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Personality and Individual Differences 35 (2003) 641–658

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PERSONALITY AND  
INDIVIDUAL DIFFERENCES

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# Emotional intelligence, personality, and the perceived quality of social relationships

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Received 21 January 2002; received in revised form 4 July 2002; accepted 7 August 2002

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## Abstract

This study explored links between emotional intelligence, measured as a set of abilities, and personality traits, as well as the contribution of both to the perceived quality of one's interpersonal relationships. In a sample of 103 college students, we found that both emotional intelligence and personality traits were associated with concurrent self-reports of satisfaction with social relationships. Individuals scoring highly on the managing emotions subscale of the Mayer, Salovey, and Caruso Emotional Intelligence Test (MSCEIT), were more likely to report positive relations with others, as well as perceived parental support, and less likely to report negative interactions with close friends. These associations remained statistically significant even controlling for significant Big Five personality traits and verbal intelligence. Global satisfaction with one's relationships was associated with extraversion, neuroticism (negatively), and the ability to manage one's emotions, as assessed by the MSCEIT.

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*Keywords:* Emotional intelligence; Emotions; Personality; Intelligence; Social competence; Social relationships

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In spite of a large body of research, it has proved difficult to integrate existing knowledge about social and emotional competence into a cohesive theoretical framework. Social skills seem to be weakly intercorrelated and somewhat context- or domain-specific. As a result, numerous studies have failed to uncover a coherent and interrelated set of abilities that could be labeled social

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intelligence (for reviews see Cantor & Kihlstrom, 1987; Kihlstrom & Cantor, 2000; Sternberg et al., 2000).

The theory of emotional intelligence proposed by Salovey and Mayer (1990; Mayer & Salovey, 1997) provides a new framework to investigate social and emotional adaptation. It focuses on emotional skills that can be developed through learning and experience, and posits four central abilities: perceiving, using, understanding, and managing emotions. In order to facilitate research in this area, the authors have developed ability tests to assess these skills. The first test was called the MEIS (*Multifactor Emotional Intelligence Test*; Mayer, Caruso, & Salovey, 1998). This instrument was subsequently improved upon, leading to a shorter, more reliable, and better-normed test, called the MSCEIT (*Mayer, Salovey, and Caruso Emotional Intelligence Test*; Mayer, Salovey, & Caruso, 2001).

Mayer, Caruso, and Salovey (1999; Mayer, Salovey, Caruso, & Sitarenios, 2001) have argued that the emotional skills mapped by their model can be viewed as an intelligence, because: (a) they represent an intercorrelated set of competencies that can be statistically interpreted as a single factor with four subfactors mapping onto the four branches of the theoretical model; (b) they are distinct from, but meaningfully related to, abilities such as verbal intelligence; and (c) they develop with age. Studies with the MEIS provided preliminary evidence that emotional intelligence, measured as a set of abilities, shows convergent, discriminant, and predictive validity (for reviews see Mayer, Salovey & Caruso, 2000; Salovey, Mayer, Caruso, & Lopes, in press).

A large body of evidence, drawn from different lines of research, suggests that emotional skills are important for social and emotional adaptation (Salovey, Mayer, & Caruso, 2002). Damásio's (1994) studies of brain-damaged patients suggest that the ability to integrate emotional information with rational decision-making and other cognitive processes is essential for people to manage their lives. Studies with children, using a variety of assessment tools, have linked the abilities to read emotions in faces, understand emotional vocabulary, and regulate affect, on the one hand, to social competence and adaptation, as rated by peers, parents and teachers, on the other (for reviews see Eisenberg, Fabes, Guthrie, & Reiser, 2000; Feldman, Philippot, & Custrini, 1991; Halberstadt, Denham, & Dunsmore, 2001; Saarni, 1999). School-based interventions that emphasize emotional competencies, such as PATHS (Promoting Alternative Thinking Strategies), suggest that training emotional skills contributes to social adaptation (Greenberg, Kusche, Cook, & Quamma, 1995; Kusché & Greenberg, 2001).

The concept of emotional intelligence has inspired numerous school-based programs of social and emotional learning, as well as management training programs. However, there has been much debate about how emotional intelligence should be defined and assessed, and what it may predict. Does emotional intelligence contribute to social and emotional adaptation over and above personality traits and traditional intelligence? To what extent are emotional skills domain- or context-specific? These questions have implications both for our understanding of social and emotional adaptation, and for the design of school- or work-based social and emotional training programs.

Whereas Salovey and Mayer proposed a theory narrowly focused on emotional skills, others have written about emotional intelligence as a general capacity for social and emotional adaptation, or as an umbrella term to designate a wide array of competencies (e.g. Bar-On, 2000; Boyatzis, Goleman, & Rhee, 2000; Goleman, 1995, 1998). These broader views encompass social and

emotional skills and traits, overlapping with personality and motivation. Mayer, Salovey, and Caruso (2000a) have argued that researchers need to retain a narrow definition of emotional intelligence, focused on skills rather than traits. This is important to ensure discriminant validity in relation to personality and other constructs. In fact, recent studies have suggested that broad, self-report measures purportedly assessing emotional intelligence lack adequate discriminant validity (Davies, Stankov, & Roberts, 1998; Dawda & Hart, 2000; Roberts, Zeidner, & Matthews, 2001). This problem appears not to characterize ability-based measures of emotional intelligence.

