
Emotional Intelligence and Social Interaction

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Two studies found positive relationships between the ability to manage emotions and the quality of social interactions, supporting the predictive and incremental validity of an ability measure of emotional intelligence, the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT). In a sample of 118 American college students (Study 1), higher scores on the managing emotions subscale of the MSCEIT were positively related to the quality of interactions with friends, evaluated separately by participants and two friends. In a diary study of social interaction with 103 German college students (Study 2), managing emotions scores were positively related to the perceived quality of interactions with opposite sex individuals. Scores on this subscale were also positively related to perceived success in impression management in social interactions with individuals of the opposite sex. In both studies, the main findings remained statistically significant after controlling for Big Five personality traits.

Keywords: *emotional intelligence; emotions; personality; intelligence; social competence; social relationships*

Emotional competencies are thought to be important for social interaction because emotions serve communicative and social functions, conveying information about people's thoughts and intentions and coordinating social encounters (e.g., Keltner & Haidt, 2001). Positive emotionality is associated with sociability (e.g., Argyle & Lu, 1990), whereas persistent negative affect keeps others at bay (e.g., Furr & Funder, 1998). Accordingly, people need to process emotional information and manage emotional dynamics intelligently to navigate the social world. Yet, few studies to date have examined the rela-

tionship between individual differences in emotional competencies and social adaptation in adult, nonclinical populations.

The idea that emotional competencies are crucial for adaptation in various realms of life has fueled interest in the concept of emotional intelligence (EI) and inspired numerous programs of social and emotional learning in school and work settings. Nonetheless, research on EI is still limited and the construct has been criticized on several grounds, including lack of evidence of incremental validity, problems of assessment, conformity bias, and cultural differences in emotional expression (e.g., Roberts, Zeidner, & Matthews, 2001).

The present studies were based on Salovey and Mayer's (1990; Mayer & Salovey, 1997) theory of emotional intelligence. Whereas other authors have written about EI as a much broader construct (e.g., Bar-On,

Authors' Note: We are grateful for the help provided by David Caruso, Stéphane Côté, Susan David, Zorana Ivcevic, Erwin Lemche, Bernd Marcus, John D. Mayer, Jochen Menges, Jerome L. Singer, Michela Schröder, Gill Sitarenios, and The Positive Psychology Network. This research was supported in part by a fellowship from Portugal's *Fundação para a Ciência e a Tecnologia* (partly funded by the European Social Fund) to Paulo Lopes and grants from the National Cancer Institute (R01-CA68427), the National Institute of Mental Health (P01-MH/DA56826), National Institute on Drug Abuse (PSO-DA13334), and the Donaghue Women's Health Investigator Program at Yale to Peter Salovey. Correspondence concerning this article should be addressed to Peter Salovey, Department of Psychology, Yale University, PO Box 208205, New Haven, CT 06520-8205; e-mail: p.lopes@surrey.ac.uk or peter.salovey@yale.edu.

PSPB, Vol. 30 No. 8, August 2004 1018-1034

DOI: 10.1177/0146167204264762

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2000), the Mayer and Salovey (1997) model focuses on emotion-related competencies that can be assessed through performance-based tests. The most recently developed ability measure of EI is the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT; Mayer, Salovey, & Caruso, 2002), which measures four core emotional competencies, including perceiving emotions, using emotions to facilitate thinking, understanding emotions, and managing emotions. We used the MSCEIT to examine the relationship between individual differences in emotional competencies and the quality of social interactions in the United States and Germany and to evaluate the incremental validity of the MSCEIT in relation to Big Five personality traits.

Evidence for the construct validity of EI, conceptualized as a set of abilities, is accumulating (for reviews, see Brackett, Lopes, Ivcevic, Mayer, & Salovey, 2004; Mayer, Salovey, Caruso, & Sitarenios, 2001; Salovey, Mayer, & Caruso, 2002). Confirmatory factor analyses have supported the four-branch model proposed by Mayer and Salovey in 1997 (Mayer, Salovey, Caruso, & Sitarenios, 2003). Higher scores on emotional intelligence tests have been associated with various indicators of social adaptation, including more prosocial behavior among schoolchildren (Rubin, 1999), greater empathy (Ciarrochi, Chan, & Caputi, 2000), and fewer negative interactions with friends, among college students (Brackett, Mayer, & Warner, 2004). In a recent study by Lopes, Salovey, and Straus (2003), college students scoring higher on the managing emotions subscale of the MSCEIT reported less conflict and antagonism in their relationship with a close friend as well as more companionship, affection, and support in their relationship with a parent. These associations remained significant after controlling for Big Five personality traits.

There is converging evidence from other lines of research that emotional competencies are associated with social adaptation. A large number of studies with children suggest that the capacity to decode, understand, and regulate emotions is associated with social and emotional adaptation (e.g., Eisenberg, Fabes, Guthrie, & Reiser, 2000; Halberstadt, Denham, & Dunsmore, 2001). Evaluations of school-based interventions emphasizing the development of emotional competencies also suggest that emotional learning contributes to social and academic adjustment (Greenberg, Kusché, Cook, & Quamma, 1995).

Nevertheless, studies assessing a range of emotional competencies among adult, nonclinical populations have generally relied on criteria assessed through single-administration, self-report instruments. The present studies sought to extend previous research by collecting both self- and peer reports of quality of social relationships, in one case, and repeated measures of social inter-

action, in another. Moreover, we conducted these studies in two different cultures to enhance the generalizability of our findings.

