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Emotional intelligence and social and academic adaptation to school

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In a sample of 127 Spanish adolescents, the ability to understand and manage emotions, assessed by a performance measure of emotional intelligence (the MSCEIT), correlated positively with teacher ratings of academic achievement and adaptation for both males and females. Among girls, these emotional abilities also correlated positively with peer friendship nominations. After controlling for IQ and the Big Five personality traits, the ability to understand and manage emotions remained significantly associated with teacher ratings of academic adaptation among boys and peer friendship nominations among girls. Self-perceived emotional intelligence was unrelated to these criteria. These findings provide partial support for hypotheses that emotional abilities are associated with indicators of social and academic adaptation to school.

Inteligencia emocional y adaptación social y académica en la escuela. En una muestra de 127 estudiantes españoles, la habilidad para comprender y manejar las emociones medida a través de un instrumento de habilidad de inteligencia emocional (el MSCEIT) correlacionó positivamente con las evaluaciones realizadas por los profesores de los logros académicos y de la adaptación en la escuela de chicos y chicas. Entre las chicas, estas habilidades emocionales correlacionaron también positivamente con la designación como amiga por parte de los compañeros. Tras controlar el CI y los factores de personalidad de los Cinco Grandes, la habilidad para comprender y manejar las emociones permaneció asociada significativamente con las evaluaciones realizadas por los profesores de los logros académicos y de la adaptación en la escuela de los chicos y la designación como amiga por parte de los compañeros entre las chicas. La inteligencia emocional autopercibida no estaba relacionada con estos criterios. Estos resultados apoyan parcialmente las hipótesis de que las habilidades emocionales están relacionadas con indicadores de adaptación social y académica en la escuela.

The theory of emotional intelligence proposed by Salovey and Mayer (1990; Mayer & Salovey, 1997) posits that the ability to recognize, understand, use, and manage emotions contributes to adaptation in various realms of life. The present study examined the relationship between emotional abilities and social and academic adaptation to school in a sample of Spanish high-school students.

Children who have difficulty regulating emotional reactions or impulsive behavior, because they are temperamentally overreactive or lack emotional skills, are likely to experience difficulties in adapting to school, work, and social environments (Caspi, 2000; Eisenberg, Fabes, Guthrie, & Reiser, 2000; Kagan, 1998). A large number of studies with children further suggest that the capacity to decode, understand, and regulate emotions is associated with social and emotional adaptation (see Halberstadt, Denham, & Dunsmore, 2001; Saarni, 1999). Among college students, emotional abilities are positively associated with the quality of social interactions (e.g., Lopes, Brackett, Nezlek, Schütz, Sellin, & Salovey, 2004; Lopes, Salovey, Côté, & Beers, 2005), and prosocial behavior (e.g., Brackett & Mayer, 2003). Evaluations of school-based interventions emphasizing the development of emotional competencies also suggest that emotional learning contributes to social and academic adjustment (Greenberg, Kusché, Cook, & Quamma, 1995).

Emotional abilities might contribute to adolescents' social and academic adaptation to school in several ways (Lopes & Salovey, 2004; Saarni, 1999; Salovey & Sluyter, 1997). First, school work and intellectual development require the ability to use and regulate emotions to facilitate thinking, enhance concentration, control impulsive behavior, perform effectively under stress, and nurture intrinsic motivation (Baumeister, Heatherton, & Tice, 1994; Csikszentmihalyi & Larson, 1984). Second, social adaptation to school involves establishing sound relationships with peers and teachers, and emotional abilities and dispositions are thought to play a crucial role in social interaction. Emotions serve communicative and social functions, conveying information about people's thoughts and intentions, and coordinating social encounters (Keltner & Haidt, 2001). The expression of positive emotions tends to elicit favorable responses from others, whereas the expression of negative emotions often drives other people away (Argyle & Lu, 1990; Furr & Funder, 1998). Emotion regulation might facilitate positive expectations for social interaction (e.g., Cunningham, 1988), the use of effective social interaction strategies (e.g., Langston & Cantor, 1989), and executive functions associated with the coordination of numerous

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skills required for effective social behavior. Third, social adaptation to school and academic performance can be mutually reinforcing and further enhance students' motivation to engage in school work and develop relationships with peers (Hawkins, Catalano, Kosterman, Abbott, & Hill, 1999).

