



## Measuring perceived emotional intelligence in adolescent population: Validation of the Short Trait Meta-Mood Scale (TMMS-23)<sup>1</sup>

Arantxa Gorostiaga<sup>2</sup>, Nekane Balluerka, Aitor Aritzeta, Mikel Haranburu, and Itziar Alonso-Arbiol (*Universidad del País Vasco, Spain*)

**ABSTRACT.** Although emotional intelligence is related to psychological and social adjustment, currently there is not any tool that enables valid and reliable measurement of such construct in the Basque adolescent population. The TMMS-23 is a well-established assessment tool of perceived emotional intelligence in adolescence that measures people's beliefs and attitudes about their own emotional experience. The aim of this instrumental study was to adapt the TMMS-23 to the Basque culture. We examined the psychometric properties of the Basque TMMS-23 in a sample of 1,038 participants (ages ranging between 13 and 19). The results of the CFA corroborated the three-factor structure of the original scale (*Attention to feelings, Clarity of feelings, and Mood repair*). Moreover, these dimensions showed adequate internal consistency and temporal stability and correlated among themselves in the expected direction. The study also showed some evidence of convergent validity and it provided external validation data based on differences in the TMMS-23 dimensions according to participants' self-concept, gender, and age.

**KEYWORDS.** Trait Meta-Mood Scale. Emotional intelligence. Test adaptation. Psychometric properties. Instrumental study

<sup>1</sup> Acknowledgements. The study was funded by a grant from Science and Innovation Ministry of the Spanish Government (PSI2009-07280), by a grant of the Gipuzkoan Network of Science, Technology and Innovation Program (OF94/2008) from the Gipuzkoa Provincial Council and European Union (FEDER), and by a grant from the Research Bureau of the University of the Basque Country (General Funding for Research Groups, GIU08/09).

<sup>2</sup> Correspondence: Facultad de Psicología. Universidad del País Vasco. 20018 San Sebastián (Spain). E-mail: arantxa.gorostiaga@ehu.es

**RESUMEN.** A pesar de la relación existente entre la inteligencia emocional y el ajuste psicológico y social, actualmente no se dispone de ningún instrumento que evalúe de forma válida y fiable dicho constructo en la población adolescente vascoparlante. El TMMS-23 es un instrumento ampliamente utilizado que evalúa la inteligencia emocional autopercebida en la adolescencia a partir de las creencias y actitudes de los sujetos sobre su propia experiencia emocional. El objetivo del presente estudio instrumental consistió en adaptar el TMMS-23 a la cultura vasca. Las propiedades psicométricas de la versión en lengua vasca del TMMS-23 fueron examinadas en una muestra de 1038 adolescentes con edades comprendidas entre los 13 y los 19 años. Los resultados del AFC corroboraron la estructura de tres factores de la escala original (*Atención, Comprensión y Regulación emocional*). Las tres dimensiones mostraron buena consistencia interna y estabilidad temporal, además de correlacionar entre sí en la dirección esperada. Asimismo, se obtuvieron evidencias de validez convergente, así como evidencias externas de validez asociadas a las diferencias observadas en las dimensiones del TMMS-23 en función del autoconcepto, el sexo y la edad de los participantes.

**PALABRAS CLAVE.** Trait Meta-Mood Scale. Inteligencia emocional. Adaptación de tests. Propiedades psicométricas. Estudio instrumental.

Adolescence is a critical period of life in which abilities to express and understand emotions, to assign meaning to emotional experience, and to regulate feelings may be particularly helpful for psychological and social adjustment (Mavroveli, Petrides, Rieffe, and Bakker, 2007). The aforementioned abilities are thought to form the basis of the Emotional Intelligence (EI) construct (Mayer and Salovey, 1997). Since Mayer, Perkins, Caruso, and Salovey (2001) demonstrated that adolescents with higher EI were more successful in managing their emotions (*i.e.*, identify their own and others' emotions in different situations, use that information to guide their actions, and resist peer pressure), several studies have been conducted to examine the predictive capacity of EI on adolescent emotional and social development and adjustment. EI has shown to be related to social success understood as greater empathy, less negative interactions with peers, higher-quality relationships and lower levels of violence and drug problems (*e.g.*, Brackett and Salovey, 2006; Mayer, Salovey, and Caruso, 2004). It has also been related to coping behaviours (Downey, Johnston, Hansen, Birney, and Stough, 2010; Mavroveli *et al.*, 2007; Mikolajczak, Petrides, and Hurry, 2009), and to higher life satisfaction and lower perceived stress (Extremera, Duran, and Rey, 2007). Moreover, in teenager samples, self-perceived EI is negatively related to depressive thoughts and frequency of somatic complaints (Mavroveli *et al.*, 2007), and to maladaptive coping styles and depression (Mikolajczak *et al.*, 2009). EI has also been negatively related to tobacco and alcohol use, basically because adolescents with high EI show greater mental ability to detect and confront unwanted peer pressure (Parker, Taylor, Eastabrook, Schell, and Wood, 2008; Trinidad and Johnson, 2002).

However, the association between EI and emotional dimension of the self-concept seems to be different depending on the dimension of EI. In fact, while attention to emotions has been negatively related to emotional self-concept (Augusto-Landa, López-

Zafra, Aguilar-Luzón, and Salguero de Ugarte, 2009), clarity of emotions and mood repair have shown a positive correlation to the emotional process of self-concept (Augusto-Landa and López-Zafra, 2010).