Among the four core emotional competencies proposed by Mayer and Salovey (1997), we expected that the ability to manage emotions would be most strongly associated with the quality of everyday social interaction for several reasons. First, the ability to regulate emotions is likely to influence the emotional valence of social interactions, because we infer other people's intentions from their emotional cues, use others' emotions as guides for our own behavior, or simply catch others' emotions through emotional contagion (e.g., Hatfield, Cacioppo, & Rapson, 1994). Second, the ability to manage emotions may influence people's motivation and expectations for social interaction (e.g., Cunningham, 1988) as well as their use of effective interaction strategies (e.g., Furr & Funder, 1998; Langston & Cantor, 1989). Third, the ability to manage emotions may facilitate a flexible focus of attention, which is important for smooth communication and social interaction. Negative affect can induce self-focused attention (e.g., Pyszczynski, Holt, & Greenberg, 1987), which is likely to make people less attentive to those around them. Fourth, the ability to manage emotions may facilitate executive functions associated with the coordination of numerous skills required for social behavior. This is apparent when unregulated social anxiety inhibits spontaneity and leads to overly constrained behavior. More generally, the capacity to regulate one's own emotions seems to be linked to a broader capacity for self-control, including the control of impulsive behavior (e.g., Baumeister, Heatherton, & Tice, 1994).

In addition, the managing emotions subscale of the MSCEIT taps into emotional regulation in interpersonal contexts and is therefore likely to be a more proximal predictor of the quality of social interactions than other MSCEIT subscales. The abilities to perceive, use, and understand emotions may influence the quality of social interactions more indirectly. For example, understanding emotional dynamics may help one to anticipate one's own and others' emotional reactions and thereby to manage emotions effectively during a tense encounter. Thus, it is likely that the abilities to perceive, use, and understand emotions will have only a weak effect on the overall quality of social relationships. This is all the more likely because people draw on many different skills when interacting with others so that any one skill has only a diluted impact on social adaptation.

In the present studies, we examined both EI and Big Five personality traits as predictors of the quality of social relationships because both emotional competencies and personality traits are likely to influence social adaptation (Lopes, Salovey, & Straus, 2003). Whereas personality

theory emphasizes temperamentally driven dispositions, the theory of emotional intelligence emphasizes acquired competencies that help people to regulate their emotions and manage social interactions. Competencies and dispositions thus provide distinct and complementary perspectives for understanding social and emotional adaptation. Yet, traits and skills, or personality and intelligence (e.g., EI), are likely intertwined (see Sternberg & Ruzgis, 1994).

In assessing the incremental validity of EI in the present studies, we statistically controlled for Big Five personality traits because some self-report measures of EI, such as the EQi (Bar-On, 1997), have been found to overlap meaningfully with the Big Five (e.g., Brackett & Mayer, 2003; Davies, Stankov, & Roberts, 1998). However, it is important to note that controlling for the Big Five is likely to be an overly stringent test of incremental validity. On one hand, there may be conceptual overlap and common method variance between the Big Five (e.g., Extraversion and Agreeableness) and criteria such as self-perceived satisfaction with social interactions. On the other hand, there may be conceptual overlap between personality traits such as Neuroticism and measures designed to assess emotional regulation (e.g., Watson, 2000).

We view social adaptation as a multifaceted construct because people may be fairly well adjusted in one context but less well adjusted in others. Indeed, both theory and research suggest that social competence does not represent a cohesive domain of ability (e.g., Cantor & Kihlstrom, 1987; Hall & Bernieri, 2001). Conducting two separate studies allowed us to focus on relationships with friends in Study 1 and examine different types of social interactions in Study 2.

STUDY 1

This study examined the relationship between emotional competencies, assessed by the MSCEIT, and the quality of relationships with friends, evaluated by participants and two friends. Friendships represent a crucial domain of social adaptation where emotional competencies are likely to play an important role because of the intimacy and emotional involvement associated with close friendships.

Hypotheses

In light of previous theory and research, we formulated the following two general hypotheses:

Hypothesis 1:

Emotional intelligence (particularly the managing emotions subscale of the MSCEIT) will be positively associated with participants' and friends' reports of friendship quality.

Hypothesis 2:

Emotional intelligence (particularly managing emotions) will explain friendship quality over and above the variance accounted for by the Big Five.

Method

PARTICIPANTS AND PROCEDURE

Participants were 118 college students (26 men, 92 women) between the ages of 17 and 24 who took part in a larger study conducted at the University of New Hampshire. Ninety-eight percent were White and from the New England area of the United States. All received course credit for participating in the study.

The measures used in this study were completed at various times throughout the semester and included the MSCEIT, the Big Five, emotional regulation, and social desirability as well as measures of friendship quality and interpersonal competence. In addition to completing these measures, each participant was asked to recruit two friends to evaluate the quality of their relationship with the participant. Informant surveys were sealed in envelopes and participants were asked to give them to two friends or close acquaintances they had met at the University of New Hampshire (with whom they were not romantically involved). These instructions were intended to limit extraneous variability associated with the choice of informants, especially considering that romantically charged interactions may be qualitatively different from other friendships. The envelopes were coded and addressed to the principal investigators so they could be easily returned via campus mail. Complete data (i.e., peer reports from two friends) were received for 66 participants.

MEASURES

Emotional intelligence. The MSCEIT (Version 2.0; Mayer et al., 2002) measures the abilities to perceive, use, understand, and manage emotions. For each subscale, there are two tasks. For the Perceiving Emotions subscale, respondents identify the emotions in photographs of faces (Faces task) as well as in designs and landscapes (Pictures task). For Using Emotions, respondents describe emotions with nonemotional vocabulary (Sensations) and 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 in which people identify the most adaptive ways to regulate their own feelings (Emotion Management) and the feelings of others in social situations

(Social Management). This last subscale will be referred to as “managing emotions.”

