

The development of emotional intelligence in adolescence

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Title: El desarrollo de la inteligencia emocional durante la adolescencia.

Resumen: En este estudio se analizó el desarrollo de las diferentes dimensiones de la inteligencia emocional durante un curso escolar y transversalmente entre los seis cursos analizados en una muestra de 484 adolescentes de ambos sexos, entre 1º de ESO y 2º de Bachiller, a quienes se administró la versión en castellano del *Emotional Quotient Inventory: Young Version Short* (Carballo y Villegas, 2001). Coincidiendo con el grueso de la investigación previa, los resultados indican que, salvo en lo que respecta a la dimensión *manejo del estrés* en la muestra femenina, el resto de dimensiones de la inteligencia emocional no experimenta cambios sustantivos en relación con la edad.

Palabras clave: Inteligencia emocional; adolescencia; desarrollo.

Abstract: The aim of this study was to analyse the development of the different dimensions of emotional intelligence in adolescents over one school year and in a cross-sectional study involving 484 adolescents of both sexes from the six school years between year 1 of Spanish secondary school (age 12-13) and year 2 of the Spanish Baccalaureate (age 17-18). Participants were administered the Spanish version of the *Emotional Quotient Inventory: Young Version Short* (Carballo & Villegas, 2001). Consistently with most previous research, the findings indicate that, except for the *stress management* dimension in the female sample group, none of the dimensions of emotional intelligence undergo substantial changes in relation to age.

Key words: Emotional intelligence; adolescence; development.

Introduction

There has been increasing interest in emotional intelligence (EI) in recent decades within both academic and professional spheres and this has led to the emergence of two different models: the ability model and the trait or mixed models. The *ability model* defines EI as the ability to process information with emotional content (Mayer & Salovey, 1997), whereas the *mixed models* define EI as an array of stable personality traits, social and emotional skills, motivational aspects and different cognitive skills (Bar-On, 2000; Boyatzis, Goleman, & Rhee, 2000; Goleman, 1995; Petrides & Furnham, 2003). Among the mixed models, Bar-On (2000, 2006) defines Emotional and Social Intelligence (ESI) as an inter-related array of emotional and social competencies, skills and facilitators which determine how effectively we understand and express ourselves, how we understand others and engage with them, and how we cope with the demands of everyday life. This model is of interest in that it combines the cognitive skills contained in the definitions of EI as an ability with the emotional facets or aptitudes related to EI as a trait.

Regarding EI development, certain studies suggest that age has no significant effect on EI (Cakan & Altun, 2005). Nevertheless, others have pointed out a direct relationship between age and EI levels; specifically, the older the subject the higher the EI level, which suggests that EI is learnt through life experience (Bar-On, 2000; Goldenberg, Matheson, & Mantle, 2006; Kafetsios, 2004). For instance, people aged between 40 and 49 score significantly higher for general EI than those in the 20-29 age group (Bar-On, 1997a), and this supports the thesis that EI increases with age. However, other studies conducted with university undergraduates (Benson, Martin, Ploeg, & Wessel, 2012) only found significant increases in one of the Emotional Quotient Inventory

(short) scales, specifically that of *adaptability*. Consequently, the age / EI relationship may not be linear. Indeed, from an EI study involving Indian executives (Punia, 2002) it could be deduced that while EI levels do indeed increase with age, at some point they peak and start to decline.

There has been growing interest in EI among adolescents over recent years due to evidence from certain studies regarding its importance in early ages for variables such as academic performance (Bar-On, 2003; Ferrando et al., 2010; Parker et al., 2004), social interaction (Bar-On, 1997a), consumption of toxic substances (Limonero, Tomás-Sábado, & Fernández-Castro, 2006), self-concept (Coelho, Marchante, & Sousa, 2016) and academic and social adaptation (Mestre, Guil, López, Salovey, & Gil-Olerte, 2006; Serrano & Andreu, 2016).