These complex relationships have also been observed between EI dimensions and gender. In fact, based on self-report measures, some researchers have shown that adult women present a greater tendency to pay attention to their emotions than men, but they show lower clarity and emotional repair (Fernández-Berrocal and Extremera, 2008; Thayer, Rossy, Ruiz-Padial, and Johnsen, 2003). The same pattern of higher scores has been found for women in emotional attention in a recent study with late adolescents, although no gender differences have emerged in these teenagers in both clarity of emotions and mood repair dimensions (Salguero, Fernández-Berrocal, Balluerka, and Aritzeta, 2010).

Due to its relevance, important efforts have been made lately for the creation of valid assessment instruments of EI (Extremera, Salguero, Fernández-Berrocal, and Ruíz, 2009). Two basic theoretical models are being tapped with these new instruments. The first one refers to ability models focused in the analysis of EI as a group of skills (Salovey and Mayer, 1990), whereas the second one, referred to as mixed models, conceives EI as a group of social and emotional competences analyzed by means of self-perception (Bar-On, 2006). Within this last group, the Trait Meta-Mood Scale (TMMS; Salovey, Mayer, Goldman, Turvey, and Palfai, 1995) is one of the most widely used instruments.

The TMMS was the first instrument developed by the authors who originally identified the EI construct. It was designed to assess individual differences in the process of emotional regulation, involving what is called emotional meta-knowledge, which combines the monitoring, appraisal and regulation of one's own feelings and emotions (Salovey *et al.*, 1995). It is, therefore, a measure of people's beliefs and attitudes about the importance of paying attention to their emotions and feelings, their capacity for understanding their own emotions, and their ability to regulate negative emotional states and prolong positive ones. It is an index of perceived EI dealing with basic aspects of it from an intrapersonal perspective (Salovey, Stroud, Woolery, and Epel, 2002).

Studies examining the psychometric properties of the TMMS have shown adequate reliability and validity in its original version (Salovey *et al.*, 1995) as well as in different adaptations to other populations (Li, Yan, Yin, and Wu, 2002; Palmer, Gignac, Bates, and Stough, 2003). In Spain, a short version of the TMMS for adult population (Fernández-Berrocal, Extremera, and Ramos, 2004) showed high reliability for each component and evidence of temporal stability for a 4-week interval. This short version was adapted to adolescent population using a sample of 1,497 students (840 females and 657 males) aged between 12 and 17, all from secondary schools in the South of Spain. This version, which was used as the source for the adaptation of the TMMS into the Basque culture, replicated the three-factor structure of the original scale. Its three dimensions showed high internal consistency values (all above .86). Evidence of discriminant validity was found for this short version of the TMMS adapted to Spanish adolescents, specifically with the big five personality factors; validity based on the relationship between TMMS scores and age and gender variables was also found (Salguero *et al.*, 2010).

### *Assessment of EI in the Basque Country*

The Basque Country is a region of two million citizens located in the North of Spain. Although both Spanish and Basque are official languages, educational services provided in school before enrolment at university are offered almost exclusively in Basque. This means that all materials used by teachers and psychologists with children and adolescents must be in that language, including psychological tests. Therefore, it is necessary that methodologically rigorous processes of test elaboration and test adaptation are developed when a new or an adapted measure is required for the assessment of psychological dimensions in this school context. However, despite the clear relevance of EI in the educational field, there is still a lack of sound measures for its correct assessment in Basque language.

Some theoretical/methodological arguments for pursuing the Basque adaptation of TMMS-23 should be mentioned. The Basque language (Basque or *Euskara*) has important differences as compared to Spanish. As for its origins, Basque is a unique non-Indo-European language in Western Europe, with an ancient history and characterized for being genetically isolated to other languages (Trask, 1997). Other important differences have been mentioned in the literature -*i.e.*, semantic, syntactic, variety of lexicon, gender use, and compound names formation- (see Gorostiaga, Balluerka, Alonso-Arbiol, and Haranburu, 2011). The correspondence between different translations depends on the (dis)similarity of the languages involved in the comparison (*e.g.*, Su-ju, 2006). This pertains to the case of Basque and Spanish, which are quite different languages; therefore, their degree of structural correspondence would be expected to be lower than in the case of more similar languages (Gorostiaga *et al.*, 2011). Thus, the need for the development of a Basque version is clearly justified here, following standard procedures.

The Basque version of the TMMS-23 was created following a forward-backward translation design based on international guidelines (Balluerka, Gorostiaga, Alonso-Arbiol, and Haranburu, 2007; Hambleton and Patsula, 1999). Each item of the Spanish short version of the TMMS for adolescents (Salguero *et al.*, 2010) was independently translated into Basque by three bilingual researchers fluent in both languages. All were familiar with both cultures and with the basic psychometric features related to item construction, and one of them was also an expert in the field of personality assessment. The three translations were compared and subject to discussion until an agreement was reached for each item. Stemmed from this version, other three researchers of similar characteristics translated the items from Basque into Spanish independently. After that, they obtained an agreed version. Finally, the six members of the translation team compared the items of original version with those from the inversely adapted version, examining the possible non-equivalence in meaning. As a consequence of this analysis, some changes were made in the Basque version of the TMMS-23. Some of the psychometric properties of this preliminary version were studied in a pilot sample composed by 132 adolescents (76 females and 56 males) aged between 13 and 19 years ( $M = 16.05$ ;  $SD = 1.44$ ). Nevertheless, the Basque TMMS-23 has not yet been subjected to a systematic study of validation with a large sample, which would provide a useful tool for the assessment of emotional intelligence in the target population (Basque adolescent students).