Ciarrochi, Chan, and Caputi (2000) found that emotional intelligence, as assessed by the MEIS, correlates with empathy, and shares little overlap with extraversion and neuroticism. Other studies using the MEIS provided preliminary evidence of its predictive validity. For example, schoolchildren scoring higher on the MEIS were rated by their peers as less aggressive, and by their teachers as more prosocial, than students scoring lower on emotional intelligence (Rubin, 1999). Adolescents scoring higher on the MEIS were less likely to have smoked cigarettes recently, and were less likely to have used alcohol in the recent past (Trinidad & Johnson, 2002). Nonetheless, further research is needed to establish the construct validity of emotional intelligence.

There have been few studies using the more professionally produced and most recently developed test of emotional intelligence, the MSCEIT. This test includes eight tasks to assess four branches of emotional intelligence: perceiving, using, understanding, and managing emotions. The tasks include, for example, reading facial expressions of emotions, identifying feelings likely to facilitate different activities, understanding emotional dynamics, and evaluating the effectiveness of different responses to interpersonal problems.

The MSCEIT can be scored using consensus or expert norms. These were drawn from a normative sample of several thousand individuals in different countries, and a sample of 21 emotion researchers. Split-half reliabilities for the branch scores, computed from the normative sample, range from 0.79 to 0.91. There is a high degree of convergence between consensus and expert scores, as evidenced by correlations greater than 0.90 (Mayer, Salovey, & Caruso, 2001; Mayer, Salovey, Caruso, & Sitarenios, *in press*).

The present study was designed to explore the construct validity of emotional intelligence by analyzing the relationships between emotional intelligence, verbal intelligence, personality, and the perceived quality of interpersonal relationships. In particular, we also evaluated whether emotional intelligence predicted concurrent self-reports about the quality of one's social relationships, controlling for the Big Five and verbal intelligence. This is a stringent test of the incremental validity of emotional intelligence, because: (a) there is conceptual overlap between some of the Big Five personality traits (e.g. social extraversion and agreeableness) and our outcome variables, which tapped into the perceived quality of social interaction; (b) there is also common method variance between the measures of personality and satisfaction with social relationships that we used, both of which relied on self-report; (c) an ability test of emotional intelligence such as the MSCEIT does not encompass all the skills that contribute to emotionally intelligent behavior; (d) there may be conceptual overlap between emotional regulation skills (one of the branches of the MSCEIT) and the Big Five.

While personality theory emphasizes temperamentally driven dispositions, Mayer and Salovey's (1997) theory of emotional intelligence focuses on skills that can be acquired through learning and experience. However, traits and skills are most likely intertwined. Personality traits may be,

in part, genetically based and fairly stable over time. However, adult personality is not rigidly determined from birth, and there is room for change. For example, a sizeable portion of children who seem temperamentally inhibited early on grow up not to be shy (Kagan, 1998). Individual learning and experience, in interaction with the environment, mold the development of personality (Caspi, 2000; Kagan, 1998; McCrae et al., 2000; Watson, 2000). The Big Five reflect emotional dispositions that may be influenced by emotional regulation skills: extraversion and neuroticism are associated with the propensity to experience positive and negative emotions, respectively, (e.g. Diener & Lucas, 1999; Larsen & Ketelaar, 1989, 1991; Rusting & Larsen, 1997; Watson, 2000), while agreeableness and conscientiousness may reflect emotional regulation in interpersonal and work settings (Larsen, 2000). Empirically, however, the overlap between emotional intelligence and personality is likely to be minimized when we assess emotional intelligence through an ability test, and personality through self-report, as in the present study. Personality measures tend to reflect typical performance, while ability tests may reflect optimal performance. Using different methods of assessment minimizes common method variance as well.

Ability tests of emotional intelligence cannot encompass all the skills that contribute to people's capacity for emotional regulation. The predictive power of such tests may therefore be somewhat restricted. Emotional regulation includes both reactive and proactive coping (Frijda, 1999), and the latter can draw upon all sorts of skills, including analytical, creative, and practical competencies. The MSCEIT clearly does not evaluate all the skills that contribute to emotional regulation. Moreover, it assesses knowledge of appropriate strategies for managing emotions, rather than actual skill in implementing them. This may restrict the predictive power of the MSCEIT, as well as minimize the overlap between the MSCEIT and the Big Five.

## 1. Hypotheses

In line with the idea that we need to take into account both emotional intelligence and personality traits in order to understand better the perceived quality of one's social relationships, we hypothesized that:

**H1.** Emotional intelligence, as assessed by the MSCEIT, shows limited overlap with personality traits and verbal intelligence.

**H2.** Both emotional intelligence and personality traits predict concurrent self-reports of satisfaction with social relationships. Emotional intelligence remains a significant predictor when the Big Five and verbal intelligence are controlled for statistically.

## 2. Method

### 2.1. Participants

One hundred and three students (37 men, 66 women) enrolled at Yale University participated in this study, either for pay or in partial fulfillment of credit requirements for an introductory psy-

chology course. The sample was 47% white/Caucasian, 22% Asian, 19% black/African-American, 11% Hispanic, and 2% other. The mean age was 19.2 years. Participants were recruited to include only native English speakers and individuals who had spent at least four years in English-language countries or schools.

## 2.2. Procedure

Participants completed the MSCEIT emotional intelligence test, a measure of verbal intelligence, personality scales, and self-report measures of satisfaction with interpersonal relationships, all in the same session. The emotional intelligence test was administered first, on paper, and then participants completed the remaining measures via computer. We were unable to collect responses to three measures (Positive Relations with Others, Private and Public Self-Consciousness, and Social Skills) for the first 12 participants.

