The Relation of Emotional Intelligence to Traditional Cognitive and Personality Variables

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**THE RELATION OF EMOTIONAL INTELLIGENCE TO
TRADITIONAL COGNITIVE AND PERSONALITY VARIABLES**

Introduction

The term "Emotional Intelligence" was coined in 1990 by Salovey and Mayer. Since then, many researchers and writers have become interested in this concept. Today, the term "Emotional Intelligence" is used in many different ways. Salovey et al. (1990) defined Emotional Intelligence as "the ability to monitor one's own and others' feelings and emotions, to discriminate among them, and to use this information to guide one's thinking and action" (p. 189). More recently, Mayer, Caruso, & Salovey (2000) have taken a cognitive ability approach, focusing on four domains: perceiving emotions in oneself and others, assimilating emotions, understanding emotions, and managing emotions in oneself and others. Goleman's (1995) popular book outlined five domains of Emotional Intelligence: knowing one's emotions, managing one's emotions, motivating oneself, recognizing emotion in others, and handling relationships (which includes managing emotions in others). Finally, Bar-On (1997a) defined emotional, personal, and social intelligence (collectively referred to as EQ) as "the ability to understand oneself and others, relate to people, and adapt to and cope with the immediate surroundings" (p. 3), and claims that "EQ provides an indication of one's noncognitive ability to succeed in coping with environmental demands" (p. 2). Although these definitions overlap, some aspects of Emotional Intelligence are unique to only a single model or definition. In our research, we focused on 14 subcomponents of Emotional Intelligence (see Table 1). These 14 subcomponents were selected by reviewing models and measures of Emotional Intelligence, as well as models and measures of the related constructs of Social Intelligence, Empathy, and Alexithymia, and looking for recurring themes.

Inspection of the 14 subcomponents suggests that some of them are cognitive abilities and some are personality dimensions. The first seven cognitive abilities are each measured by at least one maximum-performance measure, and the test designers for most existing measures claimed to be measuring a cognitive ability. This is not true for the last seven subcomponents. However, each of these 14 subcomponents has been labeled as an aspect of Emotional Intelligence by at least some writers. Calling a variable a type of intelligence when it is not is problematic. The word "intelligence" is a value-laden term: the assumption is that more is better. This assumption is true for many types of intelligence in many situations. However, this assumption is not valid for all individual difference variables. In varying situations or types of jobs, different personality characteristics, for example, might be more or less beneficial. For example, it could be that Extraversion is positively related to success among salespeople, but negatively related to success among accountants or poets. Using the term "intelligence" to describe a variable that is not a type of intelligence is therefore misleading and could be damaging. We might hire someone because they had a high score on an Emotional Intelligence test, and only find out later that many of the qualities that we measured were negatively related to success in this particular job. Because of this, intelligence researchers examine many types of evidence before concluding that a test measures a new type of intelligence.

Determining if a particular Emotional Intelligence measure is assessing a type of intelligence or a personality dimension is a question of construct validity. If a test measures a certain construct (e.g., a type of intelligence), then that test will have relations with other tests that mimic the relations between the constructs the tests measure. Evidence of construct validity can be divided into two types. First, does the test correlate with other tests it should correlate with? We will refer to this as *associative* validity. Second, does the test have low correlations with other tests that it should be uncorrelated with? We will refer to this as *dissociative* validity.

Because most cognitive abilities are positively correlated (Cattell, 1971; Thurstone, 1947), but cognitive abilities and personality dimensions are largely independent (Hakstian & Cattell, 1978), if an Emotional Intelligence measure taps a type of intelligence, then it should be positively correlated with other cognitive abilities, and have near-zero or small correlations with personality dimensions and Socially Desirable Responding. In contrast, if an Emotional Intelligence measure taps a personality dimension, it should have near-zero correlations with measures of cognitive abilities, and significant correlations with at least one other personality dimension. Ideally, if an Emotional Intelligence measure taps a cognitive ability, then it should be more highly correlated with cognitive ability tests than with personality dimensions.

Method

Undergraduates at the University of British Columbia completed measures of Emotional Intelligence, cognitive abilities, personality dimensions, and Socially Desirable Responding.

Table 1
Subcomponents of Emotional Intelligence and Example Measures

Subcomponents	Example Measures	
Emotional Understanding	Levels of Emotional Awareness Scale	
The ability to recognize one's own emotions, as they occur, and to understand emotions in general	MEIS*	Blends, Progressions, Transitions, Relativity
	MSCEIT	Blends, Progressions, Transitions, Analogies
	TAS-20	Difficulty Describing Feelings, Difficulty Identifying Feelings
	TEIS	Emotional Appropriateness
	TMMS	Clarity
	EQ-i	Self-awareness
Emotional Integration	MEIS	Synesthesia, Feeling Biases
The ability to generate, use, and feel emotions as necessary to communicate feelings, or employ them in other mental processes	MSCEIT	Synesthesia, Facilitation, Sensation Translation
Recognizing Emotions in Others	MEIS	Faces
The ability to recognize the non-verbal emotional expressions of others	MSCEIT	Faces
	OGSI	Expression Grouping
	TEIS	Recognition of Emotion in Others
	SSI	Emotional Sensitivity
	Perceived Decoding Ability	
Perception of Emotions in Objects	MEIS	Music, Designs, Stories
The ability to perceive emotions in inanimate objects	MSCEIT	Landscapes, Designs
Social Insight	Chapin Social Insight Test	
The ability to forecast the thoughts, feelings, and actions of others	OGSI	Cartoon Predictions, Missing Cartoons, Social Translation
Managing Emotions in the Self	MEIS	Managing Feelings of Self
The ability to modulate emotions in oneself as desired	MSCEIT	Emotion Management
	TMMS	Repair
	TEIS	Regulation of Emotion in Self
Managing Emotions in Others	MEIS	Managing Feelings of Others
The ability to modulate emotions in others as desired	MSCEIT	Emotions in Relationships
	TEIS	Regulation of Emotion in Others
Positive Expressivity	GJES	Positive Expressivity
The tendency to express one's positive emotions nonverbally	Positive Expressivity Scale	
Negative Expressivity	GJES	Negative Expressivity
The tendency to express one's negative emotions nonverbally	Negative Expressivity Scale	
Attending to Emotions	TMMS	Attention
The tendency to attend to emotions and be aware of them	SIPOAS	Based on Body
Emotion-Based Decision-Making	TEIS	Flexible Planning
The tendency to make plans and decisions based on one's feelings rather than basing them on logic		
Responsive Distress	TEIS	Empathy
The tendency to become distressed when in the presence of other people who are distressed	IRI	Personal Distress
	QSE	Empathic Suffering, Responsive Crying, Feeling for Others
Responsive Joy	QSE	Positive Sharing
The tendency to become happy or cheerful when in the presence of other people who are happy or cheerful		
Empathic Concern	IRI	Empathic Concern
The tendency to feel concern or sympathy for those who suffer		