Few studies have focused on EI development in adolescence. Keefer, Holden and Parker (2013), who analysed the psychometric properties of the Emotional Quotient Inventory: Young Version Short (Bar-On & Parker, 2000) in a Canadian sample of 10-18-year-olds over a six-year period (this was the first study to research longitudinal differences in EI over a period of several years), reported non-variance in three (*intrapersonal*, *interpersonal* and *adaptability*) of the four scales between the ages of 12 and 18. It has not been possible to confirm the longitudinal usefulness of the *stress management* scale. Regarding changes in accordance with age, the authors state that the findings present a complex panorama, with varying decreasing, increasing and steady patterns depending on age and the different specific scales. For example, between infancy and early adolescence, the *intrapersonal* and *adaptability* scales show significant decreases. On the other hand, between early and late adolescence the *interpersonal* and *adaptability* scales present significant increases. Regarding the *intrapersonal* scale there is first a decrease between the 10-11 and 12-13 age ranges, followed by relatively little change until the age of 17. In relation to the *interpersonal* scale, there is no change between the first two age ranges (10-11, 12-13), and subsequently there is an increase. With regard to *stress management*, there is no change in the first two school years and then a decrease at the age of 15, after

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which it remains steady from 16-17. Lastly, the *adaptability* scale decreases until 14-15 and then increases at 16-17; the degrees of change are relatively minor during the six-year time period (Keefer et al., 2013). The increase in emotional competence among older age groups is consistent with the expectation that emotional skills should increase progressively with greater maturity and further life experience (Mayer, Caruso, & Salovey, 1999; Saarni, 1999). Nonetheless, the decreases in perceived EI among younger age groups contradict the maturity hypotheses, although they are at least in line with those observed for self-perception and self-competence in other domains (Jacobs, Lanza, Osgood, Eccles, & Wigfield, 2002; Marsh, 1989; Wigfield & Wagner, 2005).

Different variables may influence self-confidence in early adolescence; as children mature cognitively and socially they are able to more realistically self-assess their strengths and weaknesses and become more aware of how they compare with their classmates and peers (Harter, 2012). Adolescents' confidence in their ability to understand and regulate their emotions may also decline in the context of the greater emotional sensitivity which comes with the onset of puberty (Somerville, Jones, & Casey, 2010). The change from primary school to secondary school may also lead to new demands and expectations which encourage young adolescents to adopt higher standards when assessing their competences (Wigfield & Wagner, 2005). The accumulation of these influences may result in the decreases observed in emotional perceptions, despite the fact that emotional skills continue to improve in this period. Likewise, it appears to be the case that the different components of EI may develop differently prior to adulthood. Hence, there remain unanswered questions which require further research.

With regard to the influence of sex on EI, most studies appear to point to the existence of certain differences (Joseph & Newman, 2010; Salguero, Fernández-Berrocal, Balluerka, & Aritzeta, 2010). Bar-On (1997b) states that women are more emotionally aware, display more empathy and relate better to others, whereas men are better at managing and regulating emotions. Women tend to score higher than men on the *interpersonal* scale whereas men tend to achieve higher scores for self-perception on the *intrapersonal*, *adaptability* and *stress management* scales (Bar-On, 1997b; Bar-On, Brown, Kirkcaldy, & Thome, 2000; Ugarriza & Pajares, 2005). Keefer et al. (2013) found that women score higher on the *intrapersonal* and *interpersonal* scales while men score higher for *adaptability*. In terms of general EI, some studies find that women have better self-perception (Saklofske, Austin, & Minski, 2003; Van Rooy, Alonso, & Viswesvaran, 2005), while others maintain that this is the case for men (Kong, Zhao, & You, 2012; Mikolajczak, Luminet, Leroy, & Roy, 2007; Shi & Wang, 2007). However, Fernández-Berrocal, Cabello, Castillo and Extremera (2012) believe that sex differences are mediated by age, so we should therefore be cautious when concluding that sex is a determining varia-

ble in EI, unless we have thoroughly analysed potential interaction with other variables.

Hence, given that there are very few studies analysing the development of EI during adolescence, and none at national level in Spain, the aim of this study was to explore the temporary stability of EI over the course of one school year, using cross-sectional sample age groups from across six levels ranging from year 1 of Spanish secondary school (age 12-13) to year 2 of the Spanish Baccalaureate (age 17-18).

Method

Participants

Participants in this cross-sectional and longitudinal developmental "ex post facto" study comprised 484 adolescents from public and semi-private schools¹; 226 boys (46.7%) and 258 girls (53.3%). The sample group was drawn from between year 1 of Spanish secondary school (age 12-13) and year 2 of the Spanish Baccalaureate (age 17-18). The sample was divided as follows according to school year: Year 1 secondary (Grade 7, $n = 83$), Year 2 secondary (Grade 8, $n = 81$), Year 3 secondary (Grade 9, $n = 88$), Year 4 secondary (Grade 10, $n = 75$), Year 1 Baccalaureate (Grade 11, $n = 89$), and Year 2 Baccalaureate (Grade 12, $n = 68$). The sampling method used was incidental and data was collected at two different times, at the start of the school year ($M_{age} = 14.99$, $SD = 1.81$); and at the end of the school year ($M_{age} = 15.64$, $SD = 1.80$).