## 2.3. Emotional intelligence: the MSCEIT

We used the MSCEIT emotional intelligence test, version 2.0 (Mayer, Salovey, & Caruso, 2001). This test assesses four branches of emotional intelligence: perceiving, using, understanding, and regulating emotions. Each branch consists of two tasks. For the Perceiving Emotions to Facilitate Thought branch of the MSCEIT, respondents are asked to identify the emotions in photographs of faces (Faces task), as well as in designs and landscapes (Pictures task). For the Using Emotions branch, respondents are asked to describe emotions using non-emotional vocabulary (Sensations), and to indicate the feelings that might facilitate or interfere with the successful performance of various cognitive and behavioral tasks (Facilitation). Understanding Emotions is assessed with questions concerning the manner in which emotions evolve and transition over time (Changes), and how some feelings are produced by blends of emotions (Blends). The ability to Manage Emotions is assessed through a series of scenarios asking the test-taker to identify the most adaptive ways to regulate one's own feelings (Emotion Management), and the feelings of others in social situations (Social Management).

Answer sheets for the MSCEIT were scored by the test publishers, Multi-Health Systems (MHS), using consensus-scoring norms. Participants' scores reflect the degree of fit between their responses and those of the normative sample, consisting of more than 5000 individuals who have taken the MSCEIT before. Scores based on consensus norms correlate highly ( $r > 0.90$ ) with those based on expert ratings (Mayer, Salovey, Caruso, & Sitarenios, 2001; Mayer et al., in press). Scores on the MSCEIT are standardized in relation to the normative sample, with a mean of 100 and a standard deviation of 15. Split-half reliabilities reported for the normative sample range from 0.79 to 0.91 for the four branches (Mayer et al., in press). In this sample, split-half reliabilities ranged from 0.60 to 0.89, for the four branches, and 0.88 for the whole test.

## 2.4. Verbal intelligence

We estimated verbal intelligence using an abridged version of the vocabulary subtest of the Wechsler Adult Intelligence Scale—Third Edition, Revised (WAIS III; Wechsler, 1997), which

asks participants to define words. We omitted the first 10 items because they were too easy for our sample. The WAIS was administered as a written test, rather than as an interview. We also collected self-reported Scholastic Aptitude Test (SAT) scores.

### 2.5. *Personality and related scales*

We assessed the Big Five personality factors using the NEO Five Factor Inventory (NEO-FFI; Costa & McCrae, 1992). Cronbach alphas in this sample were 0.86 for neuroticism, 0.83 for extraversion, 0.76 for openness, 0.70 for agreeableness, and 0.87 for conscientiousness.

We used the Fenigstein, Scheier, and Buss (1975) Self-consciousness Scale, yielding scores for Private Self-consciousness, designed to assess self-reflection ( $\alpha = 0.74$ ); Public Self-consciousness, measuring concern about others' evaluation of the self ( $\alpha = 0.86$ ); and Social Anxiety, tapping into anxiety or discomfort in the presence of others ( $\alpha = 0.72$ ).

For self-esteem we used an abridged version of the Rosenberg (1965) Scale, with four items ( $\alpha = 0.82$ ). We adapted the wording to avoid restriction of range by preceding each question with the phrase "Compared to other Yale students. . ."

### 2.6. *Self-perceived emotional intelligence*

The Trait Meta-Mood Scale (TMMS; Salovey, Mayer, Goldman, Turvey, & Palfai, 1995) was designed to assess how people reflect upon their moods, but can also be used as a proxy for self-perceived emotional intelligence. It evaluates the extent to which people report attending to and valuing their feelings (Attention), feeling clear rather than confused about their emotions (Clarity), and using positive thinking to repair negative moods (Repair). Salovey et al. (1995) reported adequate internal consistency, as well as convergent and discriminative validity for this scale. We used an abridged scale with 15 items, and obtained Cronbach alphas of 0.71 for Attention, 0.71 for Clarity, and 0.74 for Repair.

### 2.7. *Self-perceived social skills*

Because we found no short, well-established measure of social skills, we created an exploratory scale, adapting 28 items from various inventories ( $\alpha = 0.83$ ). Questions included: "Would others say that you are good at handling people?", "Would your friends say that you are good at figuring people out?", and "Do you find it difficult to work in teams?".

### 2.8. *Mood*

We asked participants to rate the extent to which they presently felt happy, sad, anxious, and angry/irritated, on five-point Likert scales, and computed a state mood composite score ( $\alpha = 0.50$ ).

### 2.9. *Social desirability*

Participants also completed the Crowne and Marlowe (1960) Social Desirability Scale during a follow-up study that took place a few weeks after the present study ( $\alpha = 0.73$ ).

### 2.10. *Quality of interpersonal relationships*

We used two self-report measures to assess self-perceived quality of interpersonal relationships. The Positive Relations with Others subscale of Ryff's (1989) Scales of Psychological Well-Being assesses satisfaction with the quality of one's engagement in, and support obtained from, the social domain of life, broadly construed. We used a 14-item version recommended by Ryff ( $\alpha = 0.83$ ).

The Network of Relationship Inventory (NRI; Furman & Buhrmester, 1985; see also Furman, 1996) asks participants to report about the quality of their relationships with other individuals along 10 dimensions, yielding three factor scores: social support, negative interaction, and power imbalance. The social support factor taps into companionship, instrumental aid, intimacy, nurturance, affection, admiration, and alliance. The negative interaction factor taps into conflict and antagonism. In this study, we asked participants to report about the parent or parental figure they felt closest to, as well as about their closest, non-romantic friend. We computed separate factor scores for parent and close friend. Cronbach alphas ranged from 0.89 to 0.94.