It is important to note that different authors have proposed varying conceptualizations of emotional intelligence. The theory proposed by Mayer and Salovey (1997) focuses on people's ability to process emotional information and regulate emotions. Other authors view emotional intelligence as encompassing personality characteristics and both social and emotional skills (e.g., Bar-On, 1997, 2006; Boyatzis, 2006; Petrides & Furham, 2000, 2001). In this paper we follow Mayer and Salovey's (1997) more focused definition of emotional intelligence because excessively broad definitions and assessments likely overlap too much with basic personality traits and yield research findings that are difficult to interpret (Brackett & Mayer, 2003; Brackett & Salovey, 2006).

We sought to extend previous research in several ways. We assessed a range of emotional abilities through both performance-based and self-report measures. We tried to obtain a rich picture of social and academic adaptation to school by obtaining peer and teacher ratings. We controlled for the Big Five personality traits and IQ because these share some variance with self-report and performance measures of emotional intelligence, respectively. Moreover, agreeableness and extraversion can influence social adaptation, openness and conscientiousness can influence academic achievement, and IQ is associated with academic performance. Finally, we examined sex differences because gender roles and associated patterns of socialization can shape academic and professional aspirations, habits of social interaction, feeling and display rules, and the development of emotional abilities. Accordingly, we might expect to find different patterns of association between emotional abilities and criteria for boys and girls.

In light of these considerations, we hypothesized that: (1) emotional intelligence is positively associated with indicators of both social and academic adaptation to school; (2) these associations remain statistically significant after controlling for IQ and the Big Five.

Method

Participants and procedures

The sample consisted of 127 Spanish high school students enrolled in two consecutive academic years (and four different classrooms) at «Colegio San José,» in San Fernando. Participants were aged 14 to 17 years (M= 15.1; SD= 0.9) and 50.4% were girls. Data collection occurred during class time, with support from the school principal, and following the ethical guidelines applicable in Spain. Later participants received carefully presented feedback based on the tests and questionnaires administered for this study.

Measures

Emotional intelligence. We administered the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT, Version 2.0; Mayer, Salovey & Caruso, 2002), translated into Spanish and adapted to the Spanish context by Extremera and Fernández-Berrocal (2002; Extremera, 2003). This test measures the abilities to perceive, use, understand, and manage emotions. For the Perceiving Emotions subscale, respondents identify the emotions in photographs of faces, as well as in designs and landscapes. For Using Emotions, respondents describe emotions with non-emotional vocabulary, and indicate the feelings that might facilitate or interfere with the successful performance of various cognitive and behavioral tasks. Understanding Emotions is assessed with questions concerning the manner in which emotions evolve and transition over time, and how some feelings are produced by blends of emotions. The ability to Manage Emotions is assessed through a series of scenarios in which people identify the most adaptive ways to regulate their own feelings and the feelings of others in social situations.

These four subscales can be aggregated into two area scores assessing experiential and strategic emotional intelligence. Experiential emotional intelligence encompasses the abilities to perceive emotions and use emotions to facilitate thought. Strategic emotional intelligence encompasses the abilities to understand and manage emotions. For the present study we used these two area scores because they might represent different cognitive processes and therefore reveal different patterns of association with academic performance. Moreover, area scores are slightly more reliable, enhancing statistical power for regression analyses. Additionally, reporting two area scores rather than four subscale scores enables a more succinct presentation of results.