The publisher of the MSCEIT requests that we not reproduce actual test items for fear of invalidating the test. The following abridged examples of items were considered when the MSCEIT was being developed. For Using Emotions: “Imagine feeling surprised because you got a birthday present that was totally unexpected. How much is the feeling of surprise like each of the following? Cold, blue, sweet” For Understanding Emotions: “Tom felt anxious, and became a bit stressed when he thought about all the work he needed to do. When his supervisor brought him an additional project, he felt _____. Overwhelmed, depressed, ashamed, self-conscious, jittery.” For Managing Emotions in oneself: “Debbie just came back from vacation. She was feeling peaceful and content. How well would each action preserve her mood? (1) She started to make a list of things at home that she needed to do. (2) She began thinking about where and when to go on her next vacation. (3) She called a friend to tell her about the vacation” For Managing Emotions in interpersonal situations: “Ken and Andy have been good friends for over 10 years. Recently, however, Andy was promoted and became Ken’s manager. Ken felt that the new promotion had changed Andy in that Andy had become very bossy to him. How effective would Ken be in maintaining a good relationship if he chose to respond in each of the following ways? (1) Ken tried to understand Andy’s new role and tried to adjust to the changes in their interactions. (2) Ken approached Andy and confronted him regarding the change in his behavior”

The MSCEIT can be scored using both expert and consensus norms. Expert scores reflect the agreement between participants’ responses and those of an expert panel of 21 emotion researchers from various nations (43% United States, 19% Canada, 33% Western Europe, 5% Israel). For example, if someone answers “A” to the first question and 24% of experts also answered “A,” this person obtains a raw score of .24 for the first question. Consensus scores reflect the agreement between participants’ responses and those of the normative sample, which consists of 5,000 English-speaking people from various nations (63% United States, 17% Canada, 7% Western Europe, and 13% other). Split-half reliabilities for the normative sample, based on expert scores and corrected by the Spearman-Brown formula, range from .76 to .90 for the four subscales of the MSCEIT (Mayer et al., 2002). Reliabilities for the present sample were .80, .67, .60, and .73, respectively, for subscales 1 to 4. Scores based on consensus norms correlate highly ($r > .90$) with those based on expert norms (Mayer et al., 2001, 2003). We report split-half reliabilities for the MSCEIT due to item heterogeneity because each subscale com-

prises two tasks tapping into somewhat different abilities. In the present studies, all analyses were based on expert scores because expert norms may be less susceptible to cultural bias and the expert panel was more internationally diverse than the normative sample. Note that expert and consensus scores were highly correlated ($r_s > .90$) in both studies.

MSCEIT scores computed by the test publishers in North America are standardized ($M = 100$, $SD = 15$). These scores are based on 122 out of 141 items because psychometric analyses on the normative sample suggested exclusion of 19 items. These were not deleted from the actual test so as to preserve a balanced layout with the same number of items for all questions.

Personality. The Big Five personality traits (Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness) were assessed with the 240-item NEO-PI-R (Costa & McCrae, 1992). Reliabilities were high for all five factors ($\alpha > .87$).

Socially desirable responding. Social desirability bias was assessed with the Paulhus Deception Scales (Paulhus, 1998), which include 40 items yielding two scores. Self-Deceptive Enhancement (SDE) measures the tendency to give inflated but honest self-descriptions reflecting lack of insight or narcissistic bias. Impression Management (IM) measures the tendency to provide consciously inflated self-descriptions (i.e., faking or lying) to produce a desired effect. The scale uses a 1 (*not true*) to 5 (*very true*) response format. Alphas were .83 (SDE) and .71 (IM) for the present sample.

Self-perceived emotion regulation skills. The skills version of the Emotion Regulation Scale (ERS; Kovacs, 2002) assesses the degree to which people use adaptive strategies and avoid maladaptive strategies to regulate emotional experience (including physical/biological, behavioral, cognitive, and social-interpersonal strategies). This scale has 68 items using a 3-point response format: *not true of me*, *sometimes true of me*, and *many times true of me* ($\alpha = .81$). Because this scale was administered as part of another study, data were available for only a subset of participants in the present study.

Quality of interpersonal relationships. Both participants’ and friends’ reports on the quality of interpersonal relationships were obtained using an abridged version of the Network of Relationships Inventory (NRI; Furman & Buhrmester, 1985; see also Furman, 1996). The full measure includes 30 items and yields three factor scores: positive interaction (social support), negative interaction (conflict), and power imbalance. Given our hypotheses and time constraints, participants answered 20 items (14 for positive and 6 for negative interaction) about their relationship with each of two friends. Each friend also answered the same 20 items about his or her relationship

with the participant. The positive interaction factor measures companionship, instrumental aid, intimacy, nurturance, affection, admiration, and alliance, whereas the negative interaction factor measures conflict and antagonism in the relationship. We used a 9-point Likert-type scale anchored at *not at all* and *extremely*. Reliabilities for both participants' and friends' reports on both scales were high ($\alpha > .88$).

Interpersonal competence. Both self- and peer-reports on two dimensions of interpersonal competence (emotional support and conflict resolution) were obtained using the Adolescent Interpersonal Competence Questionnaire (AICQ; Buhrmester, Furman, Wittenberg, & Reis, 1988). Each scale contained eight items and respondents answered questions using a 5-item Likert-type scale ranging from *poor at this* to *good at this*. The reliabilities of both self- and peer-reports on both scales were high ($\alpha > .84$).

Results

Three participants were eliminated from all analyses because they scored more than 3 standard deviations below the mean for the present sample on the managing emotions subscale of the MSCEIT, suggesting they responded randomly on the test. Analyses involving friends' ratings were based on 66 participants for whom complete data (i.e., reports from two friends) were available. Multivariate analysis of variance indicated that this subset of participants did not differ significantly from other participants on the predictor variables, including EI and Big Five scores (Wilks's Lambda = .917), $F(6, 108) = 1.65$, $p = .14$. There were also no significant differences in age or gender. These analyses allayed concerns about attrition bias.

The similarity of participants' reports about the quality of relationships with their two friends was assessed using intraclass correlations. The intraclass correlations between participants' reports for both friends were .62 and .75 for the NRI subscales of positive and negative interaction, respectively. Based on this, participants' reports about the quality of relationships with their two friends were averaged to yield a single score for each participant for each subscale of the NRI. The similarity of friends' reports about the quality of their relationships with participants also was assessed using intraclass correlations. Intraclass correlations between both friends' ratings of each participant were .58 for NRI positive interaction, .43 for NRI negative interaction, .53 for AICQ emotional support, and .58 for AICQ conflict resolution. Based on this, the ratings provided by both friends about each participant were averaged to yield a single score for each subscale of the NRI and AICQ.