* These abbreviations are explained in the Appendix.

<u>Participants: UBC Student Sample</u>

Participants were recruited from two sources. First, participants were recruited from the UBC Psychology Subject Pool. These participants completed all the measures listed in Table 2 (the 12 cognitive ability tests), as well as the Emotional Intelligence measures listed in Table 3 (referred to as Set 1). A total of 254 participants completed this study.

Once these participants had completed this two-hour study, they were asked to participate in a separate one-hour study, for the chance to win $1000 or a new computer and the opportunity to receive feedback on their personality. If they were willing to participate, they were asked to complete the measures in Table 4 (referred to as Set 2). Thirty-five students elected to participate in this one-hour study.

In addition, the instructor of two sections of an upper-level psychology course allowed the first author to advertise this study during class time. Those participants were asked to complete all of the measures listed below in Tables 2, 3, 4, and 5, in return for feedback on their personality and Emotional Intelligence and bonus course credits. A total of 160 students from the two sections participated.

Subjects were then screened for familiarity with written English. Subjects were excluded if they had been speaking English for less than 10 years or if their first language was not English and they rated themselves as 8 or less out of 10 on a scale measuring comfort with reading and writing in English. After data screening, we were left with 309 participants: 93 male, 210 female, 6 unspecified. Their ages ranged from 17 to 48, with an average of 20.3 and standard deviation of 3.6. The majority of participants identified themselves as Asian (50.8%) or White (39.1%), and most spoke English as their first language (70.2%).

<u>Measures</u>

All participants completed demographic measures of sex, age, English Language Proficiency, and Ethnicity. In addition, participants completed a cognitive battery, personality measures, and a number of Emotional Intelligence measures.

Cognitive Measures

All participants completed a short battery of tests designed to measure four different cognitive abilities: Verbal Ability, Verbal Closure (the ability to recognize words when some of the letters have been rearranged or erased), Visualization, and Inductive Reasoning. Three tests were used to measure each cognitive ability, and the mean z-score was calculated. These measures are described in Table 2.

Measures of Personality and Socially Desirable Responding

Goldberg (1999a, 1999b) created 10-item public-domain measures of constructs similar to the 30 NEO-PI-R facets (Costa & McCrae, 1992) of the Five-Factor Model of personality, using items from the International Personality Item Pool (IPIP; Goldberg, 1999b). Participants from the upper-level psychology class completed 8-item versions of 23 of these scales. These 23 scales were selected based on their apparent relevance to Emotional Intelligence. In addition, these participants completed the PDS: BIDR-7 (Paulhus, 1999), which measures two separate aspects of Socially Desirable Responding: Impression Management and Self-Deceptive Enhancement. Subject Pool participants who elected to return for the second study also completed the two subscales of the PDS: BIDR-7.

Emotional Intelligence Measures

Participants completed 31 measures of Emotional Intelligence. Because of time constraints, these measures were divided into two groups: those that measure central Emotional Intelligence subcomponents, and those that measure somewhat less central subcomponents. While all participants completed the measures of the most central subcomponents, listed in Table 3 and referred to as Set 1, only the upper-level psychology class students and the Subject Pool Participants who wished to participate in the second study completed the Set 2 measures, and only the participants from the upper-level psychology class completed the Set 3 measures.

<u>Scoring the Emotional Intelligence Measures</u>

Five methods of scoring were used with the Emotional Intelligence measures. We will describe each of these methods in turn.

Many measures are self-report. The majority of these use a five-point likert format, with response options ranging from Strongly Disagree to Strongly Agree. Two measures—the Positive Expressivity Scale and the Negative Expressivity Scale—use a five-point response scale describing the accuracy of self-descriptions, with response options ranging from Completely Inaccurate to Completely Accurate.