The MSCEIT can be scored using both expert and consensus norms. Expert scores reflect the agreement between participants' responses and those of an expert panel of 21 emotion researchers from various nations. For example, if someone answers «A» to the first question and 24% of experts also answered «A», this person obtains a raw score of .24 for the first question. Consensus scores reflect the agreement between participants' responses and those of the normative sample, which consists of 5,000 English-speaking people from various nations. Scores based on consensus norms correlate highly (r>.90) with those based on expert norms (Mayer, Salovey, & Caruso, 2001; Mayer, Salovey, Caruso, & Sitarenios, 2003). For the present study, we used expert scores because expert norms might be less susceptible to cultural bias, and the expert panel was more internationally diverse than the normative sample.

Split-half reliabilities for the normative sample, based on expert scores and corrected by the Spearman-Brown formula, range from .76 to .90 for the four subscales of the MSCEIT (Mayer et al., 2002). We report split-half reliabilities for the MSCEIT due to item heterogeneity, as different subscales tap into somewhat different abilities. The psychometric properties of the Spanish adaptation of the MSCEIT are sound (Extremera & Fernández-Berrocal, 2006). Note that MSCEIT scores computed by the test publishers in North America are standardized (M= 100, SD= 15 for the normative sample).

Although the MSCEIT was designed for individuals aged 17 and over, we used this instrument with a slightly younger age group because this was the only reliable performance measure assessing a range of emotional abilities that was available at the time. Two researchers were present during data collection to ensure that participants understood the instructions and questions for this test, and to answer any questions that participants might have.

Self-perceived emotional intelligence. We used a 33-item scale assessing self-reported emotional intelligence (SSREI; Schutte et al., 1998; Spanish adaptation by Chico, 1999). This scale covers

the four emotional abilities proposed by Mayer and Salovey (1997), assessing the extent to which respondents characteristically identify, understand, harness, and regulate emotions in themselves and others. Sample items include «When I feel a change in emotions, I tend to come up with new ideas» and «I help other people feel better when they are down.» Respondents rate themselves from 1 (strongly disagree) to 5 (strongly agree). Schutte et al. (1998) reported internal consistency of .87 to .90 and two-week test-retest reliability of .78. They found a strong first factor encompassing all the dimensions of the Mayer and Salovey (1997) model, and recommended using a single total score for this scale. Although there has been some controversy about the factor structure of this scale, in the present study we followed their recommendation and report a single average score, ranging from 1 to 5.

IQ. We used a standardized, multi-level test of general intelligence, entitled *Inteligencia General Factorial* (IGF; Yuste, 1997). The test was originally developed in Spanish and has been validated for the Spanish student population. It measures verbal reasoning, verbal understanding, spatial aptitude, and numerical and abstract reasoning. We used the intermediate version recommended for high school samples. For the sake of parsimony we report a general intelligence score reflecting a student's IQ percentile in the 13-16 year-old age group.

The Big Five personality traits. We administered the *Big Five Questionnaire* (BFQ; Caprara, Barbaranelly, & Borgogni, 1995; Spanish adaptation by Bermúdez). This 132 item inventory is based on the five-factor model of personality and has been validated in Spain. Response options range from 1 (completely false) to 5 (completely true). Internal consistency for the five factors (emotional stability, extraversion, openness, agreeableness, and conscientiousness) ranges from .65 to .81 for the normative sample. To facilitate interpretation, we report average scores for each factor, ranging from 1 to 5.

Friendship nominations. Participants were asked to nominate their three best friends at school by writing down their names and class. The number of times each participant was chosen is an indicator of peer-rated social adaptation, henceforth labeled friendship nominations.