Instruments

Emotional Intelligence was assessed using the Emotional Quotient Inventory: Young Version Short [EQ-i: YV(s), Bar-On & Parker, 2000, translated by Caraballo & Villegas, 2001]. This is a self-test designed to measure the EI of children and adolescents aged between 7 and 18. The test comprises 30 items which rate the dimensions *intrapersonal*, *interpersonal*, *stress management* and *adaptability*. The results are then added together to give a score for *general emotional intelligence*. There is also a fifth scale, *positive impression*, created to measure the extent to which subjects respond randomly or distort their responses as a result of the social desirability bias. As with several previous studies (Hassam & Sader, 2005; Parker et al., 2005; Sáinz, Ferrándiz, Fernández, & Ferrando, 2014; Ugarriza & Pajares, 2005), this fifth scale was not taken into consideration (items 3, 7, 11, 15, 20 and 25) in the presentation of the findings. The questionnaire uses a Likert-type scale with four response options ranging from "very seldom or not true of me" to "very often true of me or true of me" and was recently validated with a Spanish sample (Esnaola, Freeman, Sarasa, Fernández-Zabala, & Axpe, 2016).

Reliability was measured using Cronbach's alpha, composite reliability (CR) and McDonald's Omega index, an indicator which is less biased than Cronbach's alpha for cate-

¹ Private schools which receive some state funding.

gorical response scales (Elosua & Zumbo, 2008). The index values were as follows: *interpersonal* ($\alpha = .67$, CR = .70, and McDonald's Omega = .69); *intrapersonal* ($\alpha = .84$, CR = .87, and McDonald's Omega = .86); *stress management* ($\alpha = .84$, CR = .86, and McDonald's Omega = .85); *adaptability* ($\alpha = .83$, CR = .85, and McDonald's Omega = .84); and the questionnaire *in general* ($\alpha = .77$, CR = .95, and McDonald's Omega = .95).

Procedure

This study was granted an ethical permit from the Commission for Ethics in Research and Teaching (CEID) at the University of the Basque Country (Universidad del País Vasco/Euskal Herriko Unibertsitatea). After requesting and gaining permission from the participating schools, all families were sent a letter asking for their consent regarding participation in the study. Subsequently, the battery of questionnaires was administered to those students whose families had consented to their participation. This was done during class time and in groups, at two different times: at the start of the school year (September/October, Time 1) and at the end of the school year (May/June, Time 2). During this process, both the anonymity of the responses and voluntary participation were guaranteed.

Data analysis

Following the use of multiple imputation to replace missing data using the Lisrel 8.8 program (Jöreskog & Sörbom, 2006), the data gathered were analysed with the

SPSS statistics program for Windows. The Mann-Whitney test was used to compare the findings for the dimensions of emotional intelligence in accordance with sex, due to the fact that the sub-scales did not meet normality requirements. In order to compare the scores in accordance with the two different times, first the differences between the scores obtained at Time 1 and Time 2 were calculated and subsequently, the normality of these differences was estimated. Owing to the fact that there was no normality, the Wilcoxon W test for repeated measurements was used and the Kruskal-Wallis test was employed for the analysis in accordance with school year. The *d* index (Cohen, 1988) was used to analyse the magnitude of the differences observed (i.e. effect size).

Results

Due to the fact that previous research points to the possible existence of significant sex-based differences (Bar-On, 1997b; Keefer et al., 2013), the scores obtained were first analysed in order to verify the appropriateness of presenting the subsequent findings either as one whole sample or independently for each sex. The findings indicated that girls scored significantly higher than boys in the *interpersonal* dimension ($\chi^2_{(482)} = -5.741$, $p = .001$), with a medium effect size ($d = -0.39$). It was therefore decided to present the subsequent findings independently for each sex. Table 1 shows the data pertaining to EI evolution in the male sample over one school year.

Table 1. Longitudinal emotional intelligence scores for boys.