## 3. Results

The scales included in this study generally revealed adequate reliabilities, as summarized in Table 1, which also reports means and standard deviations for all measures. The main exception was the four-item mood scale ( $\alpha = 0.50$ ). The reliabilities for the Understanding and Managing Emotions branches of the MSCEIT (split-half  $r = 0.67$  and  $0.60$ , respectively) were lower than expected, and lower than those reported by Mayer, Salovey, Caruso, and Sitarenios (2001) and Mayer et al. (in press) for the normative sample (split-half  $r = 0.80$  and  $0.83$ , respectively). This could be due to the characteristics of our sample and the conditions under which they completed the MSCEIT. All analyses reported in this article are based on scores computed by the test publisher, which include 124 of the 141 MSCEIT items. A set of 123 items with positive item–total correlations in this sample yielded improved split-half reliabilities ( $0.89$ ,  $0.75$ ,  $0.71$ , and  $0.65$ , for the four branches, respectively).<sup>1</sup>

Statistical analyses based on scores adjusted through exclusion of the items with negative item–total correlations yielded results that were very similar to those reported here.

We eliminated two subjects from all analyses. One was an outlier who scored 48.6 on the MSCEIT, more than four standard deviations below the mean for our sample. The other reported not being a native English speaker and having spent less than four years in English-language countries or schools, the criteria we used for selecting participants for this study.

Although we used a sizeable battery of questionnaires, participant fatigue was apparently not a problem. Inspection of the data revealed no anomalies, and the scales administered toward the end of the first session still yielded adequate internal consistencies, as well as sound inter-item correlations for reverse-scored items.

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<sup>1</sup> We report split-half reliabilities for MSCEIT branch scores due to item heterogeneity, as each branch of the test is comprised of two distinct tasks. Based on the 124 items used by the test publisher for computing MSCEIT scores, Cronbach alpha for the four branches of the MSCEIT and for the total score were  $0.85$ ,  $0.64$ ,  $0.67$ ,  $0.45$ , and  $0.85$ , respectively. The set of 123 items with positive item–total correlations in this sample yielded improved Cronbach alphas of  $0.86$ ,  $0.69$ ,  $0.69$ , and  $0.58$  for branches 1–4, respectively, and  $0.87$  for the total score.

Table 1  
Descriptive statistics on included measures

Scale	Mean	S.D.	Reliability <sup>a</sup>
MSCEIT—Total score	103.6	10.6	$r = 0.88$
MSCEIT—Perceiving emotions	102.0	13.3	$r = 0.89$
MSCEIT—Using emotions	100.7	11.8	$r = 0.74$
MSCEIT—Understanding emotions	109.3	10.3	$r = 0.67$
MSCEIT—Managing emotions	101.7	9.5	$r = 0.60$
WAIS-III—Vocabulary <sup>b</sup>	66.7	17.4	$r = 0.69$
SAT—Verbal—Self-reported	725.3	56.9	
SAT—Math—Self-reported	720.8	65.9	
NEO-FFI—Neuroticism	3.05	0.72	$\alpha = 0.86$
NEO-FFI—Extraversion	3.49	0.58	$\alpha = 0.83$
NEO-FFI—Openness	3.69	0.54	$\alpha = 0.76$
NEO-FFI—Agreeableness	3.64	0.46	$\alpha = 0.70$
NEO-FFI—Conscientiousness	3.45	0.62	$\alpha = 0.87$
Private Self-consciousness	3.75	0.62	$\alpha = 0.74$
Public Self-consciousness	3.79	0.78	$\alpha = 0.86$
Social Anxiety	3.22	0.81	$\alpha = 0.72$
Self-esteem	3.44	0.82	$\alpha = 0.82$
TMMS—Attention	3.96	0.71	$\alpha = 0.71$
TMMS—Clarity	3.15	0.82	$\alpha = 0.71$
TMMS—Repair	3.36	0.99	$\alpha = 0.74$
Self-perceived social skills	3.38	0.54	$\alpha = 0.83$
Social Desirability <sup>b</sup>	41.0	14.4	$\alpha = 0.73$
State Mood Composite	3.51	0.63	$\alpha = 0.50$
Positive relations with others	3.84	0.61	$\alpha = 0.83$
NRI—Social Support—Parent	3.43	0.73	$\alpha = 0.93$
NRI—Social Support—Close friend	3.50	0.65	$\alpha = 0.92$
NRI—Negative Interaction—Parent	2.25	0.96	$\alpha = 0.94$
NRI—Negative Interaction—Close friend	1.58	0.61	$\alpha = 0.89$

90 ≤ N ≤ 101 due to missing data.

<sup>a</sup> We report split-half reliabilities for MSCEIT Scales (due to item heterogeneity, as each branch of the test is comprised of two different tasks) and for the WAIS-III Vocabulary Scale. We report Cronbach alpha standardized item coefficients for all other measures.

<sup>b</sup> WAIS-III Vocabulary and Social Desirability scores are on a scale from 0 to 100.

### 3.1. Correlations among the MSCEIT, personality, and other measures

Correlations between scores on the test of emotional intelligence and other measures are presented in Table 2. The MSCEIT showed limited overlap with the Big Five personality traits and with verbal intelligence, thus confirming our *first hypothesis*. Scores on the MSCEIT correlated with some of the Big Five personality factors, but the highest correlation was 0.33. The Managing Emotions branch of the MSCEIT correlated positively with Agreeableness and Conscientiousness, and negatively with Openness to Experience.

