A validation of the emotional intelligence inventory

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The Emotional Intelligence Inventory (EII) was developed to measure emotional intelligence based on the model of Salovey and Mayer. Exploratory factor analyses of the initial pool of items resulted in four factors: Empathy, Utilization of Feelings, Handling Relationships, and Self-control. The present study examined the concurrent validity of the EII and the Emotional Intelligence Scale using responses of 234 college students on both inventories. The instruments were administered concurrently to students in their classes from classes randomly selected from sections representing students from all colleges, majors, and undergraduate grade levels. Correlations between the total score of the EII and the Emotional Intelligence Scale were significant. Correlations between each subscale of the EII and the Emotional Intelligence Scale were significant. Correlations calculated across gender were significant. These results indicated that the EII and the Emotional Intelligence scale have concurrent validity across gender and by gender.

Una validación del Emotional Intelligence Inventory. El Emotional Intelligence Inventory (EII) fue desarrollado para evaluar la inteligencia emocional basada en el modelo de Salovey y Mayer. El análisis factorial exploratorio del total de los ítems iniciales reveló cuatro factores: empatía, uso de los sentimientos, manejo de las relaciones y autocontrol. El presente estudio examinó la validez concurrente del EII y de la Emotional Intelligence Scale utilizando las respuestas en ambas escalas de 234 estudiantes universitarios. Los instrumentos fueron proporcionados al mismo tiempo durante el horario de clase a estudiantes escogidos aleatoriamente que representaban a estudiantes de todos los niveles universitarios, graduados y aún no graduados. Las correlaciones obtenidas entre las puntuaciones totales del EII y de la Emotional Intelligence Scale fueron significativas. Las correlaciones obtenidas entre cada subscala del EII y la Emotional Intelligence Scale fueron significativas. Las correlaciones calculadas por sexos fueron significativas. Estos resultados indicaron que la EII y la Emotional Intelligence Scale tienen validez concurrente por y entre sexos.

Emotional intelligence is «the ability to perceive emotions, to access and generate emotions so as to assist thought, to understand emotions and emotional knowledge, and to reflectively regulate emotions so as to promote emotional and intellectual growth» (Mayer, Salovey, & Caruso, 2004, p. 197). Emotional intelligence was conceptualized by Thorndike (1920), elevated in work on tacit knowledge by Sternberg, (1985, 1996) and interpersonal or social intelligence by Gardner, (1993,1995), promulgated as a construct by Salovey and Mayer (1990) and Mayer and Salovey (1997), and popularized by Goleman (1995). According to Mayer and Salovey (1997), intelligence and emotion are combined because the ideation that emotion provokes makes thinking more intelligent, or thinking intelligently about emotions. From this point of view, a person with these abilities is considered to be well adjusted and emotionally skilled; the lack of these abilities renders a person socially and emotionally handicapped.

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Emotional intelligence is said to differ from cognitive ability and to be associated with enhanced performance in the workplace (Brackett & Salovey, 2006; Bradberry & Su, 2006; Druskat & Wolff, 2001; Lopes, Grewal, Kadis, Gall, & Salovey, 2006; Pescuric & Byham, 1996; Spencer, McClelland, & Kelner, 1997). It is well established that intelligence has a positive correlation with school performance indicators such as grades and standardized achievement tests, but not necessarily with other indices of success (Sternberg, Wagner, Williams, & Horvath, 1995). Emotional intelligence has been proposed as a trait to explain variations in life adjustment apart from academic intelligence (Mayer & Salovey, 1997). Research has been devoted to studying the ability to predict achievement with emotional intelligence (e.g., Barchard, 2003; Parker, Creque, Barnhart, Harris, Majeski, Wood, Bond, & Hogan, 2004), and Van der Zee, Thijs and Schakel (2002) concluded that emotional intelligence is able to predict both academic and social success better than traditional measures of academic intelligence and personality.

