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Emotional Intelligence as Predictor of Mental, Social, and Physical Health in University Students

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This study examined the association between emotional intelligence (EI), anxiety, depression, and mental, social, and physical health in university students. The sample was made up of 184 university students (38 men and 146 women). EI was evaluated by the Trait Meta-Mood Scale (Salovey, Mayer, Goldman, Turvey, & Palfai, 1995), which evaluates the three dimensions (Attention, Clarity, and Mood Repair). Anxiety was evaluated with the Trait Anxiety Questionnaire (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) and depression with the Beck Depression Inventory (Beck, Rush, Shaw, & Emery, 1979). Mental, social, and physical health were evaluated with the SF-12 Health Survey (Ware, Kosinski, & Keller, 1996). Results showed that high Emotional Attention was positively and significantly related to high anxiety, depression, and to low levels of Role Emotional, Social Functioning, and Mental Health. However, high levels of emotional Clarity and Mood Repair were related to low levels of anxiety and depression, high Role Physical, Social Functioning, Mental Health, Vitality, and General Health. This study confirmed the predictive value of Attention, Clarity and Mood Repair regarding the levels of anxiety, depression, and areas related to mental, social, and physical health in university students.
Keywords: emotional intelligence, anxiety, depression, social, physical health

Este estudio analizó la relación entre la inteligencia emocional (IE) de los universitarios, sus niveles de sintomatología ansiosa y depresiva y el estado de salud físico, social y mental. La muestra estaba compuesta por 184 estudiantes universitarios (38 varones y 146 mujeres). La IE se evaluó con el cuestionario Trait Meta-Mood Scale (Salovey, Mayer, Goldman, Turvey, & Palfai, 1995) que evalúa tres dimensiones básicas relacionadas (Atención, Claridad y Reparación Emocional). La ansiedad se evaluó con la Escala de Ansiedad Rasgo (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983), la depresión se evaluó con el Inventario de Depresión (Beck, Rush, Shaw, & Emery, 1979) mientras que el estado de salud social, mental y físico se evalúo con la SF-12 Health Survey (Ware, Kosinski, & Keller, 1996). En general, los resultados indicaron que una alta puntuación en Atención Emocional se relacionó significativa y positivamente con mayor sintomatología ansiosa y depresiva así como con puntuaciones más bajas en Rol emocional, Funcionamiento Social y Salud Mental. En cambio, mayores niveles de Claridad y Reparación Emocional se relacionaron con menores niveles de Ansiedad y Depresión, y mayor puntuación en Rol Físico, Funcionamiento Social, Salud Mental, Vitalidad y Percepción de Salud. Este estudio confirmó el carácter predictivo de la Atención, Claridad y Reparación Emocional sobre los niveles de ansiedad y depresión y sobre diferentes áreas relacionadas con la salud mental, social y física de los universitarios.
Palabras clave: inteligencia emocional, ansiedad, depresión, salud física, funcionamiento social

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The topic of emotional intelligence (EI) has recently awakened great interest in researchers and mental health professionals. EI proposes a new perspective in the study of emotions, in which they have gone from being originally considered distracting elements of cognitive processes to being considered vital phenomena of the human being, which provide useful information about how to solve daily problems. In fact, seen from this approach, the intelligent use of our emotions is considered essential for one's physical and psychological adaptation (Mayer & Salovey, 1997; Salovey, Bedell, Detweiler, & Mayer, 1999; Salovey, Mayer, Goldman, Turvey, & Palfai, 1995).

Among the many definitions of the concept, the one proposed by John Mayer and Peter Salovey, who consider EI as the capacity to process emotional information, has found the most widespread acceptance in the scientific community (Mayer & Salovey, 1997). Briefly, these authors conceive EI as "the ability to perceive accurately, appraise, and express emotion; the ability to access and/or generate feelings when they facilitate thought; the ability to understand emotion and emotional knowledge; and the ability to regulate emotions to promote emotional and intellectual growth" (p. 10). Within the field of assessment, one of the most widely used instruments to evaluate the aspects of EI defined by these authors is the Trait Meta-Mood Scale (TMMS; Salovey et al., 1995), which evaluates people's perceived capacity to pay attention to their moods and emotions, to discriminate them, and to repair and manage them.

Research using the TMMS to evaluate the levels of Attention, Clarity and Mood Repair has revealed the existence of a differential profile in its components (Extremera & Fernández-Berrocal, 2005a). Thus, people with high EI have a pattern characterized by moderate-to-low scores in Emotional Attention and high scores in Clarity and Emotional (Salovey et al., 1999).