Table 2
Cognitive Ability Tests Administered to All Participants

Measure	Definition
Verbal Ability (VA)	
Advanced Vocabulary Test[a]	This is a five-choice synonym test consisting mainly of difficult items.
Inventive Opposites[b]	The participant is asked to complete two words that are opposite in meaning from a given word, given the first letter of each of the answers.
Reading I[b]	The participant is asked to mark two out of four possible responses that are similar in meaning to the given proverb.
Verbal Closure (VC)	
Rearranged Words[c]	For each item, the participant is asked to write a common English word from a group of five scrambled letters. Modeled after the test by Ekstrom, French, and Harman (1976) that uses four-letter words.
Hidden Words[a]	The participant is asked to find and circle one or more four-letter words in apparently random lines of letters.
Incomplete Words[a]	The participant is asked to provide one or more letters to complete common words.
Visualization (VZ)	
Form Board[a]	Each item presents 5 pieces, some or all of which can be put together to form a figure presented in outline form. The participant is asked to indicate which of the pieces, when fitted together, would form the outline.
Paper Folding[a]	For each item, successive drawings illustrate two or three folds made in a square sheet of paper, with the final drawing showing where a hole is punched. The participant is asked to indicate which of five drawings shows how the punched sheet will appear when unfolded.
Surface Development[a]	Drawings are given of three-dimensional forms that can be made with paper. With each is a diagram showing how a piece of paper might be cut and folded to make the form. The participant is asked to indicate correspondences between the diagram and the three-dimensional form.
Inductive Reasoning (IR)	
Letter Sets[a]	Five sets of four letters are presented. The participant is asked to find the rule that relates four of the sets to each other, and then to mark the one that does not fit the rule.
Figure Classification[a]	Each item presents 2 or 3 groups of geometrical figures. The participant is asked to discover the rule that governs group membership, and then apply this rule to a second line of figures.
Number Series[b]	For each item, the participant is asked to provide two missing numbers in a series of six to nine numbers.

Note. Shortened versions were used for most of these tests.
a. Ekstrom, French, and Harman (1976).
b. Thurstone (1934).
c. Created by Kim Barchard, modeled after the Scrambled Words test from Ekstrom, French, and Harman (1976).

Table 3
Emotional Intelligence Measures Administered to All Participants (Set 1)

Measures	Subscales	Scoring Method[a]
Emotional Understanding		
MSCEIT*	C Blends	MP consensus
MSCEIT	D Progressions	MP consensus
MSCEIT	H Transitions	MP consensus
MSCEIT	L Analogies	MP consensus
Levels of Emotional Awareness	5 item version	MP open-ended
TAS-20	Difficulty Describing Feelings	Self-report
TAS-20	Difficulty Identifying Feelings	Self-report
TEIS	Emotional Appropriateness	MP-Self-report hybrid
Emotional Integration		
MSCEIT	B Synesthesia	MP consensus
MSCEIT	G Facilitation	MP consensus
MSCEIT	K Sensation Translation	MP consensus
Recognizing Emotions in Others		
MSCEIT	A Faces	MP consensus
OGSI	Expression Grouping part I	MP multiple-choice
TEIS	Recognition of Emotion in Others	Self-report
Perception of Emotions in Objects		
MSCEIT	F Landscapes	MP consensus
MSCEIT	J Designs	MP consensus

* These abbreviations are explained in the Appendix.
a. These scoring methods are described in the section entitled "Scoring the Emotional Intelligence Measures".
MP = Maximum-performance.

Table 4
Emotional Intelligence Measures Administered to Some Participants (Set 2)

Measures	Subscales	Scoring Method[a]
Social Insight		
OGSI*	Cartoon Predictions part I	MP multiple-choice
OGSI	Missing Cartoons part I	MP multiple-choice
OGSI	Social Translations part I	MP multiple-choice
Managing Emotions in Self		
MSCEIT	I Emotion Management	MP consensus
TMMS	Repair	Self-report
TEIS	Regulation of Emotion in the Self	Self-report
Managing Emotions in Others		
TEIS	Regulation of Emotion in Others	Self-report
MSCEIT	E Emotions in Relationships	MP consensus

* These abbreviations are explained in the Appendix.
a. These scoring methods are described in the section entitled "Scoring the Emotional Intelligence Measures".
MP = Maximum-performance.

Table 5
Emotional Intelligence Measures Administered to Participants (Set 3)

Construct	Scale	Subscale Used	Scoring Method
Attending to Emotions	Trait Meta Mood Scale (TMMS)	Attention	Self-report
Emotion-Based Decision-Making	Tett's Emotional Intelligence Scale (TEIS)	Flexible Planning	Self-report
Empathic Concern	Interpersonal Reactivity Index (IRI)	Empathic Concern	Self-report
Responsive Distress	Tett's Emotional Intelligence Scale	Empathy	Self-report
Responsive Joy	Quick Scale of Empathy (QSE)	Positive Sharing	Self-report
Positive Expressivity	Positive Expressivity Scale (PES)		Self-report
Negative Expressivity	Negative Expressivity Scale (NES)		Self-report

The TEIS Emotional Appropriateness subscale (Tett, Wang, Gribler, & Martinez, 1997) was designed to measure the ability to differentiate between similarly experienced emotions. It uses an unusual scoring method that we have labeled a hybrid of self-report and maximum-performance. Each of the 12 items is rated on a 5-point likert scale, where one end of the scale is considered to represent an appropriate emotional reaction to the given situation, and the other end is considered to be an inappropriate reaction. Thus, people might obtain low scores on this measure either because they have unusual emotional reactions (a self-report interpretation) or because they do not know what emotions those situations would create (a maximum-performance interpretation).

The O'Sullivan and Guilford tests of Social Intelligence (O'Sullivan & Guilford, 1976) use multiple-choice questions. Expression Grouping and Missing Cartoons have four response options, while Social Translations and Cartoon Predictions have three response options.

The Levels of Emotional Awareness Scale (Lane et al., 1990) is an open-ended maximum-performance measure. Subjects are asked to describe how they would feel in several different emotionally-evocative situations. There is a second person mentioned in each scenario, and subjects are also asked to describe how that person would feel. Separate scores are given for the responses for the self and the responses for the other, based on the number and specificity of emotion words used. A total score is then calculated, and it was this total score that was used in the analyses presented here.

The 12 MSCEIT subscales (Mayer, Salovey & Caruso, 1999) use consensus scoring. In this method, one's score is equal to the proportion of the norm group who gave that response. Thus, if 10% of the norm group selected option 1 "No anger" for an item, the subject would obtain a score of .10 for selecting 1; if 28% of the norm group selected option 2, then the subject would obtain a score of .28 for selecting 2.