Without a clear definition of emotional intelligence and instruments that measure constructs related to the definition, work in the area of emotional intelligence can be quite confusing and counter productive. For example, Davies, Stankov and Roberts (1998) claim that emotional intelligence is related to personality. Mayer (1999) expressed concern about stretching the definition of

emotional intelligence to a list of personality characteristics and distinguishes between the popular and the scientific psychology of emotional intelligence The Emotional Intelligence Inventory (Tapia, 2001) and The Emotional Intelligence Scale (Schutte, Malouff, Hall, Haggerty, Cooper, Golden, & Dornheim, 1998) were based on the scientific model of emotional intelligence. In order to effectively use the theory of emotional intelligence in research or for a wide range of practical applications, it is necessary to have an instrument that will accurately and efficiently assess the construct. The purpose of this study was to validate the Emotional Intelligence Inventory (EII) with the Emotional Intelligence Scale (EIS). Concurrent validity requires that the criterion test (EIS) must have been validated, which has been done (Schutte et al., 1998), and that the instruments measure the same construct, which in this case is emotional intelligence.

Method

Subjects

The subjects were 234 undergraduate students enrolled at a private, liberal arts college. Eighty-four subjects were male and 150 female. Approximately 95% of the sample was Caucasian and about 3% African-American. The ages of the subjects ranged from 18 to 29, with a mean of 20.50 and standard deviation of 1.95. All subjects were volunteers.

Materials

The Emotional Intelligence Inventory (EII) is a 41-item scale. The items were developed according to the model of emotional intelligence developed by Salovey and Mayer (1990) and Mayer and Salovey (1997). The items were constructed using a Likert-format scale of five alternatives for the responses with anchors of 1: never like me, 2: occasionally like me, 3: sometimes like me, 4: frequently like me, and 5: always like me. The score was the sum of ratings.

Exploratory factor analysis of the EII using a sample of high school students resulted in four factors identified as Empathy, Utilization of Feelings, Handling Relationships, and Self-control. Empathy consisted of 12 items. The Utilization of Feelings scale consisted of 11 items. The Handling Relationship scale consisted of 9 items. The Self-control scale also consisted of 9 items. Table 1 shows sample items by factor. The complete inventory is available from the authors upon request. Alpha coefficients for the scores on these scales were found to be .74, .70, .75, and .67 respectively. Internal consistency for the 41 items was .80 (Tapia, 2001).

The Emotional Intelligence Scale (EIS) is a 33-item scale. The items were developed according to the model of emotional intelligence by Salovey and Mayer (1990). The items were constructed using a Likert-format scale of five alternatives for the responses with anchors of 1: strongly disagree it is like me, 2: somewhat disagree this is like me, 3: neither agree nor disagree this is like me, 4: somewhat agree this is like me, and 5: strongly agree this is like me. Table 2 shows sample items. An internal consistency analysis showed a Chronbach's alpha of .90 for the 33-item scale (Schutte et al., 1998).

A Student's Demographic Questionnaire was also used. This questionnaire consisted of three questions. The purpose of these questions was for identifying gender, age and ethnic background.

Procedure

The EII and the EIS were administered to participants during their classes. Directions were provided in written form and students recorded their responses on computer scannable answer sheets. The instructions provided sample questions and information about completing the scannable sheets accurately. There were no time restrictions.

Results

Based on the four-factor solution from Tapia (2001), Cronbach's α coefficients were calculated for the scores on the factors and were found to be .76 for Empathy, .64 for Utilization of Feelings, .78 for Handling Relationships, and .58 for Self-control. Cronbach's α coefficients for the scores on all 41 items of the EII and the scores on all the 33 items of the EIS were .81 and .91, respectively. Table 3 shows means and standard deviations by total and gender.

The data were analyzed to calculate Pearson product moment correlations between the scores on the total scale and on the subscales of the EII and the total scores on the EII. Correlation analyses were performed using SPSS.