People who are emotionally attentive are characterized by paying constant attention to the course of their moods in an effort to understand them, which is not always productive for the individual. This is particularly so when excessive attention to emotions is not followed by sufficient capacity to understand their causes, motives, and consequences (Thayer, Rossy, Ruiz-Padial, & Johnsen, 2003). The real danger is that people who attend to their emotions excessively without adequate Clarity and Mood Repair could develop an emotional spiral that would generate a ruminative process, out of control, which in turn would maintain, rather than relieve, their negative mood.

Conversely, high Emotional Clarity has been linked to higher satisfaction with life (Palmer, Donaldson, & Stough, 2002; Extremera & Fernández-Berrocal, 2005b). Individuals who are aware of what they are feeling will be more skillful about treating emotional problems and, therefore, will experience more emotional wellbeing, in comparison with less skilled individuals. Likewise, people who easily identify a specific emotion during stressful situations will spend less time attending to their emotional reactions, using fewer cognitive resources, which in turn will allow them to assess alternative actions, keep their thoughts on other tasks, or use more adaptive coping strategies (Fernández-Berrocal & Extremera, 2005, in press; Gohm & Clore, 2002; Ramos, Fernández-Berrocal & Extremera, in press).

Lastly, a high score in the Mood Repair factor has also been associated with better general results in life, as it involves a higher capacity to interrupt negative moods and prolong the positive ones (Extremera & Fernández-Berrocal, 2002; Fernández-Berrocal, Salovey, Vera, Extremera, & Ramos, 2005; Goldman, Kraemer, & Salovey, 1996; Williams, Fernández-Berrocal, Extremera, Ramos, & Joiner, 2004).

The purpose of this study was to examine the relationships between these three components of EI and several variables related to mental and physical health. Specifically, we examined the relations between EI and anxious and depressive symptomatology and health status in university students.

Stemming from the aforementioned studies, our main hypothesis is that moderate-to-low scores in Emotional Attention and high scores in Clarity and Mood Repair on the Spanish version of the TMMS will be related to less anxious and depressive symptomatology and higher scores in the various components of health status. Then again, Attention, Clarity, and Mood Repair will significantly predict university students' levels of anxiety, depression, and the different components of physical, social, and mental health status.

Method

Participants

The sample, consisting of the participants who completed each questionnaire and its dimensions, was made up of 169 students from the University of Málaga (33 men and 136 women), of ages between 19 and 57 years (M = 22.84, SD = 4.24). They participated voluntarily in this study as requirement for a psychology course. The questionnaires were completed during a class under the supervision of one of several research assistants.

Measures

The following assessment instruments were employed in this study:

Trait Meta-Mood Scale (TMMS; Salovey et al., 1995). We used the Spanish modified version of the TMMS (Fernández-Berrocal, Extremera, & Ramos, 2004). This instrument is made up of 24 items and provides an indicator of the levels of perceived EI. Respondents are asked to rate

their degree of agreement on each of the items on a 5-point Likert-type scale ranging from 1 (*very much agree*) to 5 (*very much disagree*). The scale is made up of three subfactors: Attention to one's Feelings, Emotional Clarity, and Mood Repair. Attention to Feelings, assessed by the first 8 items, is the degree to which people believe they pay attention to their feelings (i.e., "I think about my mood constantly"); Emotional Clarity, evaluated by the following 8 items, refers to how people believe that they perceive their emotions (i.e., "I frequently make mistakes about my feelings"), and Mood repair, assessed by the remaining 8 items, refers to people's belief in their capacity to interrupt negative moods and prolong positive ones (i.e., "Although I sometimes feel sad, I usually have an optimistic outlook"). Fernández-Berrocal, Extremera, and Ramos found an internal consistency of .90 for Attention, .90 for Clarity, and .86 for Repair, improving the psychometric properties of the original extended 48-item version (Salovey et al., 1995), which had values of .86, .87, and .82 for Attention, Clarity, and Repair, respectively. In the present study, we obtained Cronbach alphas values for each of the TMMS dimensions of .88, 89, and .86 for Attention, Clarity, and Repair, respectively.