Teacher ratings of social and academic adaptation. In the school where we conducted this study, four teachers knew all the participants well, having taught them for at least two years. These teachers (2 men, 2 women) rated each participant on three 10-point scales: academic adaptation, social adaptation, and conflict/hostility. Academic adaptation included the following items: «what is this student's average academic achievement?» and «to what extent is this student well adapted to school (i.e., does he/she attend classes regularly, complete homework in a timely manner, respect rules, avoid disciplinary problems, etc…» A third item, «to what extent do you expect this student to fare well in life?», was included in this scale because it correlated above .75 with the previous two items, suggesting that teachers' expectations of students' success in life reflected students' academic achievement. Cronbach's alpha for this 3-item scale of academic adaptation was .93. Ratings of social adaptation were based on a single item: «To what extent is this student well accepted and socially recognized by his or her peers in the class?» Ratings of conflict and hostility were also based on a single item: «To what extent does this student create conflict (i.e., reveal hostility towards peers and/or teachers, indiscipline in the classroom, etc…)?» Inter-rater agreement among teachers, estimated using intraclass correlations, was 0.96 for academic achievement, 0.73 for social adaptation, and 0.83 for conflict and hostility. Such high agreement justified aggregating ratings across teachers.

Other measures. We also collected self-report data using an exploratory scale assessing social and emotional characteristics. These results were not informative and due to space limitations are not reported in this paper.

Results

Table 1 reports descriptive statistics for all the measures included. Note that girls scored significantly higher than boys on Experiential EI, Strategic EI, and self-perceived EI. They also received significantly higher teacher ratings of academic adaptation, and lower ratings of conflict and hostility (all t's>2.2, p<.05). In light of the observed gender differences and the theoretical considerations outlined in the introduction, we report all subsequent analyses separately by gender.

Tables 2 and 3 show correlations between predictor and criterion variables for boys and girls, respectively. For both genders, Strategic EI, assessed by the MSCEIT, correlated positively with teacher ratings of academic adaptation. Additionally, for boys, Experiential EI correlated with teacher ratings of academic adaptation and Strategic EI correlated negatively with teacher ratings of conflict and hostility. For girls, Strategic EI correlated positively with friendship nominations. Self-perceived EI was unrelated to criteria among boys and girls. Note that negative correlations between teacher ratings of

Table 1
Descriptive statistics

	Male		Female		Reliability[a]
	M	*SD*	*M*	*SD*	
1. Friendship nominations	2.66	2.06	2.40	1.36	–
2. Teacher ratings of acad. adaptation	5.11	1.57	5.74	1.85	0.92
3. Teacher ratings of social adaptation	5.99	1.15	5.60	1.32	–
4. Teacher ratings of conflict / hostility	4.00	2.28	2.59	1.81	–
5. Age	15.21	0.85	15.00	0.88	–
6. Experiential EI	86.88	14.04	91.63	13.44	0.84
7. Strategic EI	79.38	10.85	82.53	8.88	0.63
8. Self-perceived EI	3.65	0.41	3.88	0.27	0.80
9. IQ	53.85	31.40	53.82	31.65	0.90
10. Extraversion	3.27	0.42	3.18	0.37	0.73
11. Agreeableness	3.34	0.36	3.51	0.32	0.54
12. Conscientiousness	3.30	0.45	3.33	0.44	0.69
13. Emotional stability	3.01	0.35	2.79	0.42	0.75
14. Openness	3.30	0.41	3.30	0.33	0.52

Note: N= 127.
[a] We report Cronbach's alpha for Likert scales and split-half reliability corrected by the Spearman-Brown formula for performance measures (EI and IQ) due to item heterogeneity. Split-half reliability estimates for IQ were based on the 5 subscale scores.

academic adaptation and age probably reflect the fact that course repeaters tend to be older and have lower academic achievement.