With the aim of filling this gap, the main goal of the present instrumental study (Carretero-Dios and Pérez, 2007; Montero and León, 2007) was to obtain validity evidences of the Basque short version of the TMMS in a large sample of Basque adolescents. We examined the dimensionality of the instrument by means of confirmatory factor analysis. We also analyzed its reliability with regard to internal consistency and temporal stability. Likewise, some evidence about construct and convergent validity was obtained. Finally, relationships between the dimensions of TMMS-23 and social and emotional self-concept, gender and age variables were explored in order to get additional external validation data susceptible to be used in future studies aimed at cross-cultural comparisons with the data obtained in other languages and cultures.

## Method

### *Participants*

The sample was made of 1,038 adolescents (512 female and 526 male students) aged between 13 and 19 ( $M = 16.22$ ;  $SD = 1.52$ ). They were students attending secondary schools in the Basque Country.

### *Instruments*

- Basque Short Version of the Trait Meta-Mood Scale (TMMS-23). Through three subscales, the TMMS-23 is a self-report tool that assesses the extent to which people: a) pay attention to and value their feelings (*Attention*: e.g., «I think about my mood constantly»), b) feel clear rather than confused about their feelings (*Clarity*: e.g., «I almost always know exactly how I am feeling»), and c) use positive thinking to repair negative moods (*Repair*: e.g., «Although I am sometimes sad, I have a mostly optimistic outlook»). It has 23 items to be answered on a 5-point Likert scale, with options ranging from «*Strongly disagree*» to «*Strongly agree*». See Appendix 1.
- The Schutte Self-Report Inventory (SSREI; Schutte *et al.*, 1998). This self-report instrument is comprised of 33 items rated on a 5-point Likert scale and with options ranging from «*Strongly disagree*» to «*Strongly agree*». Like the TMMS-23, the SSREI is based on Salovey and Mayer's (1990) EI model. The scale has shown a clear three-factor structure, including *Appraisal and expression of emotions*, *Regulation of emotions*, and *Utilization of emotions*. It has good values of internal consistency (.87) and test-retest reliability (.78). Furthermore, evidence of convergent validity with the Toronto Alexithymia Scale, the Trait Meta-Mood Scale, and the Zung Depression Scale, as well as of discriminant validity with regard to the NEO Personality Inventory has also been found (Schutte *et al.*, 1998).
- Self-Concept Form 5 (AF-5; García and Musitu, 1999). This instrument has 30 statements to be rated by the respondent from 1 to 99 according to the degree of agreement with each statement. It measures 5 dimensions of self-concept: *Academic self-concept*, *Social self-concept*, *Emotional self-concept*, *Family self-concept*, and *Physical self-concept*. It has shown a five-factor structure that

explains 51% of total variance. The alpha coefficient for the global self-concept is .81, and the test-retest Pearson correlation values for the five dimensions range from .53 to .70 (García and Musitu, 1999). Focusing on both dimensions used in this work, *Social self-concept* refers to the perception of subject's own performance in social relationships while *Emotional self-concept* is concerning to the perception of subject's own emotional state and their responses to specific situations.

### *Procedure*

The data collection was carried out in classroom during normal school days by two researchers. Informed consents of the school authorities, the pupils and their parents were collected. The study followed the ethic guidelines of the Spanish Official Association of Psychologist and had the approval of the ethic committee for research related with Human of the University of the Basque Country. The questionnaires were administered in a battery which was set in this order: TMMS-23, SSREI and AF-5.

## **Results**

### *Confirmatory Factor Analysis*

To test the theoretical structure of the TMMS-23, a Robust Weighted Least Squares Factor Analysis (CFA) was conducted over the polychoric correlation matrix using LISREL 8.80 (Jöreskog and Sörbom, 1999). This estimation method was used because the indicators were not measured on a continuous scale and because this method produces accurate test statistics, parameter estimates, and standard errors under a great variety of conditions. As the original three orthogonal factor model proposed by Salovey *et al.* (1995) has been corroborated in different adaptations of the instrument, we decided to test only the fit of this model. The correlation between *Clarity* and *Repair* was .33; between *Attention* and *Clarity* .20, and between *Attention* and *Repair* .08. The adequacy of model fit was assessed by means of the following indices:  $\chi^2$  likelihood ratio statistic, goodness-of-fit (GFI) and adjusted goodness-of-fit (AGFI) indices, non-normed-fit index (NNFI), comparative-fit index (CFI) and root mean square error of approximation (RMSEA). GFI, AGFI, NNFI, and CFI values range from zero to 1.00, where fit-indices greater than .90 indicate a good fit (Hoyle, 1995). For the RMSEA, values of less than .05 are considered a close fit, and of less than .08, an adequate fit (Finch and West, 1997). The value of the chi-square statistic,  $\chi^2_{227, N=1038} = 1276.86, p = .01$ , indicated a statistically significant lack of fit of the model. However, the sensitivity of the chi-square statistic to the violation of the assumptions on which it is based and, specifically, its dependence on sample size, mean that the fit assessment should be based mainly on alternative indices. In fact, when measures of fit less sensitive to sample size and to deviations from normality were used, the results showed a good fit, with values of GFI (.97), AGFI (.96), NNFI (.96) and CFI (.96) close to 1.00 and RMSEA value equal to .05. Modification Indices did not suggest that any item should be included in a factor different from the ones established in the Salovey *et al.*'s (1995) model.

*Reliability*

The temporal stability of TMMS-23 dimensions was evaluated using the test-retest procedure, administering the instrument again in a smaller convenient subsample (115 female and 123 male students) one month after the first data collection. The election of the subsample was done along with the managers of the school based on a criterion of time-availability of the schools. Correlation indices for the dimensions between the two moments were adequate: .73 (*Attention*), .68 (*Clarity*), and .68 (*Repair*).