<div align="center">Reliabilities</div>

Cognitive Domain

The internal consistencies of the 12 cognitive ability tests were assessed using a subsample of 40 participants. Composite scores were formed for each of the cognitive abilities by taking the mean z-score of the three tests designed to measure it. The reliabilities of these composites were calculated using standard theorems on the reliability of linear combinations (Horst, 1966, pp. 280-282). The internal consistencies were as follows: Verbal Ability, .80; Verbal Closure, .82; Visualization, .81; and Inductive Reasoning, .72.

Personality Domain

The internal consistencies of the 23 IPIP personality scales were calculated for all subjects. Composite scores for each dimension were calculated as the mean z-score of the four or five facets that were measured. These internal consistencies were calculated as follows: Neuroticism, .94; Extraversion, .94; Openness, .90; Agreeableness, .91; and Conscientiousness, .91.

Measures of Socially Desirable Responding

The Impression Management subscale of the PDS: BIDR-7 had an internal consistency of .73. The Self-Deceptive Enhancement subscale had an internal consistency of .70.

Emotional and Social Intelligence Domain

The internal consistencies of the 31 Emotional Intelligence measures are given in Table 6. Although the majority of these measures had acceptable levels of internal consistency, many did not. In fairness to the O'Sullivan and Guilford tests (Expression Grouping, Cartoon Predictions, Missing Cartoons, and Social Translations), each of these tests has two parts and we elected to use only one part of each. The Levels of Emotional Awareness Scale as well is usually administered with either 10 or 20 items, and thus would usually have higher internal consistency. On the other hand, all available items were used for the MSCEIT subtests and the TEIS Emotional Appropriateness subscale. Since this data was collected, some revisions to the MSCEIT subscales have already been made to improve the internal consistencies (Peter Salovey, personal communication, 2000).

One test—the Levels of Emotional Awareness Scale (Lane, Quinlan, Schwartz, Walker, & Zeitlin (1990)—consists of open-ended questions, and is scored according to scoring manual guidelines. Each protocol was independently scored by two research assistants and disagreements were resolved. The inter-rater reliability of this entire procedure was assessed using a subsample of 40 participants, by comparing the scores given by one pair of markers with the scores given by another pair of markers. The average correlation among the three different pairs of markers was .96.

Table 6
Internal Consistencies of Emotional Intelligence Measures

Category	Type of Measure[a]	Measures and Subscales	Internal Consistency[b]
Emotional Understanding	MP consensus	MSCEIT C blends	.58
		MSCEIT D progressions	.50
		MSCEIT H transitions	.57
		MSCEIT L analogies	.37
	MP open-ended	Levels of Emotional Awareness 5-item version	.59
	MP-SR hybrid	TEIS emotional appropriateness	.36
	SR	TAS-20 difficulty describing feelings	.83
		TAS-20 difficulty identifying feelings	.82
Emotional Integration	MP consensus	MSCEIT B synesthesia	.80
		MSCEIT G facilitation	.82
		MSCEIT K sensation translation	.74
Recognizing Emotions in Others	MP consensus MP mult-choice	MSCEIT A faces OGSI expression grouping	.79 .31
	SR	TEIS recognition of emotion in others	.80
Perception of Emotions in Objects	MP consensus	MSCEIT F landscapes	.85
		MSCEIT J designs	.82
Social Insight	MP mult-choice	OGSI cartoon predictions	.44
		OGSI missing cartoons	.55
		OGSI social translations	.64
Managing Emotions in Self	MP consensus	MSCEIT I emotion management	.81
	SR	TMMS repair	.81
		TEIS regulation of emotion in the self	.87
Managing Emotions in Others	MP consensus	MSCEIT E emotions in relationships	.78
	SR	TEIS regulation of emotion in others	.82
Positive Expressivity	SR	Positive Expressivity Scale	.79
Negative Expressivity	SR	Negative Expressivity Scale	.74
Attending to Emotions	SR	TMMS attention	.82
Emotion-Based Decision-Making	SR	TEIS flexible planning	.83
Responsive Joy	SR	QSE positive sharing	.79
Responsive Distress	SR	TESI empathy	.87
Empathic Concern	SR	IRI empathic concern	.78

a. MP = Maximum-performance; SR = Self-Report.
b. These are the internal consistencies obtained in this study, for all measures except the MSCEIT subscales. For those measures, item-level scores are not available to test users, and so internal consistencies cannot be calculated. The internal consistencies reported here were obtained from J. D. Mayer (personal communication, July 2000).

<u>Data Analysis</u>

Each Emotional Intelligence measure was correlated with the four cognitive composites, the five personality composites, and the two measures of Socially Desirable Responding. These correlations were calculated using the data from men and women combined, unless there was a significant difference (at $p < .01$) between the correlations for men and the correlations for women. If there was a significant difference, separate correlations for men and women were used. See Tables 7 and 8.

Because approximately 350 correlations were calculated, these correlations were only considered statistically significant if $p < .001$. Using this Type 1 error rate for each significance test, the probability that we have made at least one Type 1 error anywhere in this analysis is approximately .35. Because these correlations were attenuated due to the lack of internal consistency of the measures involved, correlations that have been corrected for this attenuation were also calculated, and are given in the lower portion of each table.

The magnitude of these correlations was compared with the magnitude of the correlations found for variables that are known to measure cognitive and personality dimensions (e.g., the 12 cognitive ability measures and the 23 personality facets). In our data, the average absolute correlation between a cognitive ability test and a personality composite was .11; the average absolute correlation between a personality measure and a cognitive ability composite was .09; and the average absolute correlation between a cognitive ability test and a measure of Socially Desirable Responding was .09.