Verbal intelligence, assessed by the WAIS-III vocabulary subscale, correlated modestly (0.39) with the Understanding Emotions branch of the MSCEIT, which relies on knowledge of

Table 2  
Correlations between the MSCEIT and other measures<sup>a</sup>

	MSCEIT: Perceiving emotions	MSCEIT: Using emotions	MSCEIT: Understanding emotions	MSCEIT: Managing emotions	MSCEIT: Total score
Verbal Intelligence (WAIS-III Vocabulary)	0.06	−0.03	<b>0.39</b>	0.05	0.17
Verbal SAT (Self-reported)	−0.10	<b>−0.22</b>	<b>0.36</b>	−0.10	−0.04
Math SAT (Self-reported)	−0.09	−0.06	0.19	−0.13	−0.03
NEO-FFI—Neuroticism	−0.07	−0.03	−0.09	−0.15	−0.12
NEO-FFI—Extraversion	−0.04	−0.01	0.10	0.06	0.03
NEO-FFI—Agreeableness	0.19	<b>0.24</b>	0.15	<b>0.33</b>	<b>0.32</b>
NEO-FFI—Conscientiousness	0.11	0.12	<b>0.22</b>	<b>0.24</b>	<b>0.23</b>
NEO-FFI—Openness	−0.13	<b>−0.28</b>	−0.01	<b>−0.22</b>	<b>−0.22</b>
Self-esteem	0.01	−0.07	−0.05	0.08	−0.01
Private Self-Consciousness	0.00	−0.11	−0.16	−0.12	−0.12
Public Self-Consciousness	0.02	0.08	0.04	0.05	0.06
Social Anxiety	0.02	−0.02	−0.07	0.02	−0.01
TMMS—Attention	0.05	−0.10	0.04	0.05	0.01
TMMS—Clarity	0.08	−0.13	0.09	0.04	0.04
TMMS—Mood Repair	0.00	0.00	<b>0.21</b>	<b>0.27</b>	0.15
Self-perceived Social Skills	−0.05	−0.08	0.08	<b>0.24</b>	0.05
Social Desirability	0.09	0.01	0.08	0.15	0.11
State Mood Composite	−0.01	−0.09	0.03	0.12	0.01
Positive Relations with Others	−0.01	−0.06	0.20	<b>0.27</b>	0.11
NRI—Social Support/Parent	−0.14	−0.07	0.09	<b>0.22</b>	0.01
NRI—Social Support/Close Friend	−0.09	−0.05	0.02	0.10	−0.03
NRI—Negative Interaction/Parent	−0.05	−0.08	−0.03	−0.10	−0.09
NRI—Negative Interaction/Close friend	<b>−0.25</b>	<b>−0.33</b>	<b>−0.36</b>	<b>−0.36</b>	<b>−0.45</b>

Significant correlations are marked in bold ( $P < 0.05$ , two-tailed).  $90 \leq N \leq 101$  due to missing data.

<sup>a</sup> Measures included (in alphabetical order): MOOD: a state mood composite (happy, sad, anxious, and angry/irritated); MSCEIT (emotional intelligence ability test): MSCEIT Version 2.0 (Mayer, Salovey, & Caruso, 2001); NRI: Network of Relationship Inventory (Furman, 1996; Furman & Buhrmester, 1985); NEO-FFI: NEO Five-Factor Inventory (Costa & McCrae, 1992); Private self-consciousness, Public self-consciousness, and Social anxiety: (Fenigstein et al., 1975); Positive relations with others: Scales of Psychological Well-Being (Ryff, 1989, 14-item version); SAT: Scholastic Aptitude Test, self-reported; Self-perceived social skills: Exploratory Scale; Self-esteem: (Rosenberg, 1965), abridged; Social desirability: (Crowne & Marlowe, 1960); TMMS Attention, clarity and repair: Trait Meta-Mood Scale (Salovey et al., 1995), abridged; Verbal intelligence: Wechsler Adult Intelligence Scale—Third edition (Wechsler, 1997) vocabulary subscale.

emotional vocabulary. It did not correlate significantly with the other branches of emotional intelligence. Note that the range of verbal intelligence was somewhat restricted in this sample of Yale University students.

The MSCEIT was unrelated to public and private self-consciousness, self-esteem, social desirability, and mood, as expected. MSCEIT scores did not correlate significantly with the Attention and Clarity factors of the Trait Meta-Mood Scale, which can be seen as a proxy for self-perceived emotional intelligence. The Mood Repair Scale of the TMMS, which taps into the use of optimistic thinking to regulate negative moods, correlated 0.21 and 0.27 with the MSCEIT branches of Understanding and Managing Emotions, respectively.

### 3.2. *Self-reported satisfaction with relationships in life*

Two self-report measures tapping into the quality of interpersonal relationships provide some evidence for the convergent and incremental validity of the MSCEIT: the Positive Relations with Others subscale of Ryff's (1989) scales of psychological well-being, and the Network of Relationship Inventory (NRI; Furman & Buhrmester, 1985).

Table 3 shows the correlations between these measures, on the one hand, and the MSCEIT, verbal intelligence, and the Big Five, on the other. The Managing Emotions branch of the MSCEIT correlated with the Positive Relations with Others scale, and with the Social Support factor of the NRI in relation to a close parent or parent figure. This last scale measures the companionship, intimacy, aid and affection in the relationship. All four branches of the MSCEIT were inversely correlated with the Negative Interaction Factor of the Network of

Table 3  
Correlations between scales of self-perceived satisfaction with social relationships and other measures<sup>a</sup>