CORRELATIONAL ANALYSES

Table 1 presents correlations between predictor and criterion variables as well as descriptive statistics. The perceiving, using, and understanding emotions subscales of the MSCEIT did not correlate significantly with criteria; therefore, we do not report any analyses with those subscales.¹ Consistent with our hypotheses, the managing emotions subscale of the MSCEIT was positively correlated with participants' self-reports of positive interaction with two friends (NRI positive interaction). It was also positively correlated with friends' ratings of positive interaction, negatively correlated with friends' ratings of negative interaction (NRI negative interaction), and positively correlated with friends' ratings about participants' tendency to provide emotional support.

With regard to the Big Five, Extraversion was positively correlated with higher self-reports and friends' ratings of positive interaction with friends. Emotional stability and Conscientiousness were negatively correlated with self-perceived conflict with friends. All the Big Five subscales except for Neuroticism were positively correlated with self-reports of emotional support but none was correlated with friends' ratings of emotional support. Similarly, all the Big Five subscales except for Extraversion were related to self-perceived conflict resolution skills but only Agreeableness was significantly correlated with friends' ratings of conflict resolution skills. The Big Five traits and the self-report scale of emotional regulation did not correlate significantly with the managing emotions subscale of the MSCEIT. Self-reported emotional regulation correlated with self-reported conflict resolution skills but not with other criteria.

INCREMENTAL VALIDITY OF

MSCEIT MANAGING EMOTIONS

Considering that MSCEIT managing emotions scores were uncorrelated with the Big Five, we would expect that controlling statistically for Big Five traits would not undermine relationships between managing emotions and criteria. Multiple regression analyses confirmed this. We entered the Big Five first using a forward-stepping strategy (i.e., entering independent variables only if they explained significant additional variance in the dependent variable). Managing emotions was entered last. In these analyses, the managing emotions subscale of the MSCEIT still explained significant variance in all four criteria for which significant zero-order correlations were found: self-perceived positive interaction with friends and friends' ratings of positive interaction, negative interaction, and emotional support. Managing emotions explained between 7% and 11% of additional variance in all four criteria. Entering gender,

TABLE 1: Correlations Between Predictors and Criteria and Descriptive Statistics

	N	M (SD)	MSCEIT Managing	E	A	C	N	O	ERS ^a
<i>M</i>			102.09	124.70	118.85	112.64	96.27	122.38	88.49
<i>SD</i>			12.91	17.79	16.61	20.81	21.35	16.32	14.75
Self-reports									
NRI positive interaction	113	6.89 (1.03)	.31**	.34***	.13	-.01	-.07	.13	.05
NRI negative interaction	113	3.04 (1.54)	-.12	-.08	-.09	-.32**	.28**	-.04	.02
AICQ emotional support	115	4.10 (0.53)	.15	.34***	.23*	.25**	-.17	.33***	.17
AICQ conflict resolution	115	3.44 (0.60)	.01	.09	.47***	.27**	-.31**	.27**	.42***
Friends' reports									
NRI positive interaction	66	7.26 (0.86)	.33**	.29*	-.01	-.21	.04	-.09	.12
NRI negative interaction	65	5.25 (0.32)	-.30*	-.16	-.07	-.09	.09	-.05	-.21
AICQ emotional support	64	3.68 (0.38)	.26*	.12	.09	.10	-.17	.02	-.04
AICQ conflict resolution	65	3.78 (0.66)	-.08	-.02	.29*	.06	-.11	.20	.19

NOTE: Raw scores are reported for the Big Five personality traits. MSCEIT = Mayer-Salovey-Caruso Emotional Intelligence Test, E = Extraversion, A = Agreeableness, C = Conscientiousness, N = Neuroticism, O = Openness to Experience, ERS = self-report Emotion Regulation Scale, AICQ = Adolescent Interpersonal Competence Questionnaire, NRI = Network of Relationships Inventory.

a. For the Emotion Regulation Scale, $47 \leq N \leq 90$ due to missing data.

* $p < .05$. ** $p < .01$. *** $p < .001$.

all of the Big Five, and managing emotions simultaneously in multiple regression models, managing emotions scores remained significant in the prediction of three out of four criteria (all but friends' ratings of emotional support). These findings supported our second hypothesis regarding the incremental validity of the MSCEIT. Further analyses revealed that controlling for socially desirable responding also did not undermine relationships between managing emotions and criteria.

Discussion

The findings support both of the hypotheses about the concurrent and incremental validity of the managing emotions subscale of the MSCEIT. This subscale was associated with higher self-perceived positive interaction with friends and friends' reports of more positive interactions, less negative interactions, and higher emotional support. These associations remained statistically significant after removing variance explained by the Big Five personality traits. The present results replicate and extend previous findings on the positive relationships between emotional competencies and the self-perceived quality of relationships with friends (e.g., Lopes, Salovey, & Straus, 2003). To our knowledge, this is one of the first studies supporting the incremental validity of the MSCEIT using both self- and peer-ratings.

The managing emotions subscale was unrelated to the Big Five, suggesting that this ability is distinct from personality traits. Managing emotions scores explained peer-rated criteria better than self-rated criteria, whereas the opposite was true for the Big Five. Managing emotions scores concurrently predicted three out of four peer ratings but only one out of four self-ratings. For the Big Five, only 2 out of 20 correlations with friends'

ratings reached statistical significance but 11 out of 20 correlations with self-ratings reached statistical significance. This may be due to conceptual overlap and common method variance between the Big Five and self-reported criteria. The pattern of findings also suggests that ability measures of emotional competencies may provide an important perspective for understanding social adaptation. Note that the managing emotions subscale also explained friends' ratings of quality of social interaction better than a self-report measure of emotional regulation.

The perceiving, using, and understanding subscales of the MSCEIT were not significantly correlated with criteria. This may reflect the fact that these abilities contribute more weakly or indirectly to the quality of social interactions, as hypothesized.

STUDY 2

The previous study provided converging evidence that managing emotions competencies are related to the quality of interactions with friends. Study 2 sought to extend previous research linking emotional competencies and the quality of social interactions by examining everyday interactions with different types of people using an intensive, repeated-measures design. To address concerns that cultural differences might limit the generalizability of previous research findings with the MSCEIT, we conducted the present study in Germany.