Beck Depression Inventory (BDI; Beck, Rush, Shaw, & Emery, 1979). This measure determines the presence of a depressive syndrome, and if present, its intensity. It is a 21-item self-report scale used to assess the physical and cognitive symptoms of depression. The total score ranges between 0 and 63. Higher BDI scores indicate more depressive symptomatology. The value of Cronbach's alpha in the original BDI was .93. We used the Spanish adaptation (Sanz & Vazquez, 1998). The Spanish version has also shown adequate psychometric properties (α = .83). This instrument is extensively used in research with different populations and various psychological disorders. In this study, we obtained a Cronbach alpha of .88.

Spielberger Trait Anxiety Questionnaire (STAI-T; Spielberger, Gorsuch, & Lushene, 1983). This is a self-report measure of trait-anxiety that appraises the relatively stable cognitive responses of anxiety that characterize individuals with a tendency to perceive situations as threatening. We used the Spanish adaptation (Spielberger, Gorsuch, & Lushene, 1994). The original scale is made up of 20 items. The internal consistency of the STAI subscales ranges from .83 to .92. The test-retest reliability of the subscale STAI-T is .81. Scores range between 20 and 80, with higher scores on a subscale indicating more anxious responses in the individual. In this study, we obtained a Cronbach's alpha of .90.

12-Item Short Form (SF-12; Ware, Kosinski, & Keller, 1996). The SF-12 is used to assess individuals' health status. We used the Spanish adaptation (Ware, Kosinski, Turner-Bowker, & Gandek, 2002). This scale evaluates eight health components: Physical Functioning, which appraises limitations in physical activities such as walking or going up stairs; Social Functioning, which examines the effects of physical and emotional health on daily social activities, Role Physical and Role Emotional, which measure the limitations and problems at work or in other daily activities as a result of physical or emotional problems; Mental Health, which assesses happiness, anxiety, and depression; Vitality, which measures levels of energy and fatigue, and Bodily Pain, which evaluates limitations due to pain. Lastly, the dimension of perception of General Health is included, which measures personal health and expectations of change in health. Due to the limited length of the measure, the authors of the instrument did not measure reliability by means of Cronbach's alpha, but instead they used test-retest reliability. As this study was cross-sectional, it was not possible to calculate this type of reliability although studies in other populations show evidence of high reliability (Amir, Lewin-Epstein, Becker, & Buskila, 2002; Bohannon, Maljanian, & Landes, 2004).

Statistical Analyses

In order to analyze the relations among the EI dimensions, anxious and depressive symptomatology, and health status, first, a series of Pearson's correlations were calculated. Second, to verify the capacity of the emotional capacities to explain mental, social, and physical health indexes, a series of stepwise multiple regression analyses were conducted.

Results

The means and standard deviations of the most important variables in this study are displayed in Table 1.

Table 1
Descriptive Statistics: Means, Standard Deviations, and Range of the Variables in this Study

Variables	*M*	*SD*	Range
Emotional Attention	3.27	.80	1-5
Emotional Clarity	3.20	.82	1-5
Mood Repair	3.24	.77	1-5
Depression	6.61	6.60	0-63
Anxiety	41.38	9.74	20-80
Physical Functioning	5.83	.44	2-6
Role Physical	3.71	.64	2-4
Role Emotional	3.34	.89	2-4
Bodily Pain	1.47	.82	1-5
Social Functioning	4.26	.83	1-5
Mental Health	8.43	1.71	2-12
Vitality	2.98	1.11	1-6
General Health	2.38	.78	1-5

Note. N = 169.

Correlation and Regression Analyses

The intercorrelations among the different EI components and the dependent variables are presented in Table 2. The analysis of this table shows that the findings are in accord with what was proposed in our hypotheses.

As can be seen in Table 2, Attention to Emotions correlated positively with depression and anxiety, and negatively with the dimensions of Role Emotional, Social Functioning, and Mental Health. Likewise, the scales of Emotional Clarity and Repair presented significant correlations in the expected direction: Both scales correlated negatively with anxiety and depression and positively with Mental Health and Vitality. Moreover, Emotional Clarity correlated positively with Role Physical, and Mood Repair correlated positively with Social Functioning and General Health. Regarding the relations between Mental Health and the variables of anxiety and depression, Mental Health correlated negatively both with depression ($r = –.60$, $p < .01$) and with trait anxiety ($r = –.68$, $p < .01$).

Lastly, to verify which variables predicted the indexes of emotional and physical adjustment, a series of multiple linear stepwise regressions were performed on depression, anxiety, and the different components of health status, entering as predicting variables the three EI components (Attention, Clarity, and Repair). The most relevant results are displayed in Table 3.