Internal consistency of each dimension of the scale was estimated in the whole sample by means of Cronbach’s alpha coefficient. Values in the total sample were .84, .80, and .82 for the subscales of *Attention*, *Clarity*, and *Repair*, respectively. It can be concluded that internal consistency is high in all the dimensions.

*Relationship between TMMS-23 dimensions and SSREI subscales*

As a mean of providing some convergent evidence of the instrument, Pearson correlation coefficients were also calculated between the scores of the TMMS-23 and SSREI subscales (see Table 1). As expected, the three dimensions of TMMS-23 were positively correlated with SSREI subscales, although the correlations indexes are moderate. Specifically, and in line with theoretical predicted relationships, the *Attention* dimension of the TMMS-23 was correlated with the *Appraisal and expression of emotions* of the SSREI. Likewise, as anticipated, correlations were observed between *Clarity* and *Repair* dimensions of the TMMS and subscales of *Use of emotions* and *Regulation of emotions* of the SSREI, although all these correlations are of medium size.

**TABLE 1.** Pearson correlation coefficients between the TMMS-23 and SSREI subscales.

	<i>SSREI Subscales</i>		
	<i>Appraisal and expression of emotions</i>	<i>Use of emotions</i>	<i>Regulation of emotions</i>
TMMS-23 Subscales			
<i>Attention</i>	.41*	.29*	.25*
<i>Clarity</i>	.29*	.34*	.47*
<i>Repair</i>	.24*	.48*	.39*

\*  $p < .0001$

*Relationship between TMMS-23 dimensions, and social and emotional self-concept, gender, and age*

In order to obtain additional external validation data, we examined the relationships between the TMMS-23 dimensions, and social and emotional self-concept, gender, and age. It was expected that, in comparison with adolescents who show low social self-concept (under 30 percentile based on the scores obtained in the social dimension of the AF5 questionnaire), adolescents with high social self-concept (above 70 percentile



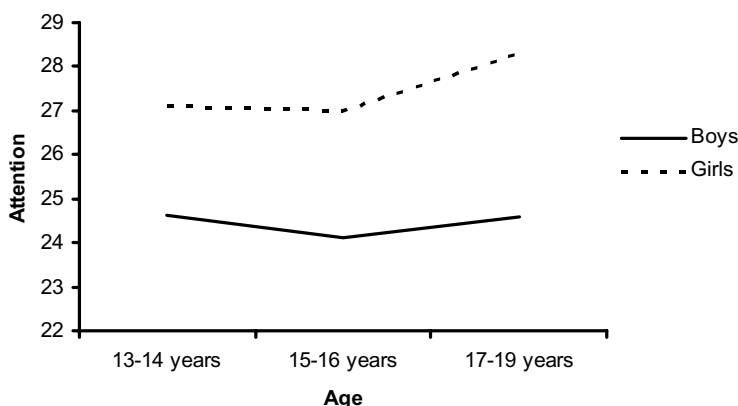
in the social dimension of the AF5 questionnaire) would pay more attention to their feelings, would feel more clear about them, and would use positive thinking in a greater extent to repair negative moods. Comparison between means carried out using Student *t* index showed that teenagers with high social self-concept obtained a higher score ( $M = 26.78$ ;  $SD = 5.50$ ) than teenagers with low social self-concept ( $M = 25.07$ ;  $SD = 5.51$ ) in attention to feelings,  $t_{647} = 3.95$ ;  $p = .0001$ , although the effect size for such difference of means was small (Cohen's  $d = .32$ ). As for the comparison between teenagers with high and low social self-concept in clarity of emotions, Student *t* index also showed a statistically significant difference between both groups,  $t_{647} = 6.11$ ;  $p = .0001$ . Like in the previous dimension, adolescents with high social self-concept obtained a higher score ( $M = 27.07$ ;  $SD = 5.63$ ) than adolescents with low social self-concept ( $M = 24.53$ ;  $SD = 4.98$ ) in clarity of emotions (Cohen's  $d = .49$ ). The same pattern was observed for mood repair, where high social self-concept adolescents obtained a higher score ( $M = 24.62$ ;  $SD = 5.08$ ) than low social self-concept adolescents ( $M = 21.30$ ;  $SD = 4.92$ ),  $t_{647} = 8.43$ ;  $p = .0001$ ; Cohen's  $d = .67$ .

Regarding to comparison between teenagers with high emotional self-concept (above 70 percentile based on the scores obtained in the emotional dimension of AF5 questionnaire) and low emotional self-concept (under 30 percentile in the emotional dimension of the AF5 questionnaire) in the three dimensions of TMMS-23, the obtained results were in line with the findings of other authors (Augusto-Landa and López-Zafra, 2010; Augusto-Landa *et al.*, 2009). In this direction, low emotional self-concept teenagers obtained a higher score ( $M = 27.02$ ;  $SD = 5.19$ ) than high emotional self-concept teenagers ( $M = 25.05$ ;  $SD = 5.83$ ) in attention to feelings,  $t_{645} = 4.54$ ;  $p = .0001$ , although the effect size for such difference of means was small (Cohen's  $d = .36$ ). On the other hand, teenagers with high emotional self-concept obtained a higher score ( $M = 27.3$ ;  $SD = 5.45$ ) than teenagers with low emotional self-concept ( $M = 24.21$ ;  $SD = 5.2$ ) in clarity of emotions,  $t_{645} = 7.37$ ;  $p = .0001$ ; Cohen's  $d = .60$ . The same pattern was observed for mood repair, where teenagers with high emotional self-concept obtained a higher score ( $M = 23.58$ ;  $SD = 5.22$ ) than teenagers with low emotional self-concept ( $M = 22.15$ ;  $SD = 5.22$ ),  $t_{645} = 3.48$ ;  $p = .001$ , although in this last case the effect size was small (Cohen's  $d = .28$ ).