Participants completed the MSCEIT, a measure of the Big Five, and maintained a social interaction diary for 2 weeks. These data also allowed us to examine relationships between EI and daily social interaction controlling for Big Five traits. Because participants completed mea-

asures of self-esteem, adult attachment, growth orientation, and self-presentational style for another study, we were also able to examine correlates of EI that have not been examined previously.

The main criteria for this study were the descriptions of social interactions that participants provided during a period of 2 weeks using a variant of the Rochester Interaction Record (RIR; Wheeler & Nezlek, 1977). Participants' reactions to everyday social encounters served as indicators of self-perceived quality of interactions. The balance between the impressions that participants wanted to convey and the impression they thought they had made served as an indicator of self-perceived success at impression management. We expected that emotional competencies, and in particular the ability to manage emotions, would be related to both the quality of social interactions and the capacity to balance goals and perceived achievement in the sphere of impression management.

Using a social interaction diary allowed us to overcome the problems inherent in single assessments of sociality, including distortion due to memory loss and the influence of unusual events. The advantages of such techniques are discussed in detail by Reis and Gable (2000). Moreover, RIR-based studies have successfully examined relationships between social interaction and various constructs that may be conceptually related to EI, such as social skills (Nezlek, 2001a), perceived risk in intimacy with others (Nezlek & Pilkington, 1994), and depression (Nezlek, Imbrie, & Shean, 1994).

With regard to cultural differences, considerable theory and research suggest that there are both cultural universals and differences in the experience, expression, and interpretation of emotions (e.g., Ekman, 1972; Mesquita & Frijda, 1992; Scherer & Wallbott, 1994). For example, people recognize facial expressions of emotion at above chance levels across cultures, but they also have a significant advantage in decoding the expressions of individuals belonging to their own cultural group (Elfenbein & Ambady, 2002). Accordingly, we would expect that basic emotional competencies are important in all cultures, even if these competencies are applied and expressed somewhat differently. A measure of emotional competencies such as the MSCEIT was designed to tap into the more universal aspects of emotional information processing so as to be relatively free of cultural bias. Accordingly, we expected that cultural differences would not undermine the predictive validity of the MSCEIT, even though this test may need to be adapted for use in different cultures.

Hypotheses

The following two hypotheses guided this study:

Hypothesis 1:

Emotional intelligence will be positively related to people's reactions to social interactions and to self-perceived success in impression management. This effect was presumed to be strongest for the managing emotions subscale of the MSCEIT because emotional regulation is crucial for managing social interactions and is also likely to contribute to people's capacity to balance expectations and actual experience in social interactions.

Hypothesis 2:

Emotional intelligence, and particularly the managing emotions subscale of the MSCEIT, will explain variance in these criteria over and above the variance accounted for by the Big Five personality traits.

Method

PARTICIPANTS

One hundred and six undergraduate students enrolled at Chemnitz University of Technology in Germany participated in this study initially, receiving course credit for participation. Of the 103 participants who provided sufficient data, 86% were women and 98% were Caucasian. Participants' ages ranged from 18 to 36 years, with a mean of 22.4 ($SD = 3.2$).

PROCEDURE

In an introductory session, participants received oral instructions about the diary study and completed the MSCEIT, following guidelines for group administration outlined in the test manual (Mayer et al., 2002). Two experimenters were present to answer questions. Following this, participants completed a battery of personality and other self-report measures online. For the third part of the study, participants described their social interactions each day for 2 weeks using a Web-based variant of the RIR (Wheeler & Nezlek, 1977). During the introductory session, participants were told that the diary study concerned patterns of social interaction and that they would use a structured questionnaire to describe these interactions. They were asked to report every social interaction they had that lasted 10 min or longer. An interaction was defined as any encounter with one or more other people in which the participants attended to one another and adjusted their behavior in response to one another. Examples were provided to clarify what was an interaction (e.g., a conversation) and what was not (e.g., sitting silently with another person watching television). Participants were asked to describe only face-to-face interactions. Telephone and Internet conversations were excluded because the self-presentation aspects of these interactions are different from those of face-to-face interactions. All instructions were available on the

Internet and participants were encouraged to contact the experimenters by e-mail if they had any problems.

Participants described whom they interacted with (using unique initials for each person) as well as the sex of each individual involved in the interaction, for up to three people. For interactions with more than three people, participants indicated how many men and women were present instead of recording individual initials. Participants also rated how they felt about the interaction, how much they wanted to make certain impressions on their interaction partners, and to what extent they had achieved these impressions. In response to the question, "How did you feel during the interaction?" participants rated each interaction along nine dimensions: enjoyment; interest; intimacy; dominance; and feeling calm, safe, wanted, and respected (single-item measures). To assess participants' impression management goals and the impression they thought they had made on others, they responded to the questions, "How did you want to be perceived?" and "How were you perceived?" Participants answered these questions in terms of seven dimensions: friendly, likable, competent, intelligent, interesting, honest, and attractive (also single-item measures). These dimensions reflect Jones and Pittman's (1982) self-presentation categories of ingratiation, self-promotion, and exemplification. Physical appearance was included because it is an important dimension of interaction among college students (e.g., Nezlek & Leary, 2002).

The response categories were discussed until participants understood the definitions, forms, and procedure. They were asked to complete an interaction record as soon as possible after each interaction or at least once a day. Paper forms were made available to all participants in case they had no access to the Internet for a particular day. After completing the study, participants answered questions about how they had maintained the diary (e.g., regarding the accuracy of the diary, the reactivity of the procedure, and technical problems). Based on these answers and inspection of the dates and times participants provided data (recorded by the server), the data from three original participants were excluded from the analyses.

EMOTIONAL INTELLIGENCE: THE MSCEIT

Emotional intelligence was measured using a German translation of the MSCEIT (Version 2.0; Mayer et al., 2002; Schütz, Hertel, & Schröder, 2002).² This test was described in Study 1. Given that cultural differences may undermine the validity of some test items, MSCEIT scores may need to be based on slightly adjusted norms in different sociocultural contexts. Accordingly, we computed scores based on 123 items with positive item-total

correlations in the present sample.³ Therefore, we report raw scores on a scale from 0 to 1 rather than standardized scores with a mean of 100 and standard deviation of 15.⁴ Correlations between the four subscale scores based on these slightly modified scales and those calculated by the test publishers were all greater than .94.