	Positive Relations with Others	NRI Social Support/Parent	NRI Social Support/Friend	NRI Negative Interaction/Parent	NRI Negative Interaction/Friend
MSCEIT—Perceiving Emotions	−0.01	−0.14	−0.09	−0.05	<b>−0.25</b>
MSCEIT—Using Emotions	−0.06	−0.07	−0.05	−0.08	<b>−0.33</b>
MSCEIT—Understanding Emotions	0.20	0.09	0.02	−0.03	<b>−0.36</b>
MSCEIT—Managing Emotions	<b>0.27</b>	<b>0.22</b>	0.10	−0.10	<b>−0.36</b>
MSCEIT—Total Score	0.11	0.01	−0.03	−0.09	<b>−0.45</b>
NEO-FFI—Neuroticism	<b>−0.53</b>	−0.02	<b>−0.28</b>	<b>0.30</b>	0.07
NEO-FFI—Extraversion	<b>0.51</b>	0.08	<b>0.42</b>	−0.10	0.04
NEO-FFI—Agreeableness	0.20	0.03	0.14	<b>−0.32</b>	−0.16
NEO-FFI—Conscientiousness	<b>0.37</b>	0.16	<b>0.27</b>	<b>−0.26</b>	<b>−0.22</b>
NEO-FFI—Openness	0.02	−0.18	−0.05	0.16	0.09
Verbal Intelligence (WAIS-III Vocabulary)	0.00	−0.18	−0.15	0.11	−0.18

Significant correlations are marked in bold ( $P < 0.05$ , two-tailed).  $90 \leq N \leq 101$  due to missing data.

<sup>a</sup> Measures included (in alphabetical order): MSCEIT Version 2.0 (Mayer, Salovey, & Caruso, 2001); NRI: Network of Relationship Inventory (Furman, 1996; Furman & Buhrmester, 1985); NEO-FFI: NEO Five-Factor Inventory (Costa & McCrae, 1992); Verbal intelligence: Wechsler Adult Intelligence Scale—Third edition (Wechsler, 1997) vocabulary subscale.

Relationship Inventory, in relation to a close friend. This scale assesses conflict and antagonism in the relationship.

To assess the incremental validity of emotional intelligence, we used multiple regression to analyze the variables that concurrently predicted self-reported satisfaction with interpersonal relationships. The predictors entered were: the Big Five personality traits, verbal intelligence, and the four MSCEIT branch scores. We followed a forward stepping strategy, entering the Big Five and verbal intelligence first, and the MSCEIT branch scores last. At each step, we retained only those variables that proved statistically significant, to avoid overstretching the carrying capacity of the data with too many predictors. We followed this strategy systematically for the five outcome variables referred above: Ryff's (1989) scale of Positive Relations with Others; and the NRI Social Support and Negative Interaction factors, for parent and friend. The final models are reported in Table 4.

Emotional intelligence revealed significant zero-order correlations with three out of these five outcome variables (positive relations with others, social support with parent, and negative interaction with friend). These associations remained statistically significant when we controlled for significant Big Five and verbal intelligence variables in multiple regression as described above.

Table 4  
Predicting self-perceived satisfaction with social relationships, using multiple regression

	Beta	P-value	R <sup>2</sup> change
<i>(a) Predicting "Positive Relations With Others" (Ryff, 1989)<sup>a</sup></i>			
Neuroticism	−0.33	0.001	0.28
Extraversion	0.35	<0.001	0.09
MSCEIT—Managing Emotions	0.22	0.01	0.05
<i>(b) Predicting "Social Support With Parent" (NRI; Furman &amp; Buhrmester, 1985)<sup>b</sup></i>			
MSCEIT—Managing Emotions	0.22	0.03	0.05
<i>(c) Predicting "Social Support With Friend" (NRI; Furman &amp; Buhrmester, 1985)<sup>c</sup></i>			
Extraversion	0.39	<.01	0.18
Conscientiousness	0.21	0.02	0.04
<i>(d) Predicting "Negative Interaction With Parent" (NRI; Furman &amp; Buhrmester, 1985)<sup>d</sup></i>			
Agreeableness	−0.30	0.001	0.10
Conscientiousness	−0.24	0.01	0.06
<i>(e) Predicting "Negative Interaction With Friend" (NRI; Furman &amp; Buhrmester, 1985)<sup>e</sup></i>			
Conscientiousness	−0.10	0.30	0.05
MSCEIT—Understanding Emotions	−0.23	0.02	0.10
MSCEIT—Using Emotions	−0.21	0.02	0.06
MSCEIT—Managing Emotions	−0.20	0.04	0.03

<sup>a</sup> Model  $F(3, 86) = 20.24$ ,  $P < 0.001$ ; adjusted  $R^2 = 0.39$ .

<sup>b</sup> Model  $F(1, 99) = 4.86$ ,  $P = 0.03$ ; adjusted  $R^2 = 0.04$ .

<sup>c</sup> Model  $F(2, 98) = 13.82$ ,  $P < 0.001$ ; adjusted  $R^2 = 0.20$ .

<sup>d</sup> Model  $F(2, 98) = 9.30$ ,  $P < 0.001$ ; adjusted  $R^2 = 0.14$ .

<sup>e</sup> Model  $F(4, 96) = 7.75$ ,  $P < 0.001$ ; adjusted  $R^2 = 0.21$ .

This suggests that emotional intelligence has incremental validity in relation to personality and verbal intelligence, supporting our [second hypothesis](#).

Using scores from [Ryff's \(1989\) Positive Relations with Others Scale](#) as the dependent variable, the final model, reported in [Table 4\(a\)](#), included as significant predictors neuroticism, extraversion, and the managing emotions branch of the MSCEIT ( $F(3, 86) = 20.24, P < 0.001$ , adjusted  $R^2 = 0.39$ ). In this model, the variance explained by the MSCEIT managing emotions branch was small but statistically significant. No other variables explained significant additional variance.

Using the social support with parent score from the NRI as the dependent variable, the final model, reported in [Table 4\(b\)](#), included only the managing emotions branch of the MSCEIT, as a positive predictor. None of the Big Five nor verbal intelligence entered the model.