Next we used multiple regression analyses to examine associations between emotional intelligence and criteria controlling for IQ and the Big Five personality traits simultaneously. These analyses included only those associations between EI scores and criteria for which zero-order correlations were found to be significant. Among boys, Strategic EI remained significantly associated with teacher ratings of both academic adaptation [$F(8, 36)= 4.71$, $p<.01$; ß= .37, $p<.01$] and conflict and hostility [$F(7, 41)= 2.31$; ß= -.39, $p<.05$] after controlling for IQ and the Big Five.[1] However, the association between experiential EI and teacher ratings of academic adaptation was no longer significant in these analyses. Among girls, Strategic EI remained significantly associated with friendship nominations [$F(7,28)= .50$; ß= .49, $p<.05$] after controlling for IQ and the Big Five. However, Strategic EI was no longer significantly associated with teacher ratings of academic achievement in these analyses.

Above we reported multiple regression analyses that did not control for age because age is confounded with academic achievement in this sample, given that students who repeat a grade tend to be older. However, we repeated the main analyses controlling simultaneously for age, IQ, and the Big Five and found essentially identical results.

Furthermore, the analyses reported above might be biased because we could not disentangle individual- and group-level effects in this study. The fact that students were nested within classes violates the assumption of independence of observations underlying ordinary least squares analyses (Bryk & Raudenbush, 1992). However, we did not conduct multilevel analyses for several reasons. First, complex multilevel analyses might not be informative because of limited statistical power and the fact that we collected data in only four classrooms. Although statistical power for multilevel analyses is not precisely defined, multilevel analyses conducted separately by gender using seven explanatory variables would probably exceed the «carrying capacity» of our data. Second, it is common practice in Spanish high schools to group students in classrooms according to their academic achievement. This confounds individual- and group-level variance. Therefore removing between-group variance would also eliminate part of the individual-level variance that we are interested in. Third, the fact that we aggregated ratings provided by four teachers and that students could nominate friends outside their classroom attenuates concerns about nesting effects to some extent.

Nesting effects might be particularly important for friendship nominations because in some classes students might get along better than in other classes. To address this concern, we repeated the analysis for friendship nominations after standardizing friendship nominations within class. This analysis replicated the finding reported above: among girls, Strategic EI remained significantly associated with friendship nominations after controlling for IQ and the Big Five.

Table 2
Correlations for males

	1	2	3	4
1. Friendship nominations	–			
2. Teacher ratings of academic adaptation	.12	–		
3. Teacher ratings of social adaptation	.26*	.01	–	
4. Teacher ratings of conflict and hostility	.02	-.64**	.44**	–
5. Age	-.09	-.36**	.13	.19
6. Experiential EI	.05	.31*	.18	-.06
7. Strategic EI	.04	.47**	.08	-.35**
8. Self-perceived EI	-.17	.25	-.15	-.30
9. IQ	.19	.43*	.32*	-.13
10. Extraversion	.25	.22	-.07	-.25
11. Agreeableness	.20	.32*	.07	-.37**
12. Conscientiousness	.32*	.19	.02	-.14
13. Emotional stability	-.01	-.03	.00	-.07
14. Openness	.08	.26	-.19	-.29*

Note: $N= 63$
* $p<0.05$; ** $p<.01$

Table 3
Correlations for females

	1	2	3	4
1. Friendship nominations	–			
2. Teacher ratings of academic adaptation	.13	–		
3. Teacher ratings of social adaptation	-.01	.40**	–	
4. Teacher ratings of conflict and hostility	.10	-.55**	.13	–
5. Age	-.04	-.30*	.01	.24*
6. Experiential EI	-.03	.09	.04	.12
7. Strategic EI	.36*	.40**	.12	.00
8. Self-perceived EI	.14	.05	.01	-.03
9. IQ	.05	.43**	.39**	-.20
10. Extraversion	-.04	-.08	.09	.09
11. Agreeableness	.09	.16	-.15	-.09
12. Conscientiousness	.17	.05	-.04	-.07
13. Emotional stability	.16	.05	.04	-.04
14. Openness	.13	.18	-.32*	-.35**