OTHER INDIVIDUAL DIFFERENCE MEASURES

To examine correlates of EI, participants completed the following measures, all of which were translated from the original English versions into German. All translations that were not published scales or previously validated by other authors were back-translated into English to ensure accuracy.

1. The BFI-44, a 44-item measure of the Big Five personality traits using a 1 to 5 response format (John & Srivastava, 1999; Lang, Lüdtke, & Asendorpf, 2001);
2. A multidimensional self-esteem scale (Fleming & Courtney, 1984; Schütz & Sellin, 2003) with 26 items using a 1 to 7 response format and three subscales: Self-Regard, Social Confidence, and School Abilities;
3. A scale measuring Self-Acceptance and Acceptance of Others with 24 items using a 1 to 5 response format (Bergemann & Johann, 1985; Berger, 1952);
4. A measure of adult attachment (Doll, Mentz, & Witte, 1995) based on the four-category model proposed by Bartholomew and Horowitz (1991): secure, preoccupied, dismissive, and fearful attachment. Using 7-point, single-item scales, participants indicate the extent to which prototypical descriptions of attachment styles correspond to their relationships with former and present romantic partners;
5. The Goal Orientation Inventory (Dykman, 1998), a 36-item measure using a 1 to 6 response format to assess two motivational factors: validation and growth seeking;
6. The Self Presentational Style Inventory (Leary, personal communication, 2000), an 80-item measure of self-presentational motives and concerns, with a 1 to 5 response format. Using an adjective checklist, participants indicated how they wanted to be perceived with respect to five self-presentational motives/concerns suggested by Jones and Pittman (1982): ingratiation, self-promotion, exemplification, supplication, and intimidation. Respondents indicated "To what degree do you want other people to see you as . . . (e.g., cheerful, intelligent, honest, cowardly, forceful . . .)?" and
7. A measure of self-deceptive enhancement (Paulhus, 1984), a 20-item measure using a 1 to 7 response format. Paulhus (1984) argued that self-deception and impression management are two components of socially desirable responding and suggested that self-deceptive enhancement may be viewed as an aspect of self-definition associated with self-esteem, ego-resiliency, and perceived control.

Results

The research questions required four types of analyses: analyses of MSCEIT scores per se, correlations

between the MSCEIT and other individual difference measures, analyses of relationships between MSCEIT scores and measures of social interaction, and analyses of these relationships controlling for individual differences in the Big Five personality traits. Descriptive statistics for trait-level measures are presented in Table 2.

ANALYSES OF MSCEIT SCORES

As can be seen from Table 2, the German version of the MSCEIT was reliable, although reliabilities were slightly lower than those reported for the normative sample (Mayer et al., 2002). MSCEIT subscales were positively correlated (r s ranging from .20 to .41, $p < .05$), as would be expected for an interrelated set of abilities, with one exception: the correlation between perceiving and managing emotions ($r = .04$, ns).

To check whether cultural differences might seriously distort responses to the test and undermine the validity of the MSCEIT in a German context, we compared the response profile of the present sample to the response profile of the predominantly North American normative sample. Response profiles were defined as the percentage of participants endorsing each of five response options for the 141 questions in the MSCEIT. Because the percentage endorsing the fifth response for any item was dependent on the percentage who endorsed the first four, only the first four responses for each item were used. This created a sample of 564 responses. The correlation between the two response profiles was $r(564) = .90$, reflecting very high agreement. We repeated this analysis for each subscale of the MSCEIT separately. The correlations between the response profiles for this sample and those of the normative sample were all greater than .86. Separate analyses for men and women found no differences in the similarity of the two sets of profiles.⁵

CORRELATIONS BETWEEN THE MSCEIT AND TRAIT MEASURES

Correlations between the MSCEIT and other trait measures are presented in Table 3. Overall, the MSCEIT showed limited overlap with the Big Five and other trait measures, supporting previous findings regarding the discriminant validity of ability measures of emotional intelligence (Brackett & Mayer, 2003; Brackett, Mayer, et al., 2004; Lopes, Salovey, & Straus, 2003; Roberts et al., 2001). The managing emotions subscale of the MSCEIT was significantly (although modestly) correlated with the Big Five (except Conscientiousness), all the self-esteem scales, acceptance of others, secure attachment, a growth-seeking goal orientation, and positive self-presentational strategies. All of these correlations were positive except for the correlation with Neuroticism, as expected. The other subscales of the MSCEIT did not correlate significantly with the measures of individual differences included in this study, except for the associa-

TABLE 2: Descriptive Statistics on Included Measures

Measure	M	SD	Reliability ^a
MSCEIT-Total	0.51	0.06	$r = .89$
MSCEIT-Perceiving emotions	0.54	0.11	$r = .89$
MSCEIT-Using emotions	0.46	0.07	$r = .63$
MSCEIT-Understanding emotions	0.64	0.11	$r = .72$
MSCEIT-Managing emotions	0.41	0.07	$r = .70$
Extraversion	3.44	0.81	$\alpha = .89$
Agreeableness	3.67	0.51	$\alpha = .62$
Conscientiousness	3.41	0.59	$\alpha = .75$
Neuroticism	3.19	0.72	$\alpha = .80$
Openness	3.92	0.55	$\alpha = .77$
Self-regard	5.17	1.06	$\alpha = .87$
Social confidence	4.22	1.29	$\alpha = .93$
School abilities	4.63	1.08	$\alpha = .82$
Self-acceptance	3.67	0.77	$\alpha = .91$
Acceptance of others	3.99	0.52	$\alpha = .73$
Attachment 1-Secure	4.37	1.84	—
Attachment 2-Fearful-avoidant	4.04	2.08	—
Attachment 3-Preoccupied	2.80	1.81	—
Attachment 4-Dismissing-avoidant	2.55	1.72	—
Validation-seeking	3.10	1.22	$\alpha = .96$
Growth-seeking	4.67	1.00	$\alpha = .95$
Self-presentation-Ingratiation	4.27	0.33	$\alpha = .85$
Self-presentation-Self-promotion	4.10	0.34	$\alpha = .75$
Self-presentation-Exemplification	4.11	0.28	$\alpha = .70$
Self-presentation-Supplication	2.40	0.33	$\alpha = .75$
Self-presentation-Intimidation	2.03	0.36	$\alpha = .75$
Self-deceptive enhancement	4.05	0.65	$\alpha = .69$