A Pearson product moment correlation was calculated between the scores on the total scale of the EII and the scores on the EIS for the 228 subjects who had both scores. A positive correlation, $r= +0.62$ ($r^2= .38$) was found between the scores on the EII and the scores on the EIS. This relationship was significant at the .01 level. The correlation coefficient, when interpreted as an index of the magnitude of the effect, indicates a large effect size.

Table 1
Emotional intelligence inventory sample items by factors

Items by factors

Empathy
　I sympathize with others when they have problems
　I go out of my way to help someone in need

Utilization of feelings
　I keep myself focused on my goals
　I understand why I react the way I do in situations

Handling relationships
　I think about why I do not like a person
　I think about how I can improve my relationships with those I love.

Self-control
　Traffic jams cause me to lose control
　Having car trouble causes me to feel stressful

Table 2
Emotional intelligence scale sample items

Sample items

1. I know when to speak about my personal problems to others
2. When I am faced with obstacles, I remember times I faced similar obstacles and overcame them
3. I expect I will do well on most things I try
4. Other people find it easy to confide in me
5. I have control over my emotions

Pearson product moment correlations were calculated between the subscales and the variable age. Table 4 shows results of this analysis.

Pearson product moment correlations were also calculated between the scores on each one of the subscales of the EII and the scores on the EIS. A positive correlation r= +0.51 (r²= .26) was found between the scores on the Empathy factor of the EII and the scores on the EIS. This relationship was found to be significant at the .01 level of significance and with large effect size. A positive correlation r= +0.45 (r²= .20) was found between the scores on the Utilization of Feelings factor and the scores on the EII. This relationship was found to be significant at the .01 level of significance and with large effect size. A positive correlation r= .52 (r²= .27) was found between the scores on the Handling Relationships factor and the scores on the EIS. This relationship was found to be significant at the .01 level with a large effect size.

A positive correlation r= .14 (r²= .02) was found between the scores on the Self-control factor and the scores on the EIS. This relationship was found to be significant at the .05 level with a small effect size.

Pearson product moment correlations were also calculated across gender. A Pearson product moment correlation was calculated between the scores on the total scale of the EII and the scores on the EIS for the 149 females who had both scores. A positive correlation, r= +0.69 (r²= .47) was found between the scores on the EII and the scores on the EIS. This relationship was found to be significant at the .01 level with a large effect size. A positive correlation r= +0.50 (r²= .25) was found between the scores on the Empathy factor of the EII and the scores of the EIS. This relationship was found to be significant at the .01 level with a large effect size. A positive correlation r= +0.58 (r²= .34) was found between the scores on the Utilization of Feelings factor and the scores on the EII. This relationship was found to be significant at the .01 level of significance and with large effect size. A positive correlation r= .56 (r²= .31) was found between the scores on the Handling Relationships factor and the scores on the EIS. This relationship was found to be significant at the .01 level with a large effect size. A positive correlation r= .24 (r²= .06) was found between the scores on the Self-control factor and the scores of the EIS. This relationship was found to be significant at the .01 level with a large effect size.

A Pearson product moment correlation was calculated between the scores on the total scale of the EII and the scores on the EIS for the 79 males who had both scores. A positive correlation, r= +0.50 (r²= .25) was found between the scores on the EII and the scores on the EIS. This relationship was found to be significant at the .01 level of significance and with large effect size. A positive correlation r= +0.39 (r²= .15) was found between the scores on the Empathy factor of the EII and the scores on the EIS. This relationship was found to be significant at the .01 level with a large effect size. A positive correlation r= +0.32 (r²= .10) was found between the scores on the Utilization of Feelings factor and the scores on the EII. This relationship was found to be significant at the .01 level with a medium effect size. A positive correlation r= .43 (r²= .19) was found between the scores on the Handling Relationships factor and the scores of the EIS. This relationship was found to be significant at the .01 level with a large effect size. The correlation between the scores on the Self-control factor and the score on the EIS was found to be not significantly different from 0 (p<.22) and a small effect size.