Correlations with cognitive variables that were larger than .09 were larger than the average correlation between personality variables and cognitive ability composites. Therefore, if a correlation with a cognitive composite was significantly larger than .09, we concluded that it failed to show dissociative validity with the cognitive variables. In addition, correlations with personality variables that were larger than .11 were larger than the average correlation between a cognitive variable and a personality composite. If a correlation with a personality variable was significantly larger than .11, then we concluded that this variable failed to show dissociative validity with that personality dimension. Finally, correlations with Socially Desirable Responding (SDR) measures that were larger than .09 were larger than the average correlation between a cognitive ability composite and a SDR measure. Therefore, if a correlation with SDR was significantly larger than .09, we concluded that this variable failed to show dissociative validity with SDR. Each of these significance tests used a Type 1 error rate of .05. Because retaining the null hypothesis provided evidence of dissociative validity, using a smaller Type 1 error rate would have been a liberal testing strategy, not a conservative one.

Finally, the largest correlation with a cognitive ability composite was compared with the largest correlation with a personality composite, using William's (1959) T_2 statistic. If this test was significant, we concluded that the measure is more strongly related to one of the two domains. For example, if the largest correlation with a cognitive ability composite was .58, and the largest correlation with a personality composite was .21, and William's T_2 statistic was significant, then we concluded that this measure is more strongly related to the cognitive domain than the personality domain. We calculated the T_2 statistic to compare the largest cognitive ability correlation with the largest personality correlation for every Emotional Intelligence variable, although we have reported results only for those comparisons that reached statistical significance at the .001 level.

Because three separate criteria were used—associative validity, dissociative validity, and a comparison of the largest correlations with the personality and cognitive composites—it was possible—indeed expected—that some Emotional Intelligence measures would satisfy one or two of the criteria but not all three. However, because these different significance tests were based on quite different sample sizes, it was also possible that an Emotional Intelligence measure demonstrate associative validity with the cognitive composites and dissociative validity with the personality composites, but have a slightly *larger* correlation with the personality composites than the cognitive composites. One such anomalous pattern of results did in fact occur—see the results for the MSCEIT H. The possibility of such anomalous results reinforces the importance of obtaining all three types of evidence before concluding that a particular Emotional Intelligence measure taps a cognitive ability (or a personality dimension).

Results

The correlations are given in Tables 7 and 8 for the cognitive and personality subcomponents respectively. Table 9 presents the results of the comparison of the largest correlations with the cognitive and personality subcomponents. All of these results are summarized in Table 10.

Table 7
Correlations of Cognitive Subcomponents of Emotional Intelligence with Cognitive Ability, Personality, and Socially Desirable Responding Variables, for Men and Women Combined

	Cognitive Ability Composites				Personality Composites					SDR Meas.	
	VA	VC	VZ	IR	N	E	O	A	C	IM	SDE
Uncorrected Correlations											
Emotional Understanding											
MSC C	.41*a	.22*	.10	.15	−.25	.18	.16	.10	.19	.05	.12
MSC D	.31*a	.08	.10	.15	−.22	.20	.05	.01	.16	.09	.23
MSC H	.26*a	.17	.07	.19*	−.11	.16	.27	.17	.27	.14	.22
MSC L	.29*a	.10	.25*a	.23*a	−.09	.07	−.06	.01	.05	.13	.07
LEAS	.28*a	.11	.09	.17	−.21	.25	.11	.15	.06	.03	.12
DDF	−.13	−.07	.06	.03	.31*b	−.39*b	−.19	−.21	−.29b	−.10	−.28*c
DIF	−.12	−.05	.08	.02	.47*b	−.28b	−.14	−.15	−.36*b	−.19	−.48*c
Em Ap	.04	.05	−.05	−.05	.16	−.06	−.06	.03	.00	−.11	−.03
Emotion Integration											
MSC B	.13	−.00	−.05	.01	−.05	.19	.11	.07	.13	.01	.01
MSC G	.03	−.02	.00	.02	−.10	.17	.17	.23	.25	.13	.19
MSC K	.13	.02	−.02	.06	−.03	.09	.16	.11	.09	.06	.10
Recognizing Emotions in Others											
MSC A	.14	.10	.05	.14	−.06	.17	.10	.16	.13	−.08	.14
EX GR	.22*a	.13	.15	.08	−.09	.00	.11	−.02	.03	−.03	.10
REC O	.14	−.01	−.01	.03	−.25	.45*b	.36*b	.29*b	.32*b	.24	.37*c
Perception of Emotion in Objects											
MSC F	.09	.08	−.03	−.01	.10	−.02	−.11	−.03	−.10	−.02	−.00
MSC J	−.14 / .19	.04	−.02	.03	.14	−.03	−.11	−.13	−.04	−.03	−.08
Social Insight											
CAR PR	.07	.10	.20	.10	.08	.17	.08	−.04	−.06	−.02	−.03
MS CR	.33*a	−.00	.19	.26	−.12	.22	.18	.02	−.01	−.01	.05
SOC TR	.48*a / .11	.19	.34 / −.07	.22	−.15	.19	.14	.10	.19	.12	.18
Managing Emotions in the Self											
MSC I	−.12 / .24	.00	.05	.14	−.00	.20	.11	.11	.21	.17	−.01
Repair	.26	.07	.18	.18	−.61*b	.52*b	.32*b	.23	.22	.18	.43*c
REG S	.55*a / .08	.01	.22	.19	−.79*b	.35*b	.06	.08	.19	.14	.50*c
Managing Emotions in Others											
MSC E	.29*a	.13	.19	.30*a	−.14	.24	.24	.08	.25	−.02	.00
REG O	.09	.06	.13	.04	−.34*b	.70*b	.33*b	.23	.30*b	.11	.37*c

* *p* < .001.
a = measure fails to show dissociative validity from cognitive variables. b = measure fails to show dissociative validity from personality variables. c = measure fails to show dissociative validity from Socially Desirable Responding.
Note. Where the correlations between men and women were different (using alpha = .01), the two correlations are given separately, with the correlation for men being given first.
Sample sizes varied from 133 to 301 for men and women combined.
MSC = MSCEIT. LEAS = Levels of Emotional Awareness Scale. DDF = TAS-20 Difficulty Describing Feelings. DIF = TAS-20 Difficulty Identifying Feelings. Em Ap = TEIS Emotional Appropriateness. EX GR = Expression Grouping. REC O = TEIS Recognizing Emotions in Others. CAR PR = Cartoon Predictions. MS CR = Missing Cartoons. SOC TR = Social Translations. Repair = TMMS Repair. REG S = TEIS Regulation of Emotion in the Self. REG O = Regulation of Emotion in Others.