		<i>M(SD)</i> Time 1	<i>M(SD)</i> Time 2	χ^2 (<i>df</i>)	<i>p</i>	<i>d</i>
Grade 7 (<i>n</i> = 46)	Intrapersonal	13.58 (4.18)	14.29 (4.52)	-1.185 (45)	.236	-0.16
	Interpersonal	17.17 (3.13)	17.48 (2.60)	-.530 (45)	.596	-0.10
	Stress management	15.48 (4.58)	15.23 (4.22)	.366 (45)	.714	0.05
Grade 8 (<i>n</i> = 47)	Adaptability	16.45 (4.09)	17.15 (3.98)	-1.240 (45)	.215	-0.17
	Intrapersonal	13.96 (4.62)	14.68 (3.94)	-.952 (46)	.341	-0.16
	Interpersonal	18.52 (3.04)	18.75 (3.01)	-.487 (46)	.626	-0.07
	Stress management	16.08 (4.75)	16.28 (4.10)	-.349 (46)	.727	-0.04
Grade 9 (<i>n</i> = 44)	Adaptability	15.87 (4.30)	16.58 (3.96)	-1.228 (46)	.220	-0.17
	Intrapersonal	14.61 (4.08)	13.88 (4.07)	-1.505 (43)	.132	0.17
	Interpersonal	18.03 (2.65)	18.13 (2.46)	-.327 (43)	.744	-0.03
Grade 10 (<i>n</i> = 29)	Stress management	17.45 (4.12)	16.89 (4.02)	-1.132 (43)	.258	0.13
	Adaptability	15.75 (3.59)	16.14 (3.58)	-1.015 (43)	.310	-0.10
	Intrapersonal	12.06 (3.79)	12.66 (3.30)	-.854 (28)	.393	-0.16
Grade 11 (<i>n</i> = 40)	Interpersonal	18.48 (2.86)	18.48 (2.67)	-.487 (28)	.627	0
	Stress management	16.49 (4.20)	16.53 (4.79)	-.097 (28)	.922	-0.08
	Adaptability	15.09 (2.94)	15.85 (4.25)	-1.611 (28)	.107	-0.20
	Intrapersonal	13.88 (4.32)	14.49 (4.75)	-1.411 (39)	.158	-0.13
Grade 12 (<i>n</i> = 20)	Interpersonal	18.86 (3.14)	17.71 (3.03)	-2.608 (39)	.009	0.37
	Stress management	17.08 (3.82)	17.75 (4.09)	-1.425 (39)	.154	-0.16
	Adaptability	17.08 (2.90)	16.70 (2.95)	-.874 (39)	.382	0.12
Grade 12 (<i>n</i> = 20)	Intrapersonal	12.92 (3.49)	12.68 (4.32)	-.224 (19)	.823	0.06
	Interpersonal	17.90 (3.15)	19.14 (2.37)	-2.053 (19)	.040	-0.44
	Stress management	18.53 (4.29)	17.79 (4.10)	-1.381 (19)	.167	0.17
	Adaptability	15.38 (3.91)	16.69 (3.59)	-2.091 (19)	.037	-0.34

Note. Time 1 = September/October; Time 2 = May/June.

As Table 1 demonstrates, significant differences were observed on the *interpersonal* scale for Grade 11 ($z_{(39)} = -2.608$, $p = .009$, $d = 0.37$) with a decrease between the start and the end of the school year; significant differences were also found on the *interpersonal* ($z_{(19)} = -2.053$, $p = .040$, $d = -0.44$) and *adaptability* ($z_{(19)} = -2.091$, $p = .037$, $d = -0.34$) scales for Grade 12, with a significant increase between the

start and the end of the school year in both cases. Aside from this, however, it appears that EI levels over one year for all of the different school age groups are relatively homogeneous, with slight increases, decreases or plateaus depending on the EI element and the school age group. Table 2 below shows the findings for the female sample.

Table 2. Longitudinal emotional intelligence scores for girls.