All three TMMS factors emerged in the model as predictive variables that accounted for 15% of the variance of depressive symptomatology, $R^2 = .15$, $F(3, 165) = 10.06$, $p < .001$. Similar results were obtained in the linear regression model for anxiety as a dependent variable: Repair, Attention and Clarity accounted for 36% of the variance of anxious symptomatology, $R^2 = .36$, $F(3, 165) = 31.42$, $p < .001$. Whereas Repair and Clarity predicted anxiety and depression negatively, Emotional Attention predicted these variables positively.

We subsequently performed a series of regression analyses on the SF-12 factors to determine the capacity of the EI components to explain them. No TMMS component was entered in the regression model for the variable Physical Functioning. Emotional Clarity was the only predictor of the variable Role Physical, $R^2 = .03$, $F(1, 167) = 5.63$, $p < .05$, accounting for 3% of the variance in the levels of role limitations due to physical problems. Attention and Clarity predicted the variable Role Emotional in the model, $R^2 = .13$, $F(2, 166) = 12.64$, $p < .001$, accounting for 13% of the variance in the levels of role limitations due to emotional problems. With regard to Bodily Pain, none of the TMMS components emerged as predictors in the regression model. Mood Repair and Attention predicted 7% of the levels of variable Social Functioning, $R^2 = .07$, $F(2, 166) = 6.21$, $p < .01$. As with anxiety and depression, all the EI components significantly predicted 20% of individuals' Mental Health, $R^2 = .20$, $F(3, 165) = 13.97$, $p < .001$, Repair and Clarity positively, and Emotional Attention negatively. Similar results were obtained for the prediction of the variable Vitality: Repair and Clarity were significant predictors of Vitality, $R^2 = .13$, $F(3, 166) = 12.98$, $p < .001$, explaining 13% of its variance. Lastly, when using individuals' General Health as the predicted variable, only the levels of Mood Repair positively predicted it, $R^2 = .04$, $F(1, 167) = 7.79$, $p < .01$, accounting for 4% of the variance.

Discussion

In this study, we tested the predictive validity of the EI as it is conceived from Mayer and Salovey's model, using self-report measures (Salovey et al., 1995). Defined as the capacity to perceive, understand, regulate, and use emotional information (Mayer & Salovey, 1997), this functionalist viewpoint of the use of emotions has afforded us an ideal

Table 2
Correlations of the TMMS Subscales with the Dependent Variables of the Study

	TMMS Subscales		
Dependent Variables	Attention	Clarity	Repair
1. Depression	.19*	–.20*	–.28**
2. Anxiety	.27**	–.28**	–.46**
3. Physical Functioning	–.01	.11	.07
4. Role Physical	–.01	.18*	.06
5. Role Emotional	–.32**	.12	.10
6. Bodily Pain	–.01	–.06	–.12
7. Social Functioning	–.16*	.11	.20**
8. Mental Health	–.24**	.21**	.32**
9. Vitality	.08	.28**	.31**
10. General Health	.01	.13	.21**

Note. For all the analyses, $N = 169$.
*$p < .05$. **$p < .001$.

Table 3
Stepwise Regression Results for Emotional Intelligence Dimensions Predicting Depression, Anxiety, and Various Health Dimensions

Variable / Predicting Variable	% R^2	F	β
Depression	15%	10.06***	
1. Repair			–.25***
2. Attention			.24***
3. Clarity			–.18*
Anxiety	36%	31.42***	
1. Repair			–.43***
2. Attention			.35***
3. Clarity			–.23***
Role Physical	3%	5.63*	
3. Clarity			.18*
Role Emotional	13%	12.64***	
2. Attention			–.35***
3. Clarity			.18*
Social Functioning	7%	6.21**	
1. Repair			.21**
2. Attention			–.17*
Mental Health	20%	13.97***	
1. Repair			.29***
2. Attention			–.29***
3. Clarity			.18*
Vitality	13%	12.98***	
1. Repair			.25
2. Clarity			.21**
General Health	4%	7.79**	
1. Repair			.21**

Note. N =169.
*$p < .05$. **$p < .01$. ***$p < .001$.