Table 7 con't

	Cognitive Ability Composites				Personality Composites					SDR Meas.	
	VA	**VC**	**VZ**	**IR**	**N**	**E**	**O**	**A**	**C**	**IM**	**SDE**

Correlations Corrected for Attenuation Due to Lack of Internal Consistency

Emotional Understanding

	VA	VC	VZ	IR	N	E	O	A	C	IM	SDE
MSC C	.60*	.32*	.15	.23	−.34	.24	.22	.14	.26	.08	.19
MSC D	.49*	.12	.16	.25	−.32	.29	.07	.01	.24	.15	.39
MSC H	.39*	.25	.10	.30*	−.15	.22	.38	.24	.37	.22	.35
MSC L	.53*	.18	.46*	.45*	−.15	.12	−.10	.02	.09	.25	.14
LEAS	.41*	.16	.13	.26	−.28	.34	.15	.20	.08	.05	.19
DDF	−.16	−.08	.07	.04	.35*	−.44*	−.22	−.24	−.33	−.13	−.37*
DIF	−.15	−.06	.10	.03	.54*	−.32	−.16	−.17	−.42*	−.25	−.63*
Em Ap	.07	.09	−.09	−.10	.28	−.10	−.11	.05	.00	−.21	−.06

Emotion Integration

	VA	VC	VZ	IR	N	E	O	A	C	IM	SDE
MSC B	.16	−.00	−.06	.01	−.06	.22	.13	.08	.15	.01	.01
MSC G	.04	−.02	.00	.03	−.11	.19	.20	.27	.29	.17	.25
MSC K	.17	.03	−.03	.08	−.04	.11	.20	.13	.11	.08	.14

Recognizing Emotions in Others

	VA	VC	VZ	IR	N	E	O	A	C	IM	SDE
MSC A	.18	.12	.06	.19	−.07	.20	.12	.19	.15	−.11	.19
EX GR	.44*	.26	.30	.17	−.17	.00	.21	−.04	.06	−.06	.21
REC O	.18	−.01	−.01	.04	−.29	.52*	.42*	.34*	.38*	.31	.49*

Perception of Emotion in Objects

	VA	VC	VZ	IR	N	E	O	A	C	IM	SDE
MSC F	.11	.10	−.04	−.01	.11	−.02	−.13	−.03	−.11	−.03	−.00
MSC J	−.17 / .23	.05	−.02	.04	.16	−.03	−.13	−.15	−.05	−.04	−.11

Social Insight

	VA	VC	VZ	IR	N	E	O	A	C	IM	SDE
CAR PR	.12	.17	.34	.18	.12	.26	.13	−.06	−.09	−.04	−.05
MS CR	.50*	−.00	.28	.41	−.17	.31	.26	.03	−.01	−.02	.08
SOC TR	.67* / .15	.26	.47 / −.10	.32	−.19	.24	.18	.13	.25	.18	.27

Managing Emotions in the Self

	VA	VC	VZ	IR	N	E	O	A	C	IM	SDE
MSC I	−.15 / .30	.00	.06	.18	−.00	.23	.13	.13	.24	.22	−.01
Repair	.32	.09	.22	.24	−.70*	.60*	.37*	.27	.26	.23	.57*
REG S	.66* / .10	.01	.26	.24	−.87*	.39*	.07	.09	.21	.18	.64*

Managing Emotions in Others

	VA	VC	VZ	IR	N	E	O	A	C	IM	SDE
MSC E	.37*	.16	.24	.40*	−.16	.28	.29	.09	.30	−.03	.00
REG O	.11	.07	.16	.05	−.39*	.80*	.38*	.27	.35*	.14	.49*

* *p* < .001.
a = measure fails to show dissociative validity from cognitive variables. b = measure fails to show dissociative validity from personality variables. c = measure fails to show dissociative validity from Socially Desirable Responding.
Note. Where the correlations between men and women were different (using alpha = .01), the two correlations are given separately, with the correlation for men being given first.
Sample sizes varied from 133 to 301 for men and women combined.
MSC = MSCEIT. LEAS = Levels of Emotional Awareness Scale. DDF = TAS-20 Difficulty Describing Feelings. DIF = TAS-20 Difficulty Identifying Feelings. Em Ap = TEIS Emotional Appropriateness. EX GR = Expression Grouping. REC O = TEIS Recognizing Emotions in Others. CAR PR = Cartoon Predictions. MS CR = Missing Cartoons. SOC TR = Social Translations. Repair = TMMS Repair. REG S = TEIS Regulation of Emotion in the Self. REG O = Regulation of Emotion in Others.