Discussion

The present investigation examined the validity of the Emotional Intelligence Inventory (EII). The total score and the subscales of the EII correlate with the EIS, indicating that the EII can be used instead of the EIS. An advantage of the EII is the ability to focus on the components of the emotional intelligence construct. However, it is evident that further research needs to be done with the EII and in the general field of emotional intelligence research.

The EIS has sustained criticism (Petrides & Furnham, 2000; Ciarrochi Deane & Anderson, 2002; Ciarrochi, Chan, & Bajgar, 2001). Therefore, the results of this study comparing the EII with the EIS may not be remarkable. The Schutte scale was developed with 62 items and four factors were extracted by use of principal

Table 3
Means and standard deviations by total and gender

	N	Mean	SD
Empathy			
Total	234	45.17	6.09
Male	84	41.85	6.93
Female	150	47.04	4.65
Utilization of feelings			
Total	234	40.12	4.52
Male	84	39.92	5.13
Female	150	40.24	4.16
Handling relationships			
Total	234	31.53	5.03
Male	84	20.36	5.39
Female	150	32.19	4.71
Self-control			
Total	234	30.93	4.63
Male	84	31.76	4.76
Female	150	30.46	4.51
EII			
Total	234	147.76	13.59
Male	84	143.88	15.11
Female	150	149.93	12.18
EIS			
Total	228	125.89	15.17
Male	79	119.19	17.93
Female	149	129.44	12.11

Table 4
Correlations between subscales of the EII and variable age

Variable	1	2	3	4	5
Empathy	1	.273**	.569**	-.107	.082
Utilization of feelings		1	.371**	.283**	-.007
Handling relationships			1	.165*	.050
Self-control				1	-.056
Age					1

** P<0.01
* P<0.05

components. After rotation the authors decided to retain only the 33 items which loaded in the first factor and called that a general factor of emotional intelligence. The general factor is usually defined as one on which all of the items in the test have salient loadings, which is not the case with the EIS factors, since only 33 of the original 62 items loaded saliently. The EII items were not discarded if they did not load in the first factor, but the psychometric properties of the EII need to be improved.

Two factors are questionable, Utilization of Feelings and Self-control. Nonetheless, an advantage of the EII is the ability to focus on the components of the emotional intelligence, despite its weaknesses. The Self-control factor has never had good internal consistency. On the original data it had a Cronbach of .67, which has diminished to .64 on the new administration. More research is needed to investigate if some of the items on this factor should be deleted or perhaps the entire factor.

As expected, females scored higher than males on emotional intelligence, but especially on empathy and handling relationships. Although males and females differ significantly in emotional intelligence or in some constructs in the EII, high scores in the EII correspond to high scores on the EIS. The advantages of the EII may lie in the existence of the subscales. According to Salovey and Mayer (1997), emotional intelligence can improve, implying that it can be taught. In that emotional intelligence is different from academic intelligence that does not appreciably change significantly with time or training, the EII may be useful in research and training programs because it yields more than a total score. By comparison, a total score on the EIS may only yield an average of low and high sub-scores. Knowing the subscale scores may allow a person to focus on the precise area of emotional intelligence he or she wishes to improve.

Valid instruments with useful subscales are critical in research. Since social adjustment and life success are partly determined by the ability to recognize and control emotions, measuring and comparing emotional constructs is an essential step in advancing the research. In order for emotional intelligence to be more than a philosophical concept or a popular trend, it must be a measurable construct and have measurable components. Petrides and Furnham (2000) stress that the validity of emotional intelligence measures must be predicated on experimental rather than correlational studies. Validating the EII against the EIS may be fruitless, since both instruments are likely to be tentative measures of the construct. They may measure the same thing, or they may not. Until a coherent domain of EI has been demonstrated, as suggested by Petrides and Furnham (2000), work in the area of emotional intelligence will remain uncertain. However, the EII offers some hope that improvements can be made to generate a better instrument.

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