NOTE: MSCEIT = Mayer-Salovey-Caruso Emotional Intelligence Test, $102 \leq N \leq 103$ due to missing data.

a. For MSCEIT scales, we report split-half reliabilities corrected by the Spearman-Brown formula due to item heterogeneity, because each subscale of the test is composed of two different tasks. We report Cronbach's alpha for other measures. Attachment was assessed with single-item scales.

tions between using and understanding emotions and self-regard and those between perceiving and using emotions and positive self-presentational strategies.

EMOTIONAL INTELLIGENCE AND DAILY SOCIAL INTERACTION

The present data constituted a hierarchically nested data structure in that one set of observations (social interactions) was nested within another set of observations (persons). There is growing consensus that multilevel random coefficient models (MRCM), also called multilevel or hierarchical linear models, provide more accurate analyses of such data than ordinary least squares (OLS) analyses (e.g., Bryk & Raudenbush, 1992; Kreft & de Leeuw, 1998). Accordingly, relationships between EI and social interaction were analyzed using MRCM as implemented by the program HLM (Raudenbush, Bryk, Cheong, & Congdon, 2000; see Nezlek, 2001b, 2003, for detailed discussions about this type of analysis).

TABLE 3: Correlations Between MSCEIT and Trait Measures

	MSCEIT Subscales and Total Score				
	Perceiving	Using	Understanding	Managing	Total
Extraversion	.00	.03	-.05	.20*	.04
Agreeableness	-.03	.05	-.06	.27*	.06
Conscientiousness	.18	.12	-.10	.03	.08
Neuroticism	.01	.03	.01	-.22*	-.05
Openness	-.06	.23*	.03	.24*	.13
Self-regard	.05	.20*	.20*	.33**	.27**
Social confidence	.04	.11	.06	.28**	.17
School abilities	-.03	.16	.23*	.19	.20*
Self-acceptance	.04	.08	.11	.20*	.16
Acceptance of others	-.05	.16	.16	.29**	.19
Attachment-Secure	-.05	.12	.15	.27**	.16
Attachment-Fearful	.03	-.09	.01	-.10	-.04
Attachment-Preoccupied	-.04	-.12	-.17	-.28**	-.22*
Attachment-Dismissing	.14	-.08	.11	.01	.10
Validation-seeking	-.06	-.10	-.24*	-.34**	-.28**
Growth-seeking	.07	.15	-.02	.28**	.15
Self-presentation-Ingratiation	.16	.22*	.02	.21*	.21*
Self-presentation-Self-promotion	.22*	.31**	.12	.20*	.31**
Self-presentation-Exemplification	.21*	.28**	.07	.22*	.28**
Self-presentation-Supplication	-.20*	-.32**	-.17	-.12	-.31**
Self-presentation-Intimidation	-.03	-.01	.07	-.07	.00
Self-deceptive enhancement	-.07	.05	.13	.17	.09

NOTE: MSCEIT = Mayer-Salovey-Caruso Emotional Intelligence Test. 102 ≤ N ≤ 103.
 *p < .05. **p < .01.

The present data set comprised a two-level structure. Level 1 observations were social interactions and Level 2 observations were persons. Of the 106 participants who began the study, 99 provided sufficient data for multi-level analyses. These participants described a total of 4,553 interactions (*M* = 46, *SD* = 17.2). Prior to analysis, all person-level variables were standardized. We followed a forward-stepping strategy (i.e., initial models contained a single predictor and additional predictors were added one at a time) because multilevel models estimate a large number of parameters and entering too many predictors can tax the carrying capacity of the data (e.g., Kreft & de Leeuw, 1998; Nezlek, 2001b). All coefficients were modeled as random.

Reactions to social interaction. The first set of analyses examined relationships between single-item measures of reactions to interactions (enjoyment, intimacy, feeling interested, important, wanted, respected, safe, calm, and dominant) as indicators of the perceived quality of social interactions and scores on each of the four subscales of the MSCEIT. The Level 1 model was an unconditional model—there were no Level 1 predictors:

$$y_{ij} = \beta_{0j} + r_{ij}$$

In this model, there are *i* observations (social interactions) for *j* individuals of a continuous variable *y*. Each

score is modeled as a function of the intercept (or mean), β_{0j} , for each person and an error term (r_{ij}). The variance of r_{ij} is the Level-1 variance.

Individual differences in reactions to social interactions were modeled at Level 2. The basic Level 2 model was as follows:

$$\beta_{0j} = \gamma_{00} + \gamma_{01} * (\text{MSCEIT score}) + \mu_{0j}$$

In this model, the intercepts (β_{0j}) from the Level 1 model are modeled as a function of γ_{00} , the mean of the intercepts; γ_{01} , the coefficient associated with scores on a MSCEIT subscale; and μ_{0j} , Level 2 error. Relationships between mean reactions and the MSCEIT score were tested by the significance of the γ_{01} coefficient. These results are summarized in Table 4. Note that “intercept” refers to γ_{00} .

The Using Emotions subscale of the MSCEIT was positively related to how enjoyable and interesting people found their interactions to be, as well as how important and safe they felt during social interactions. Scores on the Managing Emotions subscale were positively related to the extent to which people felt wanted and important in their interactions. Perceiving Emotions scores were negatively related to how dominant people felt.

