

Relating emotional intelligence to social competence and academic achievement in high school students

Paloma Gil-Olarte Márquez, Raquel Palomera Martín* and Marc A. Brackett**
University of Cádiz, * University of Cantabria and ** Yale University (USA)

This study investigated the discriminant, criterion and incremental validity of an ability measure of Emotional Intelligence (EI). High school students ($N=77$) took the Mayer-Salovey-Caruso Emotional Intelligence Test - Spanish Version (MSCEIT V. 2.0, 2002), a measure of Big Five personality traits (BFQ; Caprara, Barbanelli, & Borgogni, 1993), an General Intelligence test (IGF-r 5; Yuste, 2002), and a social competence inventory (AECS; Moraleda, González, & García-Gallo, 1998). Students' academic grades also were obtained from official school records at the end of the school year. As predicted, the MSCEIT was discriminable from well-established measures of personality and intelligence. The test was also moderately related to social competence and predicted students' final grades. Most of the findings remained significant after personality and academic intelligence were statistically controlled. The potential utility of EI in the context of academic institutions is discussed.

La relación de la inteligencia emocional con la competencia social y los logros académicos en estudiantes de Educación Secundaria. En este estudio se ha investigado la validez discriminante, de criterio y concurrente de una medida de Inteligencia Emocional (IE). La muestra, compuesta por 77 estudiantes de Educación Secundaria, completó el Mayer-Salovey-Caruso Emotional Intelligence Test, en su versión española (MSCEIT V. 2.0, 2002), una medida de los Cinco Grandes factores de personalidad (BFQ; Caprara, Barbanelli y Borgogni, 1993), un test de Inteligencia General (IGF-r 5; Yuste, 2002) y un autoinforme de competencias sociales (AECS; Moraleda, González y García-Gallo, 1998). Finalmente, la escuela facilitó las notas finales de los estudiantes. El MSCEIT mostró una validez discriminante respecto a las medidas de personalidad e inteligencia general. También se obtuvieron correlaciones moderadas con la nota final y las competencias sociales, las cuales permanecieron significativas en su mayoría una vez controlado estadísticamente el efecto de la personalidad e inteligencia general. La potencial utilidad de la IE en el contexto académico es revisada.

School teachers and parents always have been concerned about children's academic success and social adaptation both in and out of the classroom. Only recently, however, have researchers realized that a child's emotional life has an impact on these important outcomes (Gardner, 1993; Pekrun, 1992). The theory of emotional intelligence (EI; Mayer & Salovey, 1997) and a performance-based test of EI, the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT; Mayer, Salovey, & Caruso, 2002a) provide a framework to study the role of emotion-related abilities in student learning and social adaptation.

Salovey and Mayer (1990) were the first to propose a theory of EI in the academic literature. In their most recent model, they define EI as the ability to: (a) *perceive and express emotion*, (b) *use emotion to facilitate thought*, (c) *understand and reason with emotion*, and (d) *regulate emotion in the self and others* (Mayer &

Salovey, 1997). These researchers conceptualize EI as a mental ability that pertains to an individual's capacity to process and reason with and about emotion-laden information. Mayer and Salovey's model is distinct from other «mixed» models, which define and measure EI as a set of self-perceived skills, competencies, and personality traits, including optimism and self-esteem (Bar-On, 1997; 2006; Boyatzis, 2006; Goleman, 1995; see also Mayer, Salovey, & Caruso, 2000 for a thorough discussion on different models of EI).

The goal of this study is to examine whether EI, measured as a mental ability with the MSCEIT, is associated with a wide range of social competencies, and predictive of school success using end-of-the-year school grades in a sample of high-school students. The discriminant and incremental validity of EI also will be examined to test whether EI is related to social competence and grades after potentially confounding variables such as general intelligence and personality characteristics are statistically controlled. We hope to show that EI contributes to both academic and social success independently. This information could then inform educators and policy-makers on the potential utility of integrating lessons on emotional literacy into existing school curriculum.

