terms of duration but not in terms of frequency (based on Guillen & Laborde, 2014). Moreover, regarding duration, the self-control dimension of trait EI especially would be expected to motivate people to engage longer in training sessions (Audiffren & André, 2015; Petrides, 2009b).

An important distinction in sports is the type of sports practiced, generally conceptualized as either individual or team sports, each with their own diverse psychological requirements (Laborde, Guillén, & Mosley, 2016; Mroczkowska, 1997). An individual sport athlete, for example, has more responsibility for a competitive outcome, whilst his/her actions and decisions can't be compensated by teammates, thus his/her individual personality characteristics play a major role in determining the result. As personality influences behavior through motivational processes, it will influence choices about which tasks and activities to engage in (Mount et al., 2005) and may play a role in determining the type of sport practiced. Certainly, team sport athletes show different personality characteristics in comparison to individual sport athletes, with higher levels of extraversion and lower levels of conscientiousness (Allen, Greenlees, & Jones, 2013). Moreover, research investigating positive personality-trait-like individual differences (PTLID) in competitive athletes involved primarily in one sport has actually shown that athletes involved in individual sports score higher on

positive PTLID (i.e., perseverance, positivity, resilience, self-esteem, and self-efficacy) than athletes from team sports (Laborde, Guillén and Mosley, 2016).

A theoretical link can, therefore, be made between sport participation and specific dimensions of the trait EI conceptualization (Petrides, 2009b): As individual athletes are almost entirely responsible for a competitive outcome, they would be expected to be highly capable in their ability to withstand pressure and regulate stress and emotions, which are prominent aspects of the trait EI dimension of self-control. Emotionality and sociability, however, are dimensions related to managing the emotions of others and would be expected to feature highly in participants of team sports. Previous research has shown the type of sport to be unrelated to trait EI (Laborde, Dosseville, Guillén and Chávez, 2014), although individual trait EI dimensions were not considered in the study by Laborde, Dosseville, Guillén and Chávez (2014) and their sample comprised only sport science students. Although sport science students usually have a main sport in which they compete, their studies require participation in different sports. The current study aimed to address this drawback and test athletes who are only involved in one sport, whilst also examining trait EI dimensions alongside overall trait EI scores.

Given the limits identified in previous research, the main aim of this paper was to investigate the links between trait EI and sport participation. In terms of the first aspect, i.e. the amount of sport participation, and based on work focusing on other PTLID (Guillen & Laborde, 2014), it was expected that trait EI and its main factors would positively correlate with the amount of sport participation in terms of duration but not frequency. The second aspect of trait EI and sport participation was to check whether trait EI differs according to the type of sport. We hypothesized that no differences in trait EI scores would be found between individual and team sport athletes, but that individual sports athletes would score higher on self-control than team sports athletes and team sport athletes would score higher on emotionality and sociability, based on the theoretical conceptualization of trait EI (Petrides, 2009b). Finally, a secondary aim of this paper was to investigate whether similar results would be obtained with the TEIQue-FF and the TEIQue-SF. Considering that recent research showed that both versions were equivalent in terms of construct validity (Laborde, Allen and Guillén, 2016), similar results were expected for our two main research questions, based on the TEIQue-FF and TEIQue-SF.

2. Methods

2.1. Participants

A total of 972 athletes (469 women, 503 men; mean age: 21.16 years, age range: 18–36 years; 360 involved in individual sports, and 612 involved in team sports) participated in this study. They were practicing their sports for a mean of 9.2 years ($SD = 4.8$), and were training in average 440 min a week ($SD = 257$ min), with an average session duration of 110 min ($SD = 42$ min). Athletes were involved in 38 individual sports (i.e., aikido, badminton, ballet, bodyboard, boxing, climbing, canarian ball, canarian wrestling, canoeing, crossfit, cycling, dance, fencing, field-hockey, horse-riding, ice-skating, judo, karate, kick boxing, golf, gymnastics, padel, parkour, muaythay, rhythmic gymnastics, running, sailing, skeet shooting, squash, surf, swimming, table tennis, taekwondo, tennis, track and fields, triathlon, weight-lifting, windsurfing) and nine team sports (i.e., baseball, basket-ball, football, futsal handball, roller derby, rugby, synchronized swimming, volleyball, and water-polo). All participants were involved in only one sport competitively.