framework to study individual differences in people's capacity to reason about emotions and to use emotions in reasoning. Our general hypothesis was that the use of these emotional capacities would have differential effects on variables related to mental, social, and physical health. The results of this study confirm these individual differences and, therefore, underscore the positive relations between emotional capacities and mental, social, and physical health. Specifically, high Emotional Attention correlate with more anxious and depressive symptomatology, and with lower scores on Role Emotional, Social Functioning, and Mental Health, revealing the maladaptive and harmful nature of paying too much attention to one's emotions, especially when they are negative. What is the reason for this phenomenon? One explanation of the detrimental effect of Emotional Attention lies in the fact that people who pay a lot of attention to their emotions, and whose Clarity and Repair skills are insufficient, tend to initiate rumination cycles that can harm their emotional wellbeing and their interpersonal functioning. Conversely, the components of Emotional Clarity and Repair predict better psychological and physical adjustment. People with high scores in these factors reported lower levels of anxiety and depression, better Role Physical, higher Social Functioning, better Mental Health, higher levels of Vitality, and a more positive perception of General Health. Although not the aim of this study, future works should investigate the mediating effect of Emotional Attention on the relation between Clarity and Mood Repair, and depression, as proposed by Thayer et al. (2003). It would be interesting to determine when high Emotional Attention could be beneficial for the individual and predictive of a better psychological adjustment, and, specifically, with which of the other TMMS dimensions Emotional Attention would be more closely linked.

These findings are relevant for psychology because they reveal the effect of adequate comprehension and management of our moods, not only to enjoy better mental health, but also to promote various aspects related to individuals' social and physical health.

However, on the basis of this study, other lines of research emerge, such as, for example, studies to empirically examine specific profiles of individual differences in these variables by means of cluster analysis in order to obtain a typology that would allow us to identify individuals with high, medium,

or low EI. According to our data, a person with high EI should display moderate Emotional Attention and high levels of Emotional Clarity and Repair. The final goal would be to determine the necessary levels of Attention, Clarity, and Repair for adequate personal and social wellbeing. That is, the optimum levels in each one of these dimensions and the specific emotional patterns that allow us to target intervention efforts at specific improvement of particular capacities (Gohm, 2003). However, to carry out this typology, one would need a much larger sample size than the one used in the present study, as it is necessary to select people with high and low levels in each dimension to form categories. But this goal was beyond the purposes of the present work. Nevertheless, it would be interesting to investigate whether excessive levels of EI would have negative consequences for the individual. Another future line of work would be to examine the possible lack of these emotional capacities in clinical populations and to develop them as a way to promote emotional wellbeing.

Nevertheless, the findings of this study should be interpreted with caution as it presents a series of limitations. First, as it is a correlational and cross-sectional study, it is not possible to establish the direction of causality of the relationships observed. In this sense, it is necessary to carry out longitudinal studies in which the causal role of the emotional capacities regarding the emergence and development of various symptoms can be clearly determined, as well as to replicate these results in more representative populations than university students. On the other hand, one of the debates about EI is the topic of its incremental validity, once personality variables or classical intelligence variables (i.e., verbal intelligence) are controlled. Although there is evidence that EI has predictive power even when these variables are controlled (Brackett & Mayer, 2003; Lopes, Salovey, & Strauss, 2003), the data obtained in our study would have been more consistent if we had had a replication of these findings. However, the Big Five personality scales or intelligence scales require participants to complete extensive scales in long sessions, and this study was carried out in just one session and, to avoid possible response bias due to participants' fatigue, no additional scales were administered. Future studies should have this aim, whenever possible dedicating various sessions to test administration, using short versions of the Big Five personality tests, evaluating more concrete aspects of intelligence (i.e., verbal intelligence), or selecting a specific criterion variable so that test administration is not so long. Moreover, investigations of EI should study in depth its relations and common elements with other theoretically related but different concepts (i.e., empathy, alexitymia, self-esteem…).

Lastly, to avoid joint variance due to using similar assessment methods (self-report or questionnaires), it would be necessary to replicate these studies using new measures of EI based on emotional tasks, also known as measures of ability (i.e., the Mayer-Salovey-Caruso Emotional Intelligence Test—MSCEIT; Mayer, Salovey, Caruso, & Sitarenios, 2003) that are currently being adapted to Spanish (Extremera, Fernández-Berrocal, & Salovey, in press) , or else use objective dependent variables (i.e., academic achievement, work production, absenteeism…). These new kinds of measurement would increase the validity of the results and would be a step forward in demonstrating the usefulness of this new kind of intelligence and its effects on criterion variables that are relevant for the individual. However, despite these limitations, the present study shows the adaptive value of adequately managing one's emotions. Specifically, these results provide support for the notion that more emotionally intelligent individuals, that is, those who have an adequate capacity to attend, understand, and regulate their emotions, will cope better with stressing events and will regulate their negative emotions better. All this has important consequences on maintaining and promoting individuals' mental, social, and physical health.

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