Previous studies using a variety of self-report measures have shown that EI is associated with important social outcomes,

Correspondence: Paloma Gil-Olarte Márquez
Faculty of Education
University of Cádiz
11519 Puerto Real - Cádiz (Spain)
E-mail: paloma.gilolarte@uca.es

including social adjustment (Engelberg & Sjöberj, 2004), altruism and civic virtue (Charbonneau & Nicol, 2002) and leadership potential (Barling, Slater, & Kelloway, 2000). With respect to academic achievement there are mixed findings. Extremera and Fernández-Berrocá (2004) showed that emotional stability mediated the relationship between self-report EI (as measured by TMMS; Salovey, Mayer, Goldman, Turvey, & Palfai, 1995) and student grades. However, Newsome, Day and Catano (2000) did not find this association between EI and grades using the EQ-i (Bar-On, 1997). Because the above studies used self-report indices of EI, which tend to correlate highly with measures of well-being and personality (Brackett & Mayer, 2003); it would be useful to test whether EI, measured as a distinct mental ability with the MSCEIT predicts these outcomes.

Evidence for associations between EI ability and both social and academic success have been summarized in a number of recent book chapters and review articles (see Brackett, Lopes, Ivcevic, Mayer, & Salovey, 2004; Brackett & Salovey, 2006; Mayer, Salovey, & Caruso, 2004). In general, studies have shown that EI ability is related to greater empathy (Ciarrochi, Chan, & Caputi, 2000), less negative interactions with peers (Brackett, Mayer, & Warner, 2004), higher-quality relationships, less conflict and antagonism with friends (Lopes, Brackett, Nezek, Schütz, Sellin, & Salovey, 2004; Lopes, Salovey, & Straus, 2003), and lower levels of violence and drugs problems (Brackett et al., 2004; Gil-Olarte, Guil, & Mestre, 2004; Rubin, 1999; Trinidad & Johnson, 2002).

Correlations between EI and grades are in the $r = .20$ to $.25$ range for college students (Barchard, 2003; Brackett & Mayer, 2003; Lam & Kirby, 2002; Parker, Creque, Barnhart, Harris Irons, Majeski, Wood, Bond, & Hogan, 2004) and $r = .28$ to $.32$ range for high school students (Parker, Summerfeldt, Hogan, & Majeski, 2004). Once general intelligence and personality are partialled out, however, the relationship between EI and grades drops to non-significance in some studies (Barchard, 2003; Brackett & Mayer, 2003; Lam & Kirby, 2002).

Because academic grades tend to be inflated and restricted in college student samples, which attenuate correlations, the present study examines associations among EI, social competence, and academic grades in a sample of high school students. Moreover, this research examines whether the MSCEIT is a valid instrument in a European country in which Spanish is the primary language.

Introduction to the present study

In the present research we examine whether EI, measured by the MSCEIT, predicts prosocial and maladaptive behavior, and final academic grades in a Spanish sample of high school students. We first assess the discriminant validity of EI in comparison to the Big Five personality traits and verbal intelligence. We then compute zero-order correlations between the MSCEIT, social competencies, and grades. In the final set of analyses we compute partial correlations (holding the Big Five and verbal intelligence constant) to test whether the MSCEIT is incrementally validated.

Method

Participants

Analyses are based on Spanish participants ($N = 77$; 38 females, 39 males) who were students of 4^o E.S.O. (last year of the

Obligatory Secondary Education) in a semi-private High School in Cadiz, Spain. The students were between 14 and 17 years old ($M = 15.03$, $SD = .70$) and most came from middle class families.

Measures

Mayer, Salovey, Caruso Emotional Intelligence Test (MSCEIT; Mayer, Salovey, & Caruso, 2002a). Emotional Intelligence was measured with MSCEIT Version 2.0- Spanish version (adapted by Extremera & Fernández-Berrocá, 2002; Extremera, Fernández-Berrocá, & Salovey, 2006). This test contains 141 items that are answered in approximately 35 minutes. The test consists of eight tasks, which are divided into four classes or branches of abilities including (a) perceiving emotion, (b) using emotion to facilitate thought, (c) understanding emotion, and (d) managing emotion. Analysis of the data by the test publisher provides scores for each branch and a total score. More detailed information on the MSCEIT is available in the Technical Manual (Mayer, Salovey, & Caruso, 2002b). Because we were interested in the construct of EI and not the individual components of EI such as the perception of emotion, in this study we only report analyses with the MSCEIT total score.

Big Five Questionnaire (BFQ; Caprara, Barbarelli, & Borgogni, 1993). This questionnaire has 132 items, which comprise the Big Five Factors of: Neuroticism ($\alpha = .81$), Extraversion ($\alpha = .73$), Intellect ($\alpha = .76$), Agreeableness ($\alpha = .85$) and Conscientiousness ($\alpha = .88$).