2.2. Instrument: trait emotional intelligence questionnaire

The Spanish version of the TEIQue was used in this research (Petrides, 2009a). The factor structure of the TEIQue has already been

confirmed within a sport sample (Laborde, Dosseville, Guillén and Chávez, 2014). The TEIQue-FF contains 153 items, 15 facets, and four factors. The four factors are common to both the TEIQue-FF and TEIQue-SF: well-being (e.g., “On the whole, I’m pleased with my life”), self-control (e.g., “Others admire me for being relaxed”), emotionality (e.g., “I often pause and think about my feelings”), and sociability (e.g., “I would describe myself as a good negotiator”). The TEIQue-SF contains 30 items, taken in pairs from each of the 15 facets of the TEIQue-FF. Items are scored on a scale from 1 (completely disagree) to 7 (completely agree). In the current study, Cronbach’s α reliability coefficients for the TEIQue-FF were the following (TEIQue-SF between parentheses): well-being 0.84 (0.77), self-control 0.80 (0.68), emotionality 0.73 (0.71), sociability 0.75 (0.67), global trait EI = 0.90 (0.85).

2.3. Procedure

Ethics approval was obtained from the ethics committee of the local university. Participants were contacted through a team of research assistants that established contacts with sport clubs. The research assistants attended training sessions and described the study to the athletes, who were then given the possibility to participate. After signing an informed consent form, participants were asked to fill out the TEIQue-SF and TEIQue-FF, the order of which was counterbalanced among participants. In addition, participants were asked to answer questions about their sport practice, which sport they practiced, how many days a week, the average length of a training session, and the amount of time every week. Participants needed between 25 and 40 min, on average, to complete the questionnaire battery.

2.4. Data analysis

Data were first checked for normality and outliers. Data were normally distributed. To answer our first main research question, the relationship between trait EI and the amount of sport participation, a Pearson correlation analysis was conducted, including the four trait factors and global score for both the TEIQue-FF and TEIQue-SF, as well as the variables related to the amount of sport participation. For our second main research question, regarding the relationship between trait EI and type of sport, two MANOVAs (dependent variables: the four trait EI factors) and two ANOVAs (dependent variable: the global trait EI score) were run to investigate the differences in trait EI according to the type of sport, with the TEIQue-FF and with the TEIQue-SF. Finally, in order to investigate further the differences between the TEIQue-FF and TEIQue-SF, MANOVAs (dependent variables: the four trait EI factors) and ANOVAs (dependent variable: the global trait EI score) were run with the global sample as well as with both individual and team athletes samples, and a Pearson correlation analysis was run between the four main factors and global score of the TEIQue-FF and TEIQue-SF.

3. Results

3.1. Trait EI and amount of sport participation

Descriptive statistics regarding the TEIQue-FF and TEIQue-SF are presented in Table 1. The full correlation matrix displaying the variables related to sport participation as well as the TEIQue-FF and TEIQue-SF is presented in Table 2. Regarding the amount of practice per session (in min), positive significant correlations (between $r = 0.06$, $p = 0.048$, and $r = 0.11$, $p < 0.001$) were found with all trait EI dimensions except self-control, for both the TEIQue-SF and the TEIQue-FF. Regarding practice time per week (in days), positive significant correlations (between $r = 0.09$, $p = 0.005$, and $r = 0.13$, $p < 0.001$) were found with all trait EI dimensions except emotionality, for both the TEIQue-SF and the TEIQue-FF. Regarding practice time per week (in min), positive significant correlations (between $r = 0.08$, $p = 0.018$, and $r = 0.14$,

Table 1
Descriptive statistics.

TEIQue dimension	TEIQue form	Individual		Team		Global	
		M	SD	M	SD	M	SD
Well-being	Short	5.34	0.99	5.37	0.98	5.36	0.98
	Full	5.12	0.89	5.11	0.81	5.11	0.84
Self-control	Short	4.47	0.80	4.47	0.81	4.47	0.81
	Full	4.37	0.66	4.37	0.64	4.37	0.65
Emotionality	Short	4.88	0.91	4.86	0.80	4.87	0.84
	Full	4.73	0.72	4.68	0.62	4.70	0.66
Sociability	Short	4.61	0.82	4.63	0.81	4.62	0.81
	Full	4.55	0.67	4.52	0.64	4.53	0.65
Trait EI	Short	4.86	0.68	4.86	0.65	4.86	0.66
	Full	4.68	0.59	4.66	0.53	4.67	0.56

TEIQue = trait emotional intelligence questionnaire; $N = 972$.