For the two outcome variables that did not reveal significant zero-order correlations with emotional intelligence (“social support with friend” and “negative interaction with parent”), the only significant predictors retained in the final models were personality variables. These models are reported in [Tables 4\(c\) and \(d\)](#).

Using the negative interaction with friend score from the NRI as a dependent variable in multiple regression, the final model, reported in [Table 4\(e\)](#), included the understanding, using, and managing emotions branches of emotional intelligence ( $F(4, 96) = 7.75, P < 0.001$ ; adjusted  $R^2 = 0.21$ ). Conscientiousness entered the model in step one but did not remain statistically significant when emotional intelligence was included.

We replicated these findings following a more conservative strategy: entering all of the Big Five and verbal intelligence simultaneously as a first block of variables, and forward-stepping MSCEIT branch scores last. The results were generally similar to those reported above, though some predictors no longer remained statistically significant. Emotional intelligence still accounted for significant variance in two out of five outcome measures (Positive Relations with Others, and Negative Interaction with Friend), after apportioning the maximum possible variance to personality traits and verbal intelligence. In predicting Social Support with Parent, the managing emotions branch of the MSCEIT became marginally significant ( $P < 0.10$ ).

#### 4. Discussion

We found preliminary evidence for the convergent, discriminant, and incremental validity of emotional intelligence, in relation to verbal intelligence and personality measures. Both of the hypotheses were supported. There was a general pattern of low correlations between scores on an emotional intelligence test, on the one hand, and personality traits and verbal intelligence, on the other. Emotional intelligence showed significant (though modest) correlations with several indicators of quality of social interaction. These findings provide some evidence of both convergent and discriminant validity for the MSCEIT, supporting the first hypothesis.

Multiple regression analyses provided preliminary support for the incremental validity of the MSCEIT in relation to personality and verbal intelligence. The managing emotions branch of the MSCEIT retained a significant association with three out of five outcome variables tapping into the self-perceived quality of interpersonal relationships, even when we controlled for significant

Big Five and verbal intelligence measures. The fact that both the MSCEIT and the Big Five concurrently predicted self-reported satisfaction with relationships in life suggests that we need to take into account both emotional skills and personality dispositions in order to understand social and emotional adaptation. This finding supports the second hypothesis.

Our findings should be viewed as tentative, and interpreted with caution, as there are several limitations to this study.<sup>2</sup> Until these results are replicated with other samples, we do not know if they generalize. Reliance on self-report measures of satisfaction with social relationships is another limitation. Note, however, that we used an ability measure of emotional intelligence to “predict” self-reported satisfaction with social relationships—we did not use a self-report measure to predict self-reported outcomes. Moreover, we used a rather stringent test of incremental validity (controlling for personality), as discussed earlier.

Lower than expected reliabilities for some branches of the MSCEIT may have attenuated correlations with other measures. On the other hand, this increases our confidence that correlations reported as statistically significant were not due to chance. There was substantial variability in the amount of time participants took to complete the MSCEIT, and we do not know to what extent this may have influenced emotional intelligence scores.

It is also possible that the measure of verbal intelligence that we used was not as valid as we might wish. For logistical reasons we asked participants to provide written rather than oral responses to the WAIS Vocabulary Scale, which entails describing the meaning of words. Participants wishing to finish the study faster might have typed shorter replies, which are more likely to be incomplete or unsatisfactory, and thereby received scores that do not accurately reflect their true verbal intelligence.

The general pattern of low correlations found in the present study between emotional intelligence, measured as a set of abilities, and the Big Five personality traits has been replicated in other recent studies—even though the exact associations vary (Brackett & Mayer, 2001; Ciarrochi et al., 2000; Lopes, Schütz, Sellin, Nezlek, & Salovey, in preparation). Together, these findings suggest that, when emotional intelligence is assessed as a set of skills, discriminant validity in relation to personality and verbal intelligence is substantial. Several researchers have questioned the construct validity of emotional intelligence because self-report scales of emotional intelligence share substantial overlap with personality measures (Davies et al., 1998; Dawda & Hart, 2000). This criticism does not seem to apply to an ability measure of emotional intelligence such as the MSCEIT.

The results we obtained with the Trait Meta-Mood Scale, which can be seen as a proxy for self-perceived emotional intelligence, also suggest that self-report and ability measures of emotional intelligence yield different findings. We found low correlations between the MSCEIT and the TMMS. Correlations between the TMMS and the Big Five were higher than those between the MSCEIT and the Big Five.<sup>3</sup>

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<sup>2</sup> We should also note that, in a follow-up study with the same participants, emotional intelligence did not significantly predict how people were evaluated by others following a half-hour group negotiation exercise. This could be due to the nature and constraints of the situation, or to the difficulty of predicting specific instances of behavior from general traits and skills.

<sup>3</sup> Due to limitations of space, we do not report correlations between the TMMS and measures other than the MSCEIT.

The Using and Managing Emotions branches of the MSCEIT were positively (though modestly) associated with the Big Five trait of agreeableness, which taps into altruism, interpersonal trust, and compliance, among other facets. Managing Emotions also correlated with several indicators of relationship quality. These results strengthen previous findings based on the MEIS, suggesting that emotional intelligence is associated with prosocial tendencies (e.g. Rubin, 1999) and relationship quality (Ciarrochi et al., 2000). Scores on the Understanding and Managing Emotions branches were also positively (though modestly) associated with conscientiousness, possibly reflecting self-control. The conscientiousness factor of the Big Five taps into self-discipline, dutifulness, and deliberation.