The analysis of variance carried out taking gender and age as predictor variables and *Attention* as criterion variable revealed a statistically significant effect both of gender,  $F_{(1, 1032)} = 64.78$ ;  $p = .0001$ , and age,  $F_{(2, 1032)} = 3.38$ ;  $p = .034$ . However, in both cases the effect size was small ( $\eta^2_{\text{gender}} = .06$ ;  $\eta^2_{\text{age}} = .007$ ). The same can be said about the effect size associated with the interaction ( $\eta^2_{\text{interaction}} = .002$ ), which did not show statistical significance. However, as some investigations have reported that adult women and girls in late adolescence score higher in areas relating to attention and expression of emotions (Fernández-Berrocal and Extremera, 2008; Thayer *et al.*, 2003), we examined whether in any of the three age ranges corresponding to early, medium and late adolescence (13-14, 15-16, and 17-19 years old) there were differences in *Attention* according to gender. For this purpose, we calculated the simple effects and compared, in an independent fashion, the effect of gender in each age group. The results showed that in the age-ranges of 13-14 years,  $F_{(1, 1032)} = 7.91$ ;  $p = .005$ , of 15-16 years,  $F_{(1, 1032)} = 30.94$ ;  $p =$



.0001, and of 17-19 years,  $F_{(1, 1032)} = 60.65; p = .0001$ , there were statistically significant differences between boys and girls (see Figure 1). According to these results, the effect size corresponding to the mean difference between males and females in the 17-19 age range was quite high (Hedges'  $g_{17-19 \text{ years}} = .71$ ), while in the 15-16 and 13-14 age-ranges, the effect sizes were moderate (Hedges'  $g_{15-16 \text{ years}} = .55$ ; Hedges'  $g_{13-14 \text{ years}} = .47$ ).



**FIGURE 1.** Mean scores on Attention for boys and girls in each age group.

As for the analysis of variance carried out with gender and age as predictor variables and *Clarity* as criterion variable, we obtained statistically significant effects for gender,  $F_{(1, 1032)} = 14.37; p = .0001$ , and age,  $F_{(2, 1032)} = 6.26; p = .002$ , although the effect sizes associated with these variables were small ( $\eta^2_{\text{gender}} = .014; \eta^2_{\text{age}} = .012$ ). The same can be said for the effect size linked to the interaction ( $\eta^2_{\text{interaction}} = .002$ ), which fell short of statistical significance. Analysis of the simple effects revealed that there were statistically significant differences between boys and girls, mean scores being higher for boys, in the age range of 15-16 years,  $F_{(1, 1032)} = 12.93; p = .0001$ , while such differences did not appear in the other two age ranges. The effect sizes associated with gender differences found in the three age ranges were small (Hedges'  $g_{13-14 \text{ years}} = .28$ ; Hedges'  $g_{15-16 \text{ years}} = .35$ ; Hedges'  $g_{17-19 \text{ years}} = .17$ ).

Finally, the analysis of variance carried out with gender and age as predictor variables and *Repair* as criterion variable, showed statistically significant effects for gender,  $F_{(1, 1032)} = 10.12; p = .002$ , and age,  $F_{(2, 1032)} = 10.24; p = .0001$ , even though the effect sizes associated with such variables were small ( $\eta^2_{\text{gender}} = .010; \eta^2_{\text{age}} = .019$ ). The effect size linked to the interaction ( $\eta^2_{\text{interaction}} = .001$ ) was also small and did not show statistical significance. Analysis of the simple effects revealed that in the 17-19 age-range there were statistically significant gender differences, mean scores being higher for boys,  $F_{(1, 1032)} = 7.01; p = .008$ . However, the effect size associated with this difference of means was small (Hedges'  $g_{17-19 \text{ years}} = .24$ ). In the remaining age-ranges statistical significance was not reached and, in accordance with this result, the effect sizes linked to the differences between girls and boys in the 13-14 years (Hedges'  $g_{13-14 \text{ years}} = .32$ ) and 15-16 years (Hedges'  $g_{15-16 \text{ years}} = .12$ ) age-ranges were also small.

### Discussion

The aim of the present work was to validate the Basque short version of the Trait Meta-Mood scale by providing different sources of validity evidence and by testing its reliability in a large sample of adolescents. Furthermore, external validation data based on relationships between TMMS-23 dimensions and other variables, such as social and emotional self-concept, gender and age were also provided with the aim of extending the cross-cultural and cross-language evidentiary base for the scale.

Regarding the dimensionality of the inventory, the three-factor structure of the original scale (Salovey *et al.*, 1995) corresponding to the dimensions of *Attention*, *Clarity*, and *Repair* of emotions, was also observed in the Basque TMMS-23. This same structure has also been found in other cultures and languages, such as German, Portuguese, and Chinese and closely in Spanish. Furthermore, in line with studies mentioned above, the Basque version of TMMS-23 has been shown to be reliable because high indices of internal consistency and acceptable indices of temporal stability were obtained for all dimensions. This fact lends further support to consider the TMMS an instrument of doubtless usefulness for the assessment of individual's emotional reflective processes (see a review in Fernandez-Berrocal and Extremera, 2008).