		<i>M</i> (<i>SD</i>) Time 1	<i>M</i> (<i>SD</i>) Time 2	z (<i>df</i>)	<i>p</i>	<i>d</i>
Grade 7 (<i>n</i> = 37)	Intrapersonal	14.21 (4.64)	13.22 (5.27)	-1.199 (36)	.230	0.19
	Interpersonal	19.45 (2.95)	20.43 (2.60)	-2.014 (36)	.044	-0.35
	Stress management	18.55 (3.45)	17.51 (3.98)	-2.029 (36)	.042	0.27
	Adaptability	15.23 (4.20)	16.31 (4.53)	-1.818 (36)	.069	-0.24
Grade 8 (<i>n</i> = 34)	Intrapersonal	13.78 (4.32)	14.29 (4.58)	-.282 (33)	.778	-0.11
	Interpersonal	19.62 (2.61)	20.41 (2.37)	-1.718 (33)	.086	-0.31
	Stress management	16.56 (5.03)	15.73 (4.91)	-1.359 (33)	.174	0.16
	Adaptability	15.36 (3.61)	16.54 (3.16)	-2.590 (33)	.010	-0.34
Grade 9 (<i>n</i> = 44)	Intrapersonal	13.37 (4.73)	13.94 (4.42)	-.373 (43)	.709	-0.12
	Interpersonal	20.19 (3.16)	20.08 (2.54)	-.315 (43)	.753	0.03
	Stress management	16.18 (4.37)	15.63 (4.79)	-1.214 (43)	.225	0.11
	Adaptability	16.16 (4.08)	15.97 (3.54)	-.093 (43)	.926	0.04
Grade 10 (<i>n</i> = 46)	Intrapersonal	13.92 (4.13)	13.89 (3.53)	-.060 (45)	.952	0.07
	Interpersonal	19.44 (2.61)	19.73 (2.75)	-.825 (45)	.409	-0.10
	Stress management	15.90 (4.38)	14.87 (4.16)	-1.087 (45)	.277	0.24
	Adaptability	15.73 (3.76)	15.88 (3.79)	-.224 (45)	.823	-0.03
Grade 11 (<i>n</i> = 49)	Intrapersonal	13.46 (4.42)	14.12 (4.44)	-1.278 (48)	.201	-0.14
	Interpersonal	19.41 (2.49)	19.49 (2.27)	-.035 (48)	.972	-0.03
	Stress management	16.95 (4.58)	16.64 (4.56)	-.612 (48)	.541	0.06
	Adaptability	15.38 (3.15)	15.34 (3.11)	-.264 (48)	.792	0.01
Grade 12 (<i>n</i> = 48)	Intrapersonal	12.90 (3.92)	12.56 (4.20)	-.708 (47)	.479	0.08
	Interpersonal	20.21 (2.49)	20.13 (2.29)	-.277 (47)	.782	0.03
	Stress management	15.23 (4.28)	14.97 (4.50)	-.872 (47)	.383	0.05
	Adaptability	16.08 (3.04)	16.42 (3.31)	-.841 (47)	.400	-0.10

Note. Time 1 = September/October; Time 2 = May/June.

The findings for the female sample confirmed significant differences in the *interpersonal* ($z_{(36)} = -2.014$, $p = .044$, $d = -0.35$) and *stress management* ($z_{(36)} = -2.029$, $p = .042$, $d = 0.27$) scales for Grade 7. However, whereas perception of the *interpersonal* dimension increases in the period between the start and the end of the school year, the perception of *stress management* decreases over the same time period. For their part, girls from Grade 8 scored higher for perception of *adaptability* at the end of the school year ($z_{(33)} = -2.590$, $p = .010$, $d = -0.34$). Consequently, with the exception of the

mentioned cases, it appears that the EI levels among girls over one school year and in all the different age groups are relatively homogeneous or stable, with slight increases, decreases or plateaus depending on the EI element and the age group in question.

Following the analysis of the repeated measurements over the course of one school year, below are the findings of the cross-sectional analysis of all six age groups participating in the study, with the male sample results first.

Table 3. Cross-sectional emotional intelligence scores for boys.

		Grade 7 (<i>n</i> = 46)	Grade 8 (<i>n</i> = 47)	Grade 9 (<i>n</i> = 44)	Grade 10 (<i>n</i> = 29)	Grade 11 (<i>n</i> = 40)	Grade 12 (<i>n</i> = 20)
Intrapersonal	<i>M</i> (<i>SD</i>)	13.58 (4.18)	13.96 (4.62)	14.61 (4.08)	12.06 (3.79)	13.88 (4.32)	12.92 (3.49)
	χ^2 (<i>p</i>)			$\chi^2_{(5)} = 6.708$ ($p = .243$)			
Interpersonal	<i>M</i> (<i>SD</i>)	17.17 (3.13)	18.52 (3.04)	18.03 (2.65)	18.48 (2.86)	18.86 (3.14)	17.90 (3.15)
	χ^2 (<i>p</i>)			$\chi^2_{(5)} = 6.261$ ($p = .282$)			
Stress management	<i>M</i> (<i>SD</i>)	15.48 (4.58)	16.08 (4.75)	17.45 (4.12)	16.49 (4.20)	17.08 (3.82)	18.53 (4.29)
	χ^2 (<i>p</i>)			$\chi^2_{(5)} = 8.842$ ($p = .116$)			
Adaptability	<i>M</i> (<i>SD</i>)	16.45 (4.09)	15.87 (4.30)	15.75 (3.59)	15.09 (2.94)	17.08 (2.90)	15.38 (3.91)
	χ^2 (<i>p</i>)			$\chi^2_{(5)} = 9.767$ ($p = .082$)			