Note: $N= 64$
* $p<0.05$; ** $p<.01$

Discussion

In a sample of Spanish adolescents, strategic emotional intelligence, assessed by a performance measure (the MSCEIT) and encompassing the ability to understand and manage emotions, correlated positively with teacher ratings of academic adaptation for both boys and girls. Among girls, strategic emotional intelligence also correlated positively with friendship nominations. After controlling for IQ and the Big Five personality traits, strategic EI remained significantly associated with teacher ratings of academic adaptation among boys and peer friendship nominations among girls. Self-perceived emotional intelligence was unrelated to criteria. These results provided partial support for our hypotheses. Although we cannot determine causality, our findings suggest the possibility that emotional abilities contribute to students' social and academic adaptation to school. This further suggests that school-based programs aimed at promoting social and emotional abilities might have beneficial consequences. The

present findings are also interesting because they are based on a sample of high school students revealing substantial variability in intellectual ability, whereas most studies of emotional intelligence have been conducted with college student samples revealing restriction of range on IQ.

The significant association between peer friendship nominations and the ability to understand and manage emotions found among girls replicates prior findings linking emotional abilities and the quality of social interaction (e.g., Lopes et al., 2004; Lopes et al., 2005). It is unclear why the same pattern was not found for boys in the present sample. It is also unclear why the ability to understand and manage emotions seemed to be more strongly associated with academic adaptation for boys and with social adaptation for girls. Given limited statistical power, testing the statistical significance of differences in correlations would not be informative. However, it is possible that girls use their emotional abilities in different ways than boys and with different goals in mind. Some of the teachers we contacted at this school suggested that, compared to boys, girls in this age group and school might be relatively more concerned about being accepted by their peers than by their teachers. This might reflect differences in need for achievement and social affiliation. Thus our findings highlight the importance of examining gender differences in future research.

The focus of this study was to examine associations between emotional abilities and academic and social adaptation. Yet, these data also allowed us to examine how teachers' perceptions of students are related to students' characteristics. Boys whom teachers perceived to be academically better adjusted tended to score highly on experiential and strategic emotional intelligence, IQ, and agreeableness. Girls whom teachers perceived to be academically better adjusted tended to score highly on strategic emotional intelligence and IQ. More interestingly, perhaps, boys whom teachers perceived to be socially better adjusted among peers also tended to be perceived by teachers to be more conflictive and hostile, but did not receive more friendship nominations than their counterparts. Girls whom teachers perceived to be socially more well adjusted among peers tended to score highly on IQ and self-report lower openness to experience than their counterparts. These findings suggest that teachers might have a limited and biased perspective about students' social integration among peers. Teachers might be wrong in thinking that students who appear to be conflictive or hostile are also more popular among peers.

The present study had several limitations. MSCEIT scores for the present sample might be biased by cultural or age differences, which would explain why mean scores for the present sample were significantly below the mean of 100 for the normative sample. The MSCEIT was designed to tap into the more universal aspects of emotional information processing and the expert sample upon which scores are based is internationally diverse. Nonetheless, cultural differences might still contribute to lower scores. Furthermore, we administered the MSCEIT to 14- to 17-year-olds, whereas this test was designed for people aged 17 or older. We did this because the MSCEIT was the only reliable performance measure assessing a range of emotional abilities (although a youth-version of the MSCEIT, the MSCEIT-YV, is to be released shortly). We took special care to ensure that participants understood the test instructions and items. Nonetheless, the age of our participants might have influenced scores on this test. Additional limitations included the fact that: we could not disentangle individual- and group-level effects, as explained in the results section; teacher ratings of social adaptation and conflict were based on single-item scales; teachers might be susceptible to halo effects and have limited information about students' social standing among peers; and we did not control for study-wise error rates. For all these reasons, the present findings should be viewed as preliminary and interpreted with caution until they are replicated.

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Footnotes

[1] Note that IQ was also significantly associated with teacher ratings of academic adaptation in these analyses ($ß$= .52, p<.01).

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