$p < 0.001$) were found with all trait EI dimensions except emotionality, for both the TEIQue-SF and the TEIQue-FF.

3.2. Trait EI and type of sport

Regarding the four trait EI factors, the MANOVA with the TEIQue-FF did not indicate any difference between athletes from individual and team sports, $F(4, 967) = 0.374$, Wilks’ Lambda = 0.998, $p = 0.827$, partial $\eta^2 = 0.002$; and neither did the one with the TEIQue-SF, $F(4, 967) = 0.141$, Wilks’ Lambda = 0.999, $p = 0.967$, partial $\eta^2 = 0.001$. Regarding the global trait EI score, the ANOVA with the TEIQue-FF did not indicate any difference between athletes from individual and team sports, $F(1, 970) = 0.516$, $p = 0.473$, partial $\eta^2 = 0.001$, and neither did the one with the TEIQue-SF, $F(1, 970) = 0.002$, $p = 0.962$, partial $\eta^2 = 0$. Adding gender as a covariate did not change the results.

3.3. Comparison between the TEIQue-LF and TEIQue-SF

A repeated-measures MANOVA showed that there is a significant difference in the trait EI factors scores obtained with the TEIQue-FF and TEIQue-SF: $F(4, 968) = 51.169$; Wilks’ Lambda = 0.825, $p < 0.001$, partial $\eta^2 = 0.18$. Further ANOVAs with Greenhouse-Geisser correction showed that a significant difference was found in all trait EI factors: for emotionality $F(1, 971) = 96.005$; $p < 0.001$, partial $\eta^2 = 0.09$; for well-being $F(1, 971) = 152.054$; $p < 0.001$, partial $\eta^2 = 0.14$; for sociability $F(1, 971) = 21.085$; $p < 0.001$, partial $\eta^2 = 0.02$; self-control $F(1, 971) = 26.581$; $p < 0.001$, partial $\eta^2 = 0.03$. A repeated-measures ANOVA with global trait EI score obtained with the TEIQue-FF and TEIQue-SF showed a significant difference, with a high score obtained with the TEIQue-SF: $F(1, 971) = 270.841$; $p < 0.001$, partial $\eta^2 = 0.22$.

Regarding the difference between the trait EI scores obtained with TEIQue-FF and TEIQue-SF for the individual and team athletes samples, repeated-measures MANOVAs with the four trait EI factors as dependent variables revealed significant differences for both the individual athletes sample $F(4, 356) = 14.676$; Wilks’ Lambda = 0.858, $p < 0.001$, partial $\eta^2 = 0.14$; and the team athletes sample $F(4, 608) = 37.498$; Wilks’ Lambda = 0.802, $p < 0.001$, partial $\eta^2 = 0.20$. Repeated-measures ANOVAs with the global trait EI revealed significant differences for both the individual athletes samples, $F(1, 359) = 76.493$; $p < 0.001$, partial $\eta^2 = 0.18$ and the team athletes sample, $F(1, 611) = 199.038$; $p < 0.001$, partial $\eta^2 = 0.25$. With both samples, the scores obtained with the TEIQue-SF were systematically higher than those obtained with the TEIQue-FF.

More specifically regarding the trait EI factors, for individual athletes further ANOVAs with Greenhouse-Geisser correction showed a significant difference in all trait EI dimensions but one: emotionality $F(1, 359) = 24.251$; $p < 0.001$, partial $\eta^2 = 0.06$; well-being $F(1, 359) = 44.225$; $p < 0.001$, partial $\eta^2 = 0.11$; self-control $F(1, 359) = 9.553$; $p = 0.002$, partial $\eta^2 = 0.03$. For sociability it was only a tendency $F(1, 359) = 3.567$; $p = 0.060$, partial $\eta^2 = 0.01$.