Table 8

Correlations of Personality Subcomponents of Emotional Intelligence with Cognitive Ability, Personality, and Socially Desirable Responding Variables, for Men and Women Combined

	Cognitive Ability Composites				Personality Composites					SDR Meas.	
	VA	VC	VZ	IR	N	E	O	A	C	IM	SDE

Uncorrected Correlations

Personality Subcomponents

	VA	VC	VZ	IR	N	E	O	A	C	IM	SDE
PES	.12	.07	.13	.02	−.29b	.69*b	.40*b	.33*b	.15	.10	.31*c
NES	−.12	.00 / −.32	−.01	−.05	.68*b / .16	.01	.09	−.09	−.64*b / .10	−.21	−.01
ATT	−.05 / .29	.13	.06	.03	−.26	.37*b	.50*b	.42*b	.34*b	.29c	.35*c
FL PL	.13	−.11 / .22	.00	.10	−.20	.30*b	.40*b	.31*b	.14	.20	.21
POS SH	.10	.10	.18	.05	−.10	.35*b	.25	.34*b	.17	.23	.28c
EMP	−.18 / .17	.18	−.00	.00	.08	.27	.34*b	.57*b	.15	.25	.01
EM CN	.05	.15	−.04	.02	−.06	.33*b	.28	.58*b	.18	.30*c	.09

Correlations Corrected for Attenuation Due to Lack of Internal Consistency

Personality Subcomponents

	VA	VC	VZ	IR	N	E	O	A	C	IM	SDE
PES	.15	.09	.16	.03	−.34	.80*	.47*	.39*	.18	.13	.42*
NES	−.16	.00 / −.41	−.01	−.07	.82* / .19	.01	.11	−.11	−.78* / .12	−.29	−.01
ATT	−.06 / .36	.16	.07	.04	−.30	.42*	.58*	.49*	.39*	.37	.46*
FL PL	.16	−.13 / .27	.00	.13	−.23	.34*	.46*	.36*	.16	.26	.28
PS SH	.13	.12	.23	.07	−.12	.41*	.30	.40*	.20	.30	.38
EMP	−.22 / .20	.21	−.00	.00	.09	.30	.38*	.64*	.17	.31	.01
EM CN	.06	.19	−.05	.03	−.07	.39*	.33	.69*	.21	.40*	.12

* $p < .001$.
b = measure fails to show dissociative validity from personality variables. c = measure fails to show dissociative validity from Socially Desirable Responding. None of the correlations with the cognitive composites were large enough to indicate a lack of dissociative validity.
Note. Where the correlations between men and women were different (using alpha = .01), the two correlations are given separately, with the correlation for men being given first.
Sample sizes varied from 113 to 114 for men and women combined.
VA = Verbal Ability. VC = Verbal Closure. VZ = Visualization. IR = Inductive Reasoning. N = Neuroticism. E = Extraversion. O = Openness. A = Agreeableness. C = Conscientiousness. IM = Impression Management. SDE = Self-Deceptive Enhancement. PES = Positive Expressivity Scale. NES = Negative Expressivity Scale. ATT = TMMS Attention. FL PL = TEIS Flexible Planning. PS SH = QSE Positive Sharing. EMP = TEIS Empathy. EM CN = IRI Empathic Concern.

Table 9
Comparison of the Largest Absolute Correlation with a Cognitive Ability with the Largest Absolute Correlation with a Personality Variable, Selected Results

	Variables		**Correlations**				
Measure	**Cog.**	**Per.**	**Cog.**	**Per.**	*n*	**T₂**	*p*
TAS-20 Difficulty Identifying Feelings	VA	N	−.12	.47	113	3.48	.0007
TMMS Repair	VA	N	.26	−.62	113	3.97	.0001
TEIS Regulation of Emotions in Others	VZ	E	.13	.70	113	6.11	.0000
Positive Expressivity	VZ	E	.14	.69	113	5.83	.0000
TEIS Empathy	VC	A	.17	.57	113	3.58	.0005
IRI Empathic Concern	VC	A	.16	.58	113	3.78	.0003

Note. To prevent excessive numbers of Type 1 errors, these comparisons needed to obtain *p* values of less than .001 to be considered significant. Because there were 31 variables for which these correlations were compared, the probability of making at least one Type 1 error in this set of comparisons was approximately .031.
T_2 = William's (1959) T_2 statistic for comparing dependent correlations. Cog. = Cognitive. Per. = Personality. VA = Verbal Ability. VC = Verbal Closure. VZ = Visualization. N = Neuroticism. E = Extraversion. A = Agreeableness.

Table 10
Decisions Regarding Associative and Dissociative Validity of Emotional Intelligence Variables

Measure	Cognitive?			Personality?		Str.	Conclusion
	Ass. Cog.	Diss. Per.	Diss. SDR	Ass. Per.	Diss. Cog.		
Emotional Understanding							
MSCEIT C Blends	y	y	y				Maybe Cog
MSCEIT D Progressions	y	y	y				Maybe Cog
MSCEIT H Transitions	y	y	y				
MSCEIT L Analogies	y	y	y				Maybe Cog
Levels of Emotional Awareness Scale	y	y	y				Maybe Cog
TAS-20 Difficulty Describing Feelings				y	y		Maybe Per
TAS-20 Difficulty Identifying Feelings				y	y	Per	Per
TEIS Emotional Appropriateness		y			y		
Emotional Integration							
MSCEIT B Synesthesia		y	y		y		
MSCEIT G Facilitation		y	y		y		
MSCEIT K Sensation Translation		y	y		y		
Recognizing Emotions in Others							
MSCEIT A Faces		y	y		y		
OGSI Expression Grouping	y	y	y				Maybe Cog
TEIS Recognizing Emotions in Others				y	y		Maybe Per
Perception of Emotion in Objects							
MSCEIT F Landscapes		y	y		y		
MSCEIT J Designs		y	y		y		
Social Insight							
OGSI Cartoon Predictions		y	y		y		
OGSI Missing Cartoons	y	y	y				Maybe Cog
OGSI Social Translations		y	y				
Managing Emotions in the Self							
MSCEIT I Emotion Management		y	y		y		
TMMS Repair				y	y	Per	Per
TEIS Regulation of Emotions in the Self				y			
Managing Emotions in Others							
MSCEIT E Emotions in Relationships	y	y	y				Maybe Cog
TEIS Regulation of Emotions in Others				y	y	Per	Per
Personality Subcomponents							
Positive Expressivity				y	y	Per	Per
Negative Expressivity			y		y		
TMMS Attention				y	y		Maybe Per
TEIS Flexible Planning			y	y	y		Maybe Per
QSE Positive Sharing			y	y	y		Maybe Per
TEIS Empathy			y	y	y	Per	Per
IRI Empathic Concern				y	y	Per	Per

Ass. = Associative Validity. Diss. = Dissociative Validity. Cog. = Cognitive.
Per. = Personality. SDR = Socially Desirable Responding. Str. = Stronger Relation.