Moreover, the three subscales correlated as expected, with small correlations between *Clarity* and *Repair*, and between *Attention* and *Clarity*, and without correlation between *Attention* and *Repair*. This may suggest – as has been shown in adults (Palmer *et al.*, 2003) and in Spanish adolescents (Salguero *et al.*, 2010) – the existence of a functional sequence in the emotional regulation process. A certain level of attention to feelings would be necessary for being able to understand emotional states and a certain level of clarity of feelings would be required for being able to moderate or regulate them (Mayer and Salovey, 1997).

On another issue, the correlation patterns observed between the scores of the Basque TMMS-23 and the SSREI subscales offered some evidence about convergent validity of the instrument. In line with other studies (Ferrandiz *et al.*, 2006; Schutte *et al.*, 1998), the *Attention* dimension of the TMMS correlated moderately with the *Appraisal and expression of emotions* of the SSREI and the dimensions of *Clarity* and *Repair of emotions* of the TMMS showed medium correlation with subscales of *Use* and *Regulation of emotions* of the SSREI. The *Attention* dimension (TMMS) appeared as the less correlated with the *Use* and the *Regulation of emotions* dimensions (SSREI), which can be considered as an additional evidence of the above mentioned logical sequence in the emotional regulation process. In order to be able to regulate emotions, individuals first need to pay attention to and understand them (Mayer and Salovey, 1997).

Turning now to the relationships between the TMMS-23 dimensions and social self-concept, the results are in line with those that have found association between EI and social success. In fact, social self-concept shows a clear relationship with the capacity to understand and to regulate emotional states, which have been found to contribute to social success and adaptation mainly in adolescence (Brackett and Salovey, 2006; Mayer *et al.*, 2004). On the other hand, the complex relationships between EI and emotional process of self-concept found by other authors (Augusto-Landa *et al.*, 2009; Augusto-Landa and López-Zafra, 2010) has also been observed in our study. Thus, a

negative association between attention to feelings and emotional self-concept, and a positive association between understanding of emotions and mood repair and emotional self-concept, has been observed. This result is coherent with researches that have related an excess of emotional attention with emotional rumination processes and depression (Fernández-Berrocal and Extremera, 2008).

Focusing on the relationships between the TMMS-23 dimensions and gender and age, our results confirmed those obtained with Spanish adolescents (Salguero *et al.*, 2010) showing that girls present a greater tendency than boys to pay attention to their emotions, and that such difference becomes more pronounced as the adolescents get older. However, no differences were observed for boys and girls in the *Clarity* and *Repair of emotions* dimensions. In this line, studies measuring self-perceived EI have shown no clear differences between women and men at general levels of EI, even though differences do emerge in some sub-dimensions, coherently with our results, women scoring higher than men in the areas of attention and emotional expression (Fernández-Berrocal and Extremera, 2008; Thayer *et al.*, 2003). With regard to understanding of emotional states, contradictory results have been found in the literature, with some studies showing that women score higher (Ciarrochi, Chan, and Caputi, 2000), and others showing that they score lower (Pascual, Ripalda, Ortega, and Etxebarria, 2009). Thus, more research is needed in order to ascertain if there are differences between boys and girls as well as to examine the influence of other variables, as gender identity, which may moderate the relationship between gender and self-perceived EI (Brackett and Salovey, 2006). On the other hand, regarding age differences our results are coherent with those obtained in other similar studies (Harrod and Scheer, 2005; Salguero *et al.*, 2010).

The benefits of a valid and reliable tool for measuring self-perceived EI in Basque adolescent population could be summarized in the next points. First, taking into account that abilities collected in the TMMS represent a useful and significant predictor for social and psychological adjustment of people's lives, it will allow to reliably assess aspects associated with EI in a priority group such as teenagers. Second, the Basque TMMS-23 will allow the analysis of how the characteristics of the emotional regulation process evolve over the course of development. Third, as it has been shown in research with adults, the TMMS dimensions can help us to explain differences in adolescents' psychosocial adaptation and to determine the importance of perceived emotional competence in this age group. Fourth, adolescence is a period of life in which subjective perception about one's own abilities determine their use (Gohm, 2003) and psychosocial variables like self-esteem and self-trust mediate coping behaviour very strongly (Skinner and Zimmer-Gembeck, 2007). Therefore, the availability of TMMS for Basque adolescent population, besides being an important resource for ability measures of EI, will allow increasing individual's awareness of their emotional abilities and giving accurate information about their emotional behaviour. This information can be useful in the design of programs not only focused on increasing EI competences, but also on improving individual's awareness of emotional abilities.

The TMMS has already shown high predictive validity in adult population in clinical and organizational fields (Fernández-Berrocal and Extremera, 2008). The present

study has confirmed that the Basque TMMS-23 has satisfactory psychometrical properties, comparable to those of the Spanish version. However, because of linguistic and cultural differences can exert influence on the indicators of the evaluated construct, the TMMS-23 should be only used with Basque speaking population. Furthermore, although our study has shown evidence of the different sources of validity of TMMS-23 as a measure of self-perceived EI in Basque adolescent population, future research should contribute new data, primarily on the instrument's predictive validity for teenager population. In addition, further studies are required to search for validity evidence in the Basque-speaking adult population.