Table 2
Correlation matrix for all study variables.

Study variables	1	2	3	4	5	6	7	8	9	10	11	12
1 Practice per week (min)	–											
2 Practice time per week (days)	0.33**	–										
3 Practice time per week (min)	0.84**	0.74**	–									
4 TEIQue-SF emotionality	0.06*	0.01	0.05	–								
5 TEIQue-FF emotionality	0.07*	0.00	0.05	0.77**	–							
6 TEIQue-SF self-control	0.04	0.10**	0.08*	0.40**	0.37**	–						
7 TEIQue-FF self-control	0.04	0.10**	0.08*	0.40**	0.48**	0.67**	–					
8 TEIQue-SF well-being	0.08**	0.12**	0.12**	0.51**	0.49**	0.37**	0.41**	–				
9 TEIQue-FF well-being	0.08*	0.10**	0.11**	0.52**	0.63**	0.36**	0.52**	0.78**	–			
10 TEIQue-SF sociability	0.07*	0.10**	0.10**	0.37**	0.36**	0.28**	0.24**	0.40**	0.37**	–		
11 TEIQue-FF sociability	0.11**	0.13**	0.14**	0.43**	0.56**	0.34**	0.39**	0.45**	0.55**	0.69**	–	
12 TEIQue-SF score EI	0.08*	0.11**	0.11**	0.80**	0.70**	0.65**	0.58**	0.80**	0.73**	0.66**	0.64**	–
13 TEIQue-FF score EI	0.09**	0.09**	0.11**	0.68**	0.85**	0.53**	0.74**	0.68**	0.86**	0.49**	0.74**	0.83**

TEIQue = trait emotional intelligence questionnaire; SF = short-form; FF = full-form; $n = 972$.

* $p < 0.05$.

** $p < 0.01$.

For team athletes further ANOVAs with Greenhouse-Geisser correction showed a significant difference in all trait EI factors: emotionality $F(1, 611) = 75.826$; $p < 0.001$, partial $\eta^2 = 0.11$; well-being $F(1, 611) = 109.614$; $p < 0.001$, partial $\eta^2 = 0.15$; sociability $F(1, 611) = 18.907$; $p < 0.001$, partial $\eta^2 = 0.03$; self-control $F(1, 611) = 17.003$; $p < 0.001$, partial $\eta^2 = 0.03$.

The correlations between the scales of TEIQue-FF and TEIQue-SF were all large: well-being ($r = 0.78$, $p < 0.001$), self-control ($r = 0.67$, $p < 0.001$), emotionality ($r = 0.77$, $p < 0.001$), sociability ($r = 0.69$, $p < 0.001$), and global trait EI ($r = 0.83$, $p < 0.001$). The correlations between the scales of TEIQue-FF and TEIQue-SF disattenuated for unreliability were the following: well-being ($r = 0.97$), self-control ($r = 0.91$), emotionality ($r = 1.00$), sociability ($r = 0.97$), and global trait EI ($r = 0.95$).

4. Discussion

The main aim of this paper was to clarify the association between trait EI, amount of sport participation, and type of sport. A secondary aim was to investigate whether similar results would be obtained with the TEIQue-FF and TEIQue-SF.

Our hypotheses regarding the association between trait EI and the amount of sport participation are partially confirmed, supporting the notion that trait EI, in conjunction with other important personality traits, constitutes the basis of a healthy personality (Rushton et al., 2008). More specifically, regarding the relationship between trait EI and time spent practicing sport, our hypothesis is partially confirmed, as the majority of trait EI dimensions showed positive correlations with sport participation duration. Our findings are therefore in line with previous research into hope, persistence, and resilience (Guillen & Laborde, 2014) that present similar effect sizes. However, in this study trait EI also showed links with sport participation frequency, which was not found with hope, persistence, and resilience.