As shown in Table 3, no inter-group differences were found in the male sample for any of the four dimensions of

EI. Table 4 shows the cross-sectional findings for the female sample.

Table 4. Cross-sectional emotional intelligence scores for girls.

		Grade 7 (<i>n</i> = 37)	Grade 8 (<i>n</i> = 34)	Grade 9 (<i>n</i> = 44)	Grade 10 (<i>n</i> = 46)	Grade 11 (<i>n</i> = 49)	Grade 12 (<i>n</i> = 48)
Intrapersonal	<i>M</i> (<i>SD</i>)	14.21 (4.64)	13.78 (4.32)	13.37 (4.73)	13.92 (4.13)	13.46 (4.42)	12.90 (3.92)
	χ^2 (<i>p</i>)			$\chi^2_{(5)} = 2.795$ (<i>p</i> = .732)			
Interpersonal	<i>M</i> (<i>SD</i>)	19.45 (2.95)	19.62 (2.61)	20.19 (3.16)	19.44 (2.61)	19.41 (2.49)	20.21 (2.49)
	χ^2 (<i>p</i>)			$\chi^2_{(5)} = 4.810$ (<i>p</i> = .440)			
Stress management	<i>M</i> (<i>SD</i>)	18.55 (3.45)	16.56 (5.03)	16.18 (4.37)	15.90 (4.38)	16.95 (4.58)	15.23 (4.28)
	χ^2 (<i>p</i>)			$\chi^2_{(5)} = 14.083$ (<i>p</i> = .015)			
	Post hoc	1-3 ($\bar{z} = -2.447$, <i>p</i> = .014, <i>d</i> = 0.60); 1-4 ($\bar{z} = -2.891$, <i>p</i> = .004, <i>d</i> = 0.67); 1-6 ($\bar{z} = -3.533$, <i>p</i> = .001, <i>d</i> = 0.85)					
Adaptability	<i>M</i> (<i>SD</i>)	15.23 (4.20)	15.36 (3.61)	16.16 (4.08)	15.73 (3.76)	15.38 (3.15)	16.08 (3.04)
	χ^2 (<i>p</i>)			$\chi^2_{(5)} = 4.267$ (<i>p</i> = .512)			

The findings for girls indicate significant inter-group differences only in the *stress management* dimension ($\chi^2_{(5)} = 14.083$, *p* = .015), with a downward trajectory between Grade 7 and Grade 12. The post hoc analysis revealed significant differences between Grade 7 and Grade 9 ($\bar{z} = -2.447$, *p* = .014, *d* = 0.60); between Grade 7 and Grade 10 ($\bar{z} = -2.891$, *p* = .004, *d* = 0.67); and between Grade 7 and Grade 12 ($\bar{z} = -3.533$, *p* = .001, *d* = 0.85), with girls from Grade 7 scoring consistently higher. The *intrapersonal*, *interpersonal* and *adaptability* dimensions had a relatively flat or stable trajectory, although in the *intrapersonal* dimension the trend was downward.

Discussion

The aim of this study was to analyse the development of the different dimensions of EI in a sample of adolescents of both sexes, drawn from a cross-section of pupils from the different year groups of Spanish Secondary School (ages 12-16) and Spanish Baccalaureate (17-18), using repeated measurements over one school year (this was the first research study of its kind undertaken at a national level in Spain).