### References

- Augusto-Landa, J. M. and López-Zafra, E. (2010). The impact of emotional intelligence on nursing: An overview. *Psychology, 1*, 50-58.
- Augusto-Landa, J. M., López-Zafra, E., Aguilar-Luzón, M. C., and Salguero de Ugarte, M. F. (2009). Predictive validity of perceived emotional intelligence on nursing students' self-concept. *Nurse Education Today, 29*, 801-808.
- Balluerka, N., Gorostiaga, A., Alonso-Arbiol, I., and Haranburu, M. (2007). La adaptación de instrumentos de medida de unas culturas a otras: una perspectiva práctica. *Psicothema, 19*, 124-133.
- Bar-On, R. (2006). The Bar-On model of emotional-social intelligence (ESI). *Psicothema, 18*, 13-25.
- Brackett, M. A. and Salovey, P. (2006). Measuring emotional intelligence with the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT). *Psicothema, 18*, supl., 34-41.
- Carretero-Dios, H. and Pérez, C. (2007). Standards for the development and the review of instrumental studies: Considerations about test selection in psychological research. *International Journal of Clinical and Health Psychology, 7*, 863-882.
- Ciarrochi, J. V., Chan, A. Y. C., and Caputi, P. (2000). A critical evaluation of the emotional intelligence construct. *Personality and Individual Differences, 28*, 539-561.
- Downey, L. A., Johnston, P. J., Hansen, K., Birney, J., and Stough, C. (2010). Investigating the mediating effects of emotional intelligence and coping on problem behaviours in adolescents. *Australian Journal of Psychology, 62*, 20-29.
- Extremera, N., Duran, A., and Rey, L. (2007). Perceived emotional intelligence and dispositional optimism-pessimism: Analyzing their role in predicting psychological adjustment among adolescents. *Personality and Individual Differences, 42*, 1069-1079.
- Extremera, N., Salguero, J. M., Fernández-Berrocal, P., and Ruíz, D. (2009). Acercamientos actuales en la medición científica de la inteligencia emocional: algunas implicaciones de su uso en el ámbito laboral. In J. M. Augusto (Coord.), *Estudios en el ámbito de la inteligencia emocional* (pp.175-198). Jaén: Universidad de Jaén.
- Fernández-Berrocal, P. and Extremera, N. (2008). A review of trait meta-mood research. In A. M. Columbus (Ed.), *Advances in Psychology Research, Vol. 55* (pp. 17-55). New York, NY: Nova Publishers.
- Fernández-Berrocal, P., Extremera, N., and Ramos, N. (2004). Validity and reliability of Spanish modified version of the Trait Meta-Mood Scale. *Psychological Reports, 94*, 47-59.
- Ferrandiz, C., Marín, F., Gallud, L., Ferrando, M., López Pina, J. A., and Prieto, M. D. (2006). Validez de la escala de inteligencia emocional de Schutte en una muestra de estudiantes universitarios. *Ansiedad y Estrés, 12*, 167-179.

- Finch, J. F. and West, S. G. (1997). The investigation of personality structure: Statistical models. *Journal of Research in Personality*, 31, 439-485.
- García, F. and Musitu, G. (1999). *AF5 Autoconcepto Forma 5*. Madrid: TEA Ediciones.
- Gohm, C. (2003). Mood regulation and emotional intelligence: Individual differences. *Journal of Personality and Social Psychology*, 84, 594-607.
- Gorostiaga, A., Balluerka, N., Alonso-Arbiol, I., and Haranburu, M. (2011). Validation of the Basque Revised NEO Personality Inventory (NEO PI-R). *European Journal of Psychological Assessment*, 27, 193-205.
- Hambleton, R. K. and Patsula, L. (1999). Increasing the validity of adapted tests: Myths to be avoided and guidelines for improving test adaptation practices. *Journal of Applied Testing Technology*, 1, 1-30.
- Harrod, N. R. and Scheer, D. S. (2005). An exploration of adolescent emotional intelligence in relation to demographic characteristics. *Adolescence*, 40, 503-512.
- Hoyle, R. H. (Ed.) (1995). *Structural equation modeling: Concepts, issues, and applications*. Thousand Oaks, CA: Sage.
- Jöreskog, K. G. and Sörbom, D. (1999). *LISREL 8. User's Reference Guide*. Lincolnwood, IL: Scientific Software International.
- Li, C., Yan, J., Yin, X., and Wu, Z. (2002). A primary study of the application of the Trait Meta-Mood Scale in military medical students. *Chinese Journal of Clinical Psychology*, 10, 202-203.
- Mavroveli, S., Petrides, K. V., Rieffe, C., and Bakker, F. (2007). Trait emotional intelligence, psychological well-being and peer-rated social competence in adolescence. *British Journal of Developmental Psychology*, 25, 263-275.
- Mayer, J. D., Perkins, D. M., Caruso, D. R., and Salovey, P. (2001). Emotional intelligence and giftedness. *Roeper Review*, 23, 131-137.
- Mayer, J. D. and Salovey, P. (1997). What is emotional intelligence? In P. Salovey and D. Sluyter (Eds.), *Emotional development and Emotional Intelligence: Implications for educators* (pp. 3-31). New York, NY: Basic Books.
- Mayer, J. D., Salovey, P., and Caruso, D. (2004). Emotional Intelligence: Theory, findings and implications. *Psychological Inquiry*, 15, 197-215.
- Mikolajczak, M., Petrides, K. V., and Hurry, J. (2009). Adolescents choosing self-harm as an emotion regulation strategy: The protective role of trait emotional intelligence. *British Journal of Clinical Psychology*, 48, 181-193.
- Montero, I. and León, O. G. (2007). A guide for naming research studies in Psychology. *International Journal of Clinical and Health Psychology*, 7, 847-862.
- Palmer, B., Gignac, G., Bates, T., and Stough, C. (2003). Examining the structure of the Trait Meta-Mood Scale. *Australian Journal of Psychology*, 55, 154-158.
- Parker, J. D. A., Taylor, R. N., Eastabrook, J. M., Schell, S. L., and Wood, L. M. (2008). Problem gambling in adolescence: Relationships with internet misuse, gaming abuse and emotional intelligence. *Personality and Individual Differences*, 45, 174-180.
- Pascual, A., Ripalda, A., Ortega, I., and Etxebarria, I. (2009). Diferencias de género en frecuencia de emociones positivas y negativas, alexitimia y estrategias de afrontamiento. In P. Fernández-Berrocal, N. Extremera, R. Palomera, D. Ruiz-Aranda, J. M. Salguero, and R. Cabello (Eds.). *Avances en el estudio de la Inteligencia Emocional* (pp. 343-347). Santander: Fundación Marcelino Botín.
- Salguero, J. M., Fernández-Berrocal, P., Balluerka, N., and Aritzeta, A. (2010). Measuring perceived emotional intelligence in adolescent population: Psychometric properties of the Trait Meta Mood Scale. *Social Behavior and Personality: An International Journal*, 38, 1197-1210.