Overall, our findings reflect the established positive relationship between trait EI and physical activity engagement, a relationship that can be partially explained by higher EI facilitating higher compliance with health-related goals through motivational mechanisms (Saklofske, Austin, Galloway, & Davidson, 2007; Saklofske, Austin, Rohr, & Andrews, 2007; Solanki & Lane, 2010). Regarding the amount of practice per session, only the self-control factor showed no correlation, which is surprising given that self-control should be linked to how many people persist with exercise and overcome urges to stop when it becomes demanding (Audiffren & André, 2015). It would be interesting to check whether this result is specific to self-control as conceptualized by the TEIQue, or if we would find similar results with the traditional instrument used to measure self-control, the trait self-control scale (Tangney, Baumeister, & Boone, 2004). Regarding practice

time per week (in days) and total amount of practice a week, only the emotionality factor was not related. This factor reflects the perception of one's own and others' feelings, the communication of one's feelings to others, one's fulfillment in personal relationships, and one's perceived ability to consider someone else's perspective (Petrides, 2009b). Given that the emotionality factor is significantly related to the length of practice sessions, it seems more important to have a longer practice session than to participate more frequently, potentially because managing one's and others' emotions plays a greater role in longer sessions as tiredness sets in. However, this is only speculative and the different relationships between training duration and training frequency, respectively, and trait EI emotionality should be investigated further. Finally, regarding effect sizes, the effects we found between trait EI and sport participation are small and below the recommended minimum effect size that constitute a "practically" significant effect for social science research (Ferguson, 2009). This might suggest that the association between trait EI and sport participation is of limited practical value for understanding how to promote sport participation or to increase trait EI. However, sometimes true effects are small and can still have meaningful consequences when considered at the population level, for example when considering the existence of a healthy personality, of which emotional intelligence may form a part, that predisposes an individual to engage in healthy activities (Rushton et al., 2008). Other personality variables, such as those measured with the big five (Allen & Laborde, 2014), may also be at play.

Regarding our second main aim, our hypothesis was partially validated. Firstly, in line with our prediction, trait EI dimensions did not differ according to the type of sport, which complements previous research using the TEIQue (Laborde, Dosseville, Guillén and Chávez, 2014) but differs from research conducted with other positive PTLID, where self-efficacy, self-esteem, positivity, resilience, perseverance were found to be higher in athletes from individual sports (Laborde, Guillén and Mosley, 2016) than in athletes from team sports. This would suggest that trait EI differs from other positive PTLID in the sense that, whilst the other PTLID mentioned above were mainly targeting the individual itself, trait EI may be relevant in both individual and team sports, considering the aspects related to managing others' emotions in particular (Petrides, 2009b). The fact that trait EI and its dimensions are equally relevant for individual and team sports is confirmed by the fact that we found no differences in the trait EI dimensions of self-control, emotionality, and sociability between individual and team athletes, contrary to our prediction based on trait EI theory (Petrides, 2009b).

Our final aim was to investigate whether similar results would be obtained with the TEIQue-FF and TEIQue-SF. Regarding the type of sport, similar results were obtained with both questionnaires in the sense that a similar effect size has been found for individual and team

sport athletes. However, one should note that the scores obtained with the TEIQue-SF were systematically higher than those obtained with the TEIQue-FF. This was also true when the full sample was analyzed together. However, large correlations were obtained between the four factors and the global trait EI score as calculated with the TEIQue-FF and the TEIQue-SF. Moreover, similar correlations were found between the amount of time spent with sport practice, and the TEIQue-FF and TEIQue-SF. This would be in line with the research on concurrent and construct validity of the TEIQue-FF and TEIQue-SF (Laborde, Allen and Guillén, 2016). The difference in scoring between the two versions could originate from the fact that the items taken from the TEIQue-FF to build the TEIQue-SF relied on the highest factor loadings, and were consequently the most representative of each dimension, which could potentially explain the stronger scoring. The implication of this finding is that researchers could use in their research either the TEIQue-FF or the TEIQue-SF, but not mix both in one study, given this might confound the results.

The main limitation of this study was that, due to its cross-sectional design, causality cannot be inferred through our results. Longitudinal studies are therefore needed to evaluate whether trait EI would develop when increasing the frequency and duration of sport participation, or whether athletes possessing higher trait EI would consequently train longer and more frequently. Moreover, it would be interesting to couple a subjective assessment of sport participation, such as that of this study, with an objective measure of physical activity that uses data from accelerometers (Logan, Duncan, Harris, Hinckson, & Schofield, 2016).