The findings reveal differences between boys and girls in the *interpersonal* dimension, with girls scoring higher than boys. These findings coincide with most previous research (Bar-On, 1997b; Bar-On et al., 2000; Joseph & Newman, 2010; Keefer et al., 2013; Salguero et al., 2010; Ugarriza & Pajares, 2005). It seems that adolescent girls often demonstrate greater ability in certain competences, including those involving mainly interpersonal aspects (Qualter, Gardner, Pope, Hutchinson, & Whately, 2012). In other words, most studies suggest the presence of more developed traits or abilities depending on whether the subject is male or female (Caballero, 2004), mostly owing to sex differences in the socialisation and emotional education of boys and girls (Fivush, Brotman, Buckner, & Goodman, 2000).

Regarding EI development, it should be noted that very little research has been conducted on patterns of continuity and change. In this study, there was little substantial change in self-perception over the time period analysed among any of the age groups studied, which suggests that one school year is not a sufficiently long time period for significant vari-

ations in EI to occur among adolescents. In the male sample, differences were found only in the *interpersonal* dimension in Grade 11 (decreasing between the start and the end of the school year) and Grade 12 (increasing between the start and the end of the school year); and in *adaptability* in the Grade 12 sample, in which adaptive capacity was observed to increase significantly between the start and the end of the school year. In the female sample, differences were found in the *interpersonal* and *stress management* dimensions among Grade 7 pupils, and in *adaptability* in Grade 8, with a decrease in *stress management* levels being recorded despite increases in the *interpersonal* and *adaptability* dimensions.

As far as the cross-sectional analysis is concerned, it should be highlighted that significant statistical differences were found only in the *stress management* dimension among girls, with a significant decrease being observed between Grade 7 and Grade 12, with a large effect size. All these findings are consistent with those reported in the study by Keefer et al. (2013), which highlights the relative stable development of certain EI dimensions during adolescence.

Nevertheless, while not statistically significant, the results observed for the *stress management* scale are interesting, since they follow a different pattern in each sex. In boys, there was an upward "development", with the Grade 7 age group scoring lowest and the Grade 12 age group scoring highest. These findings coincide with the expectation that emotional skills should increase progressively as adolescents mature (Bar-On, 2006; Bar-On & Parker, 2000; Extremera, Fernández-Berrocal, & Salovey, 2006; Mayer et al., 1999; Saarni, 1999; Shutte, Malouff, Thorsteinsson, Bhullar, & Rooke, 2007). However, among the girls in our study, the "evolution" of *stress management* was completely different from that of boys, decreasing between Grade 7 and Grade 12. These findings, as observed in other studies and in self-perception and self-competence beliefs (Jacobs et al., 2002; Wigfield & Wagner, 2005), contradict maturity hypotheses. This decrease could be explained by cognitive and social maturity, which enables adolescent girls to more realistically self-assess their strengths and weaknesses, thus rendering them more self-aware (Harter, 2012).

In sum, we may conclude that EI "development" varies in accordance with sex and the dimension being analysed.

This is consistent with that postulated by Keefer et al. (2013) in their study conducted on adolescents over a six-year period, which found a similar pattern of evolution with increases, decreases and plateaus. Except for the case of the *stress management* dimension among girls, there was no substantial change in the other dimensions, coinciding with most previous research which reports either little or no differences in EI in accordance with age (Balci-Celik & Deniz, 2008; Birks, McKendree, & Watt, 2009; Harrod & Sheer, 2005; Nasir & Masrur, 2010); significant albeit relatively weak increases in EI parallel to the developmental process (Fariselli, Ghini, & Freedman, 2006); or, similarly to that found here, inconsistent and/or inconclusive patterns (Ugarriza & Pajares, 2005).

As a result of the findings presented here, it could be concluded that there may be other factors with more relevant effects than age, such as education, experience or socialisation in different roles or behaviours, which would explain any possible fluctuations in EI among adolescents. Although age is often associated with higher levels of EI, it is very likely that this has more to do with an accumulation of life experiences rather than the development of EI itself. Hence, there would be subjects of different ages with different EI levels, making it necessary to observe not the cross-

sectional differences between subjects but rather their longitudinal trajectories and, more specifically, the effect of environmental factors on the acquisition of a series of skills of unquestionable importance for psychological adjustment and well-being.

This study has certain limitations. Firstly, the sample group is fairly small. Secondly, it appears that studying EI development over the course of one school year is not sufficient to understand the evolution of this construct in adolescence. Consequently, future research should both increase the analysis period and employ more than two repeated measurements in order to collect more conclusive data. Nonetheless, given that this is the first Spanish study conducted at a national level using two repeated measures, it may prove to be a turning point, encouraging future longitudinal studies analysing EI development over a longer time period.

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