Factorial General Intelligence (IGF-5r; Yuste, 2002). This 70-item questionnaire assessed verbal ($\alpha = .88$), numerical ($\alpha = .88$) and spatial ($\alpha = .87$) reasoning. General Intelligence ($\alpha = .94$) is measured by the sum of these three abilities.

Social-Cognitive Attitudes and Strategies (AECS; Moraleda, González, & García-Gallo, 1998). This scale measures nine social competencies and ten aspects of social thinking. In this study we only examined the social competence scales, including: Self-confidence-Assertiveness ($\alpha = .72$): «I usually show good self-confidence when I have to discuss a problem with someone», Cooperation-Help ($\alpha = .75$): «I feel pleasure congratulating and encouraging my peers when they do good work», Prosocial Leadership ($\alpha = .77$): «When I am in a group, I usually get the role of organizer and direct the work», Social Sensibility ($\alpha = .81$): «When I see someone who is upset, I like to approach him/her and empathize with his/her feelings», Social Apathy ($\alpha = .72$): «I prefer to play alone on break, away from other peers», Shyness-Anxiety ($\alpha = .75$): «It is very difficult for me to look into the eyes of someone when I am speaking with him/her», Aggressiveness-Obstinacy ($\alpha = .70$): «When I think I am right, I am inflexible, although the rest of the people disagree with me», Dominancy ($\alpha = .73$): «I usually try to be the boss and have authority over people», and Conformity ($\alpha = .70$): «I don't usually have problems in accepting and obeying norms because I think they are good for everyone, facilitating coexistence».

Official school records. Students' final grades for both science and humanities classes were obtained from official school records.

Procedure

All participants took the MSCEIT, BFQ, IGF, and AECS in separate sessions, each lasting one-hour. Students completed the measures voluntarily during tutorial hours with the school

counselor in their own classroom. Final grades were obtained at the end of the academic year; consent was obtained.

Results

First, we computed descriptive statistics on all measures. Second, we compared the MSCEIT to the Big Five and General Intelligence. We then computed the correlations among the MSCEIT, social competencies measures, and academic grades. Finally, we tested the incremental validity of the MSCEIT (relative to the Big Five and General Intelligence).

Descriptive Statistics

Table 1 displays the descriptive statistics on all measures included in the study, which were all normally distributed. The MSCEIT scores of our participants were somewhat lower than the individuals who comprised the normative sample. Emotional intelligence, however, is hypothesized to develop with age and experience; therefore the lower scores in this sample of high school students could be expected (Mayer, Salovey, & Caruso, 1999). It is also possible that the participants had difficulty with some of the questions on the MSCEIT because the test is recommended for use with individuals over seventeen years old and our sample was slightly under this age. General Intelligence scores also were somewhat lower than the population mean. Finally, Big Five scores were all in the expected range as were the students' final grade point averages.

We then compared the participants' scores on the social competence scales to the published population norms. Participants'

scores were below the population mean on five of the nine social competencies: Leadership, Social Apathy, Shyness, Aggressiveness, and Dominancy. Participants' scores were near the mean on four scales: Social sensibility, Cooperation, Self-confidence and Conformity.

Discriminant Validity of the MSCEIT

MSCEIT scores were then correlated with the Big Five traits and general intelligence. With respect to the Big Five, the MSCEIT was significantly correlated with Agreeableness $r = .36, p .01$ and Intellect $(r = .36, p .01)$, but not with Neuroticism, Extraversion and Conscientiousness. The MSCEIT was moderately related to verbal intelligence $(r = .31, p .05)$ but not with general intelligence $(r = .22, n.s.)$. These findings replicate previous work, which showed that the MSCEIT is mostly independent of personality, and does not overlap greatly with Verbal and General Intelligence (Brackett & Mayer, 2003; Brackett, Mayer, & Warner, 2004; Lopes, Salovey, & Straus, 2003; Lopes et al., 2004; Salovey, Mayer, Caruso, & Lopes, 2001).