5. Conclusion

This study showed that trait EI was positively related to sport participation duration and frequency. Moreover, we clarified that research could use either the TEIQue-SF or TEIQue-FF but not mix data from both scales within one study. We know that trait EI plays an important role in several aspects of sport performance (Laborde, Dosseville and Allen, 2016), and that specifically designed interventions can help to increase trait EI in athletes (Campo, Laborde, & Mosley, 2016). Exploring whether training longer and more frequently can facilitate the development of trait EI represents an exciting question for future research.

References

- Allen, M. S., & Laborde, S. (2014). The role of personality in sport and physical activity. *Current Directions in Psychological Science*, 23, 460–465. <http://dx.doi.org/10.1177/0963721414550705>.
- Allen, M. S., Greenlees, I., & Jones, M. V. (2013). Personality in sport: A comprehensive review. *International Review of Sport and Exercise Psychology*, 6, 184–208.
- Allen, M. S., Magee, C. A., Vella, S. A., & Laborde, S. (2016). Bidirectional associations between personality and physical activity in adulthood. *Health Psychology*. <http://dx.doi.org/10.1037/hea0000371>.
- Audiffren, M., & André, N. (2015). The strength model of self-control revisited: Linking acute and chronic effects of exercise on executive functions. *Journal of Sport and Health Science*, 4, 30–46. <http://dx.doi.org/10.1016/j.jshs.2014.09.002>.
- Campo, M., Laborde, S., & Mosley, E. (2016). Emotional Intelligence Training in Team Sports. *Journal of Individual Differences*, 37(3), 152–158. <http://dx.doi.org/10.1027/1614-0001/a000201>.
- Ferguson, C. J. (2009). An effect size primer: A guide for clinicians and researchers. *Professional Psychology: Research and Practice*, 40(5), 532–538. <http://dx.doi.org/10.1037/a0015808>.
- Guillen, F., & Laborde, S. (2014). Higher-order structure of mental toughness and the analysis of latent mean differences between athletes from 34 disciplines and non-athletes. *Personality and Individual Differences*, 60, 30–35. <http://dx.doi.org/10.1016/j.paid.2013.11.019>.
- Haskell, W. L., Lee, I. M., Pate, R. R., Powell, K. E., Blair, S. N., Franklin, B. A., ... Bauman, A. (2007). Physical activity and public health: Updated recommendation for adults from the American College of Sports Medicine and the American Heart Association. *Medicine & Science in Sports & Exercise*, 39, 1423–1434. <http://dx.doi.org/10.1249/mss.0b013e3180616b27>.
- Hengartner, M. P., van der Linden, D., Bohleber, L., & von Wyl, A. (2016). Big five personality traits and the general factor of personality as moderators of stress and coping reactions following an emergency alarm on a Swiss university campus. *Stress and Health*. <http://dx.doi.org/10.1002/smi.2671>.
- Laborde, S., Brüll, A., Weber, J., & Anders, L. S. (2011). Trait emotional intelligence in sports: A protective role against stress through heart rate variability? *Personality and Individual Differences*, 51, 23–27. <http://dx.doi.org/10.1016/j.paid.2011.03.003>.
- Laborde, S., You, M., Dosseville, F., & Salinas, A. (2012). Culture, individual differences, and situation: Influence on coping in French and Chinese table tennis players. *European Journal of Sport Science*, 12, 255–261. <http://dx.doi.org/10.1080/17461391.2011.566367>.
- Laborde, S., Lautenbach, F., Allen, M. S., Herbert, C., & Achtzehn, S. (2014a). The role of trait emotional intelligence in emotion regulation and performance under pressure. *Personality and Individual Differences*, 57, 43–47. <http://dx.doi.org/10.1016/j.paid.2013.09.013>.
- Laborde, S., Dosseville, F., Guillén, F., & Chávez, E. (2014b). Validity of the trait emotional intelligence questionnaire in sports and its links with performance satisfaction. *Psychology of Sport and Exercise*, 15, 481–490. <http://dx.doi.org/10.1016/j.psychsport.2014.05.001>.