We did not expect to find non-significant correlations between the managing emotions branch of the MSCEIT, on the one hand, and neuroticism, extraversion, and social anxiety, on the other. In a subsequent study with a German sample (Lopes et al., *in preparation*), we did find small but significant correlations (in the 0.2 range) with neuroticism (negative) and extraversion (positive), as well as with agreeableness and conscientiousness (both positive). We expected to find somewhat higher correlations because neuroticism and social anxiety reflect self-perceived difficulties with emotional regulation, and extraversion reflects positive emotionality. Neuroticism, sometimes also labeled emotional instability, assesses a disposition to experience negative emotional states, such as anxiety, depression, anger and hostility, feelings of vulnerability, and self-consciousness. Extraversion is associated with positive emotionality, energy, and interpersonal warmth or gregariousness (Costa & McCrae, 1992).

Larsen (2000) draws a distinction between temperamental differences in susceptibility to affective stimuli, or emotional reactivity (which he associates more with neuroticism and extraversion), and individual differences in response modulation (which he associates more with agreeableness, conscientiousness, and openness). We would expect the development of emotional regulation skills to improve emotional balance, contributing to lower neuroticism and higher extraversion, agreeableness, and conscientiousness. However, it is likely that people also develop social and emotional skills to compensate for their temperamental dispositions, as Kagan (1998) has suggested.

Someone who is prone to negative emotions may need to work harder to develop emotional control, thereby acquiring a more sophisticated repertoire and understanding of emotional regulation strategies. This person might then obtain a high score on a test of emotional intelligence, while still reporting a disposition to experience negative emotions, or neuroticism. Similarly, someone who is dispositionally prone to experience more positive emotions may feel less need to pay attention to emotional regulation strategies. Such compensation mechanisms would weaken the link between the emotional skills assessed by the MSCEIT and personality traits, thus helping to explain the low correlations we found here.

We did not expect to find negative (although small) correlations between two branches of the MSCEIT and openness to experience. We think that openness to feelings, which is one facet of openness to experience, is important for emotional intelligence (see also McCrae, 2000). Previous findings with the MEIS indicate that emotional intelligence is positively associated with openness to feelings ( $r = 0.24$ ), but unrelated to openness to aesthetics (Ciarrochi et al., 2000). The Big Five Scale used in the present study (the NEO-FFI) does not assess openness to feelings. In the Lopes et al. (*in preparation*) study conducted in Germany, we did find a positive correlation between the managing emotions branch of the MSCEIT and openness to experience, assessed with a different instrument.

It is possible that the negative correlation between the MSCEIT and openness to experience in this study was due to chance or, perhaps, an artifact of conformity bias. The MSCEIT is designed to assess emotional skills, but the method of consensus scoring used in this study may also reflect conformity with, or attunement to, social norms. If people who score high on openness to experience provide somewhat unusual responses to the emotional stimuli used in the MSCEIT, they may receive lower scores on this test, because responses are scored according to how well they match the normative sample.

In interpreting findings from the MSCEIT, it is unclear to what extent we are truly assessing skill, rather than conformity or adjustment to social norms. Roberts et al. (2001) have criticized ability tests of emotional intelligence for this reason. However, there are several reasons to pursue the development of such measures, in spite of this criticism. The first is that there is a high degree of agreement between expert and consensus scoring (Mayer, Salovey, Caruso, & Sitarenios, 2001; Mayer et al., *in press*), which enhances our confidence in this scoring method. The second is that social and emotional skills, used to interact and communicate with others, necessarily reflect attunement to social norms and expectations, so that it may be difficult to distinguish skill and adjustment. The third is that complex, real-life problems often allow more than one correct solution, and therefore need to be assessed using expert or consensus norms if we want to avoid relying on self-report. One faces a similar challenge in evaluating practical intelligence or creativity (Sternberg, 1999; Sternberg et al., 2000).

Finally, we should note that scores on the MSCEIT were unrelated to social desirability and mood. This supports the idea that a skills-based measure of emotional intelligence is not influenced by some of the biases that may undermine the credibility of self-report measures, especially for assessment purposes.

Emotional intelligence, assessed as a set of abilities, shares limited overlap with verbal intelligence and personality measures. The MSCEIT, designed to assess emotional skills, and the Big Five, intended to measure social and emotional dispositions, seem to tap into different aspects of psychological functioning. Different methods of assessment (ability testing and self-report) seem to minimize overlap. Both the MSCEIT and personality traits concurrently “predicted” self-reported satisfaction with relationships in life. These findings suggest that we need to take into account both emotional skills and dispositions to better understand social and emotional functioning. The fact that the MSCEIT explained unique variance in self-reported satisfaction with interpersonal relationships supports the incremental validity of this ability-based measure of emotional intelligence.

Future research should seek to establish the predictive validity of emotional intelligence, using outcomes measures that do not rely on self-report. If future studies confirm that the MSCEIT has adequate psychometric properties, convergent and discriminant validity, the crucial issue is to determine whether ability-based measures of emotional intelligence can predict other important outcomes.

## **Acknowledgements**

We thank the following individuals for their suggestions and comments during the preparation and running of this study, data analysis, and writing: Sigal Barsade, David Caruso, Geoffrey

Cohen, J. Richard Hackman, Alan Kazdin, Chinyelu Lee, Helena Lopes, John Mayer, John Nezlek, Jerome Singer, Gill Sitarenios, Robert Sternberg, Victor Vroom, and Edward Zigler. We also acknowledge support from the National Cancer Institute (R01-CA68427), the National Institute of Mental Health (P01-MH/DA56826), and the Donaghue Women's Health Investigator Program at Yale to Peter Salovey.

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