Criterion Validity of the MSCEIT

We then computed zero-order correlations to test whether EI is associated with prosocial and maladaptive behavior and end of the year school grades. Table 2 shows these results. EI correlated positively with Cooperation, Self-confidence and Leadership, and negatively with Shyness and Dominancy. Because we expected two general factors of social competencies (one positive and one negative) we factor analyzed the nine social competence measures using principal axis factoring with oblique rotation. As expected, the two-factor solution was optimal (all loadings were above $\pm .40$). The factors were labeled: Prosocial behavior (social sensibility, cooperation, self-confidence, leadership, apathy and shyness) and Maladaptive behavior (aggressiveness, dominancy

Table 1
Descriptive statistics for all measures

	Range	Mean	Std. deviation
Social competencies			
Social sensibility	28-56	46.11	(4.56)
Cooperation	36-68	53.64	(6.83)
Self confidence	35-69	54.03	(7.47)
Leadership	8-28	18.05	(4.34)
Social apathy	11-43	25.37	(7.14)
Shyness	8-40	23.63	(7.38)
Aggressiveness	20-46	28.55	(5.79)
Dominancy	6-30	16.22	(5.42)
Conformity	28-59	45.23	(6.71)
Prosocial behavior	4-30	20.43	(4.63)
Maladaptive behavior	14-37	23.38	(4.67)
Academic performance			
Final grades (GPA)	3-9.36	6.07	(1.48)
Emotional intelligence			
MSCEIT total score	59.34-101.86	82.12	(8.98)
Personality			
Extraversion	2.25-3.79	3.12	(0.31)
Neuroticism	1.92-3.92	2.96	(0.41)
Conscientiousness	2.00-4.25	3.19	(0.45)
Agreeableness	2.38-4.04	3.35	(0.38)
Intellect	2.33-4.13	3.25	(0.36)
Performance measure			
Verbal intelligence ¹	20-96	49.50	(23.46)

Note: 70 N 77, missing data.
1 N = 50

Table 2
Zero order and partial correlations between Total MSCEIT scores and all measures

	Zero order ¹	Partial correlation (verbal quotient held constant) ²	Partial correlation (big five held constant) ³
Social competencies			
Social sensibility	.14	.23	-.04
Cooperation	.38**	.34**	.17
Self-confidence	.44**	.47**	.38**
Leadership	.31**	.33**	.25*
Social apathy	-.21	-.15	-.11
Shyness	-.33**	-.28*	-.26*
Aggressiveness	-.18	-.18	-.13
Dominancy	-.24*	-.24*	-.07
Conformity	.22	.19	.07
Prosocial behavior	.41**	.45**	.30*
Maladaptive behavior	-.19	-.25	-.04
Academic Pperformance			
Final grades (GPA)	.46**	.43**	.36**

Note: ¹ N = 75-77; ² N = 50; ³ N = 65. All significant correlations are shown in bold face.
*p 0.05; **p 0.01

and conformity). The factors accounted for 33.2% and 20.25% of the variance, respectively. In order to test the associations between EI and Prosocial versus Maladaptive behavior, two higher-order factor-based scales were created by averaging scores on the first-order scales. The correlation between EI and Prosocial behavior was $r = .41, p .001$ and with Maladaptive behavior it was $r = -.19, p .05$. In this sample it appears that EI is more predictive of positive social behavior than of negative behavior. Finally, the strongest zero-order correlation was between EI and end of the year grades, $r = .46, p < .001$.

Incremental validity of the MSCEIT

Although EI was only modestly correlated with several Big Five factors and General Intelligence, we thought it was important to test the incremental validity of the MSCEIT. For example, because Agreeableness and EI are correlated, it is conceivable that controlling for Agreeableness might reduce the size of the correlation between EI and certain social behaviors such as Cooperation. Table 2 shows the partial correlations between the MSCEIT and the criteria controlling for the Big Five (Column 2) and General Intelligence scores (Column 3). The results are presented separately due to the smaller sample size for individuals with valid IQ scores. After statistically controlling for the Big Five, the MSCEIT remained predictive of Self-confidence, Leadership, Shyness, the Prosocial Behavior factor, and final grades. After controlling for General intelligence, the MSCEIT remained predictive of Cooperation, Self-confidence, Leadership, Dominancy, Shyness, Prosocial Behavior factor, and final grades. Overall, the results support the incremental validity of the MSCEIT.

Discussion

The present research provided support for the relationship between EI and prosocial/maladaptive behavior and academic achievement in a sample of high-school students in Spain. These findings also support the hypotheses made by educators and psychologists about the potential utility of integrating lessons on EI in school (Elías, Gara, Schuyler, Brandon-Muller, & Sayette, 1991; Lopes & Salovey, in press; Pool, 1997).

Predictive validity and incremental validity of emotional intelligence

In this sample of high school students EI was related to six out of nine indices of social competence and final grades. The most robust findings were between EI and Self-confidence, Prosocial behavior, and academic grades. All of these associations remained significant when General Intelligence was controlled. After personality was controlled four of the six correlations remained statistically significant.