- Laborde, S., Lautenbach, F., & Allen, M. S. (2015). The contribution of coping-related variables and heart rate variability to visual search performance under pressure. *Physiology & Behavior*, 139, 532–540. <http://dx.doi.org/10.1016/j.physbeh.2014.12.003>.
- Laborde, S., Dosseville, F., & Allen, M. S. (2016a). Emotional intelligence in sport and exercise: A systematic review. *Scandinavian Journal of Medicine & Science in Sports*, 26, 862–874. <http://dx.doi.org/10.1111/sms.12510>.
- Laborde, S., Guillén, F., & Mosley, E. (2016b). Positive personality-trait-like individual differences in athletes from individual- and team sports and in non-athletes. *Psychology of Sport and Exercise*, 26, 9–13. <http://dx.doi.org/10.1016/j.psychsport.2016.05.009>.
- Laborde, S., Allen, M. S., & Guillén, F. (2016c). Construct and concurrent validity of the short- and long-form versions of the trait emotional intelligence questionnaire. *Personality and Individual Differences*, 101, 232–235. <http://dx.doi.org/10.1016/j.paid.2016.06.009>.
- Logan, G. R., Duncan, S., Harris, N. K., Hinckson, E. A., & Schofield, G. (2016). Adolescent physical activity levels: Discrepancies with accelerometer data analysis. *Journal of Sports Sciences*, 34, 2047–2053. <http://dx.doi.org/10.1080/02640414.2016.1150599>.
- Mount, M. K., Barrick, M. R., Scullen, S. M., & Rounds, J. (2005). Higher-order dimensions of the big five personality traits and the big six vocational interest types. *Personnel Psychology*, 58(2), 447–478. <http://dx.doi.org/10.1111/j.1744-6570.2005.00468.x>.
- Mroczkowska, H. (1997). Attributive reduction of failure-borne losses in view of team cohesion - analogies and differences in individual versus team competition. *Biology of Sport*, 14, 325–332.
- Petrides, K. V. (2009a). Psychometric properties of the trait emotional intelligence questionnaire (TEIQue). In C. Stough, D. H. Saklofske, & J. D. A. Parker (Eds.), *Assessing emotional intelligence: Theory, research, and applications* (pp. 85–101). New York, NY: Springer Science.
- Petrides, K. V. (2009b). *Technical manual for the trait emotional intelligence questionnaire (TEIQue)*. London, England: London Psychometric Laboratory.
- Petrides, K. V., Pita, R., & Kokkinaki, F. (2007). The location of trait emotional intelligence in personality factor space. *British Journal of Psychology*, 98, 273–289. <http://dx.doi.org/10.1348/000712606X120618>.
- Petrides, K. V., Vernon, P. A., Schermer, J. A., Ligthart, L., Boomsma, D. I., & Veselka, L. (2010). Relationships between trait emotional intelligence and the big five in the Netherlands. *Personality and Individual Differences*, 48, 906–910. <http://dx.doi.org/10.1016/j.paid.2010.02.019>.
- Rushton, J. P., Bons, T. A., & Hur, Y. -M. (2008). The genetics and evolution of the general factor of personality. *Journal of Research in Personality*, 42(5), 1173–1185. <http://dx.doi.org/10.1016/j.jrp.2008.03.002>.
- Saklofske, D. H., Austin, E. J., Galloway, J., & Davidson, K. (2007a). Individual difference correlates of health-related behaviours: Preliminary evidence for links between emotional intelligence and coping. *Personality and Individual Differences*, 42, 491–502. <http://dx.doi.org/10.1016/j.paid.2006.08.006>.
- Saklofske, D. H., Austin, E. J., Rohr, B. A., & Andrews, J. J. W. (2007b). Personality, emotional intelligence and exercise. *Journal of Health Psychology*, 12, 937–948. <http://dx.doi.org/10.1177/1359105307082458>.
- Solanki, D., & Lane, A. M. (2010). Relationships between exercise as a mood regulation strategy and trait emotional intelligence. *Asian Journal of Sports Medicine*, 1, 195–200.
- Tangney, J. P., Baumeister, R. F., & Boone, A. L. (2004). High self-control predicts good adjustment, less pathology, better grades, and interpersonal success. *Journal of Personality*, 72, 271–324. <http://dx.doi.org/10.1111/j.0022-3506.2004.00263.x>.