Cognitive Subcomponents of Emotional Intelligence

The correlations for the cognitive subcomponents of Emotional Intelligence are given in Table 7. There were six self-report measures of the ability to understand and manage one's own emotions—concepts that sound cognitive in nature. However, for 5 of these 6 measures—TAS-20 Difficulty Describing Feelings, TAS-20 Difficulty Identifying Feelings, TMMS Repair, TEIS Regulation of Emotion in Others, and TEIS Recognition of Emotion in Others—we found evidence that they measure personality dimensions: each of these measures demonstrated associative validity with personality composites and dissociative validity from cognitive composites, and three of these subscales were more closely associated with the personality domain than the cognitive domain. Therefore, despite the fact that the concepts being measured sound cognitive in nature, researchers should not claim that these subscales measure types of intelligence. Apparently these subscales are unable to overcome the method bias of using the self-report format.

There were eighteen maximum-performance measures of cognitive subcomponents of Emotional Intelligence. None of these measures demonstrated associative validity with the personality subcomponents. Eight of these demonstrated associative validity with the cognitive composites and dissociative validity with the personality dimensions. However, for none of these measures was the largest absolute correlation with a cognitive composite significantly larger than the largest absolute correlation with a personality dimension. Therefore, although there is some evidence that these measures are tapping cognitive abilities, this evidence cannot be considered very strong at this point. Measures of Emotional Understanding and Social Insight were the most likely to be related to the cognitive composites. On the other hand, some of these measures had relatively high correlations with Verbal Ability (see especially the results for the MSCEIT C), and future research should ensure that these are not simply new measures of Verbal Ability.

Personality Subcomponents of Emotional Intelligence

The correlations for each of the seven personality subcomponents of Emotional Intelligence are given in Table 8. For none of these seven variables was there evidence of associative validity with the cognitive ability composites, or dissociative validity from the personality variables. Therefore, it does not appear that any of these scales measure cognitive abilities. In contrast, for most of these variables, there was evidence of associative validity with the personality composites, and dissociative validity from the cognitive ability composites, and for three of these measures the correlations with the personality composites were significantly larger than the correlations with the cognitive composites. It therefore appears that many of these variables measure personality dimensions.

Conclusions

Given the complete failure of self-report measures of Emotional Intelligence to demonstrate associative validity with the cognitive variables, the complete failure of these measures to demonstrate dissociative validity from the personality composites, and the frequent failure of these measures to demonstrate dissociative validity from the measures of Socially Desirable Responding, we concluded that researchers should not claim that self-report measures of Emotional Intelligence measure any type of intelligence. Our findings support the conclusions of previous research (Bar-On, 1997b; Davies, Stankov, & Roberts, 1998; Wong, Day, Maxwell, & Meara, 1995) that has shown that self-report measures of Emotional Intelligence have moderate relations with personality dimensions but only small relations with cognitive abilities.

Among the maximum-performance measures, the tests of Emotional Understanding and Social Insight stand out as being most likely to be related to other cognitive abilities and to have low correlations with personality dimensions. These two areas may be the most promising for future test development efforts. Future research should ensure, however, that none of these tests are simply new measures of Verbal Ability. Test development for other subcomponents of Emotional Intelligence (including personality subcomponents) should proceed, but test designers should be careful about applying the label "Intelligence" to those measures.

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APPENDIX
Abbreviations and References

Measure	Abbreviation	Reference
The Trait Meta-Mood Scale	TMMS	Salovey, Mayer, Goldman, Turvey, & Palfai (1995)
33 Item Measure of Emotional Intelligence	33EI	Schutte et al. (1998)
Tett's Emotional Intelligence Scale	TEIS	Tett, Wang, Gribler, & Martinez (1997)
Multifactor Measure of Emotional Intelligence	MEIS	Mayer et al. (2000)
Mayer-Salovey-Caruso Emotional Intelligence Test	MSCEIT	Mayer, Salovey, & Caruso (1999)
The Adjective Check List Interpretive Report	ACLIR	Measurement and Planned Development (1999)
EQ-i	EQ-i	Bar-On (1997a, 1997b)
Style in the Perception of Affect Scale	SIPOAS	Bernet (1996)
Gross and John's Expressivity Scale	GJES	Gross & John (1999)
Social Skills Inventory	SSI	Riggio (1989)
O'Sullivan and Guilford's Tests of Social Intelligence	OGSI	O'Sullivan & Guilford (1976)
Chapin Social Insight Test	CSIT	Chapin (1942); Gough (1993)
Perceived Encoding Ability scale	PEA	Zuckerman & Larrance (1979)
Perceived Decoding Ability scale	PDA	Zuckerman & Larrance (1979)
Balanced Emotional Empathy Scale	BEES	Mehrabian (1996)
Interpersonal Reactivity Index	IRI	Davis (1983)
A Quick Scale of Empathy	QSE	Caruso & Mayer (1999)
Toronto Alexithymia Scale - 20	TAS-20	Bagby, Parker, & Taylor (1994)
Levels of Emotional Awareness Scale	LEAS	Lane et al. (1990)
Positive Expressivity Scale	PES	Barchard (2001)
Negative Expressivity Scale	NES	Barchard (2001)