The relationship we found between MSCEIT scores and academic achievement contradicts previous findings with college students (Barchard, 2003) in which the relationship between EI and academic grades became non-significant after verbal skills were held constant. One explanation for our findings is that the distribution of EI and General Intelligence scores is less restricted than in college student samples. Thus, it will be important to replicate these findings. Our research also supports and extends prior research relating EI to indices of prosocial behavior (Lopes

et al., 2003; Lopes et al., 2004; Trinidad & Johnson, 2002; Vorbach, 2002).

Due to the reduced sample size in the partial correlation analyses, a number of the significant zero order correlations became non-significant even though the effect sizes remained unchanged. For example, the positive correlation between EI and cooperation and the negative association between EI and dominancy became non-significant when personality was statistically controlled, even though the effect size was the same. Indeed, many other partial correlations would have remained significant if the sample had been larger.

It is unclear why EI was not correlated with Aggressive behavior; this effect was found in two other studies with college students (Brackett & Mayer, 2003; Brackett et al., 2004). One potential explanation is that we employed a broad self-report measure of aggression and the other studies measured aggression with objective ratings of aggressive behavior (e.g., number of physical fights). Moreover, Aggressiveness and Social Apathy scores were below the population average.

We also are unsure why EI was not related to Social Sensibility. This scale evaluates the tendency to understand other people's feelings, have tolerance of character differences between people, to value to the other ones, and to have a positive image of them. Empathy correlates positively with EI (Mayer et al., 1999).

Limitations and Future Directions

This study is limited because we only examined the EI, academic achievement, and social competence of 77 high school students in Spain. It will be necessary to replicate these findings in a larger and more heterogeneous sample of students. For example, it will be important to know whether EI correlates with social competence and academic achievement with elementary, middle, and high school students with different ethnic and socioeconomic backgrounds. Due to the small number of participants, in this study we were unable to test for gender differences in correlations between EI and social competence and academic achievement, which may have masked some of the findings. For example, Brackett et al. (2004) found that EI predicted social deviance for males, but not for females.

Another limitation is that we assessed social competence with self-report instruments instead of using more objective measures from parents, peers, or teachers. Additionally, there were problems with the IQ scores of the participants, which may pertain to the students' lack of motivation or fear of failure. Finally, the participants were adolescents living in a medium to high socioeconomic context whose social and emotional adjustment may be higher than adolescents living in disadvantage contexts (Tiwari & Srivastava, 2004).

This study also raised a number of interesting questions for future research: Why was EI predictive of prosocial, but not maladaptive behavior? Why does EI predict academic achievement? For example, it is possible that students who are better able to manage their emotions, one component of EI, are more effective at controlling anxiety and focusing their attention in school, which helps them to achieve higher grade point averages. Moreover, students with higher EI may report more prosocial behavior because they are more perceptive of people's emotional states; these students have the «feelings» vocabulary to discuss their own and others feelings and are more effective at

handling conflict. Only future research will help us to answer these questions.

Future research also will need to examine whether EI skills can be taught. That is, can students increase their scores on tests that measure the ability to perceive, use, understand, and regulate emotions? Zeidner, Roberts and Matthews (2002) urge educators to validate emotional literacy programs. Currently, researchers at Yale University are testing the effectiveness of «Emotional literacy in the middle school: A six-step program to promote social, emotional, and academic learning» (Maurer & Brackett, 2004). This curriculum was designed to teach children about the emotion-related abilities described in Mayer and Salovey's (1997) model of EI. Preliminary evaluations of the program by students, teachers, and parents are all very positive.

Conclusion

This study examined relations between EI and important social and academic outcomes for high school students. The results support the incremental validity of EI and provide positive indications of the importance of EI in adolescent's academic and social development.

Students with high EI tended to be more prosocial and perform better in school. This suggests that integrating lessons on socio-emotional learning in schools might improve students' performance, decrease maladaptive behavior and increase prosocial behavior (Guil, Gil-Olarte, Mestre & Núñez, 2005; Guil, Mestre & Gil-Olarte, 2004). However, it will be important to test the effectiveness of socio-emotional and academic learning (SEAL) programs on these outcomes in school (Mayer & Cobb, 2000; Brenner & Salovey, 1997). It also will be necessary to test whether these skills are learned better by adding a specific program to the curriculum (or after school program) or by integrating SEAL into existing curriculum such as literature or history. Finally, only well designed experiments and longitudinal studies at various levels (Elementary, Middle and High School) will show whether EI can be learned (and at what age) and whether teaching these skills will have lasting effects.

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