- Salovey, P. and Mayer, J. D. (1990). Emotional intelligence. *Imagination, Cognition, and Personality*, 9, 185-211.
- Salovey, P., Mayer, J. D., Goldman, S. L., Turvey, C., and Palfai, T. P. (1995). Emotional attention, clarity, and repair: Exploring emotional intelligence using the Trait Meta-Mood Scale. In J. W. Pennebaker (Ed.), *Emotion, Disclosure and Health* (pp.125-151). Washington, DC: American Psychological Association.
- Salovey, P., Stroud, L. R., Woolery, A., and Epel, E. P. (2002). Perceived emotional intelligence, stress reactivity, and symptoms reports: Further explorations using the Trait Meta-Mood Scale. *Psychology and Health*, 17, 611-627.
- Schutte, N. S., Malouff, J. M., Hall, L. E., Haggerty, D. J., Cooper, J. T., Golden, C. J., and Dornheim, L. (1998). Development and validation of a measure of emotional intelligence. *Personality and Individual Differences*, 25, 167-177.
- Skinner, E. A. and Zimmer-Gembeck, M. J. (2007). The Development of coping. *Annual Review of Psychology*, 58, 119-144.
- Su-ju, L. (2006). On how to achieve functional equivalence in translation between Chinese and English. *Sino-US English Teaching*, 3, 71-75.
- Thayer, J. F., Rossy, L. A., Ruiz-Padial, E., and Johnsen, B. H. (2003). Gender differences in the relationship between emotional regulation and depressive symptoms. *Cognitive Therapy and Research*, 27, 349-364.
- Trask, R. L. (1997). *The history of Basque*. London, UK: Routledge.
- Trinidad, D. R. and Johnson, C. A. (2002). The association between emotional intelligence and early adolescent tobacco and alcohol use. *Personality and Individual Differences*, 32, 95-105.

Received February 7, 2011

Accepted June 17, 2011



**APPENDIX 1.** Basque version of TMMS-23.

Zure emozio eta sentimenduei buruzko esaldi batzuk aurkituko dituzu ondoren. Esaldi bakoitza arretaz irakur ezazu eta markatu ezazu zenbateraino zauden ados edo desados esaldiak dioenarekin. Gogoan izan ez dagoela erantzun zuzenik eta okerrik.

	Erabat desados	Pixka bat ados	Nahiko ados	Oso ados	Erabat ados
1. Arreta handia jartzen dut sentimenduetan	1	2	3	4	5
2. Normalean, asko arduratzen naiz sentitzen dudana	1	2	3	4	5
3. Normalean denbora hartzen dut nire emozioetan pentsatzeko	1	2	3	4	5
4. Nire emozioei eta umore-egoerari kasu egitea merezi duela uste dut	1	2	3	4	5
5. Nire sentimenduei uzten diet nire pentsamenduetan eragiten	1	2	3	4	5
6. Nire umore-egoeran pentsatzen dut etengabe	1	2	3	4	5
7. Sarritan pentsatzen dut nire sentimenduetan	1	2	3	4	5
8. Arreta handia jartzen diet nire sentimenduei	1	2	3	4	5
9. Argi ditut nire sentimenduak	1	2	3	4	5
10. Sarritan, nire sentimenduak deskribatu ditzaket	1	2	3	4	5
11. Ia beti dakit nola sentitzen naizen	1	2	3	4	5
12. Normalean badakit zeintzuk diren besteenganako ditudan sentimenduak	1	2	3	4	5
13. Normalean egoera desberdinetan nire sentimenduak zeintzuk diren jakiten dut	1	2	3	4	5
14. Beti esan dezaket nola sentitzen naizen	1	2	3	4	5
15. Batzuetan esan dezaket zeintzuk diren nire emozioak	1	2	3	4	5
16. Nire sentimenduak ulertu ditzaket	1	2	3	4	5
17. Batzuetan triste sentitzen banaiz ere, ikuspegi baikorra (optimista) izan ohi dut	1	2	3	4	5
18. Gaizki sentitzen banaiz ere, gauza atseginetan pentsatzen saiatzen naiz	1	2	3	4	5
19. Triste nagoenean, bizitzako gauza atseginetan pentsatzen dut	1	2	3	4	5
20. Pentsamendu positiboak edukitzen saiatzen naiz, gaizki sentitzen banaiz ere	1	2	3	4	5
21. Buruhauste gehiegi ditudanean, lasaitzen saiatzen naiz	1	2	3	4	5
22. Umore ona edukitzen saiatzen naiz	1	2	3	4	5
23. Haserre nagoenean, nire umore-egoera aldatzen saiatzen naiz	1	2	3	4	5