The size of these relationships can be understood by calculating predicted values for people high (+1 *SD*) and low (−1 *SD*) on MSCEIT scores. Because trait variables

TABLE 4: Associations Between MSCEIT Subscales and Reactions to All Interactions Estimated by Multilevel Modeling

Measure	MSCEIT Subscales				
	Intercept	Perceive	Use	Understand	Manage
Enjoyable	7.08	.03	.17*	-.09	.13†
Intimate	6.78	.05	.14	-.10	.10
Interested	7.09	.13†	.20**	-.05	.12
Important	6.54	-.04	.20*	-.05	.18*
Wanted	7.65	.08	.15†	-.02	.19**
Respected	7.42	.08	.12	.03	.16†
Safe	7.30	.07	.18*	-.03	.06
Calm	6.88	.09	.14	-.02	.00
Dominant	5.38	-.15*	.02	-.05	-.04

NOTE: MSCEIT = Mayer-Salovey-Caruso Emotional Intelligence Test. $N = 4,553$ observations at Level 1 and 99 people at Level 2.

† $p < .10$, two-tailed. * $p < .05$. ** $p < .01$.

were standardized, a one-unit difference in MSCEIT scores represents a difference of 1 *SD*. For example, in the analysis of enjoyment, the coefficient for Using Emotions was 0.17 and the intercept was 7.08. The estimated score for a person +1 *SD* on Using Emotions is 7.25 (7.08 + 0.17) and the estimated score for a person -1 *SD* is 6.91 (7.08 - 0.17). The between-person *SD* for enjoyment was 0.73, so this difference of 0.34 corresponds to approximately one half of a *SD*.

The previous analyses did not distinguish reactions to different types of interactions. However, reactions can vary widely as a function of the sexual composition of an interaction; that is, are all of the other people present of the same sex as the diary keeper, of the opposite sex, or of both sexes? We analyzed reactions to same-, opposite-, and mixed-sex interactions using the following Level 1 model:

$$\gamma_{ij} = \beta_{1j} * (\text{same sex}) + \beta_{2j} * (\text{opposite sex}) + \beta_{3j} * (\text{mixed sex}) + r_{ij}$$

In these models, the three predictors are dummy-coded (0, 1) variables representing whether an interaction was same-, opposite-, or mixed-sex (these were not centered). The coefficients produced by such codes represent the means for γ for same-, opposite-, and mixed-sex interactions, respectively (Nezlek, 2001b, 2003). These coefficients were then analyzed at Level 2 with models similar to those used in the previous analyses:

$$\beta_{1j} = \gamma_{10} + \gamma_{11} * (\text{MSCEIT score}) + \mu_{1j}$$

$$\beta_{2j} = \gamma_{20} + \gamma_{21} * (\text{MSCEIT score}) + \mu_{2j}$$

$$\beta_{3j} = \gamma_{30} + \gamma_{31} * (\text{MSCEIT score}) + \mu_{3j}$$

These analyses indicated that relationships between the perceived quality of social interactions, on one hand, and the Perceiving, Using, and Understanding Emotions subscales of the MSCEIT, on the other, did not vary as a function of the sexual composition of interactions. The coefficients representing relationships between these three emotional competencies and reactions to same-, opposite-, and mixed-sex interactions were similar to those found in the analyses of all interactions.⁶ Managing Emotions scores, however, were more reliably related to reactions to opposite-sex interactions than they were to reactions to same- and mixed-sex interactions. Coefficients representing these relationships are presented in Table 5. For ease of reference, the coefficients for all interactions are also presented. For opposite-sex interactions there were significant relationships between Managing Emotions and perceptions of enjoyment, intimacy, interest, importance, and respect. We further evaluated whether relationships between Managing Emotions and reactions to interactions were stronger for opposite-sex than for same- and mixed-sex interactions through a series of tests of fixed effects (Bryk & Raudenbush, 1992, pp. 48-56; Nezlek, 2003). This difference was significant at $p < .05$ for intimacy, interest, and importance and at $p = .06$ for enjoyment and respect. Differences for safe and wanted were in the same direction but did not reach conventional levels of significance ($p = .11$).

Perceived success in impression management. To measure self-presentational success, participants were asked, "How were you perceived?" and "How did you want to be perceived?" They responded along seven dimensions: friendly, likable, competent, intelligent, interesting, honest, and attractive. For each dimension, the difference between participants' responses to the two questions, reflecting the balance between self-reported goals and achievement, was calculated. These measures were analyzed with a series of multilevel models identical to those used in the previous analyses.

The results of these analyses are presented in Table 6. Managing Emotions scores were positively related to all seven measures of self-presentational success (competent and attractive at $p < .10$), whereas the other three subscales of the MSCEIT were unrelated to these outcomes.⁷ Note, however, that means for perceived success were significantly less than 0 (with the exception of attractiveness); that is, on average, participants believed they had not been perceived as positively as they wanted to be perceived.

Follow-up analyses examined whether relationships between emotional competencies and self-presentational success varied as function of the sexual composition of social interactions (i.e., same-, opposite-, and mixed-sex). As shown in Table 7, Managing Emotions scores

TABLE 5: Associations Between Managing Emotions Scores and Reactions to Same-, Opposite-, and Mixed-Sex Interactions Estimated by Multilevel Modeling

Measure	Type of Interaction			Overall
	Same	Opposite	Mixed	
Enjoyable	.09	.21**	.06	.13†
Intimate	.02	.26*	-.01	.10
Interested	.08	.20*	.03	.12
Important	.11	.30**	.11	.18*
Wanted	.17*	.25**	.11	.19**
Respected	.09	.24*	.15	.16†
Safe	.11	.12	-.02	.06
Calm	.02	.00	-.01	.00
Dominant	-.05	-.02	-.07	-.04

NOTE: $N = 4,553$ observations at Level 1 and 99 people at Level 2. † $p < .10$, two-tailed. * $p < .05$. ** $p < .01$.

TABLE 6: Associations Between MSCEIT Scores and Self-Presentational Success in All Interactions Estimated by Multilevel Modeling

Measure	MSCEIT Subscales				
	Intercept	Perceive	Use	Understand	Manage
Friendly	-.28	.02	.02	.06	.14**
Liked	-.26	.04	.03	.05	.13**
Competent	-.24	.04	.00	.00	.07†
Intelligent	-.15	.04	-.01	.03	.09*
Interesting	-.25	.04	.00	-.01	.09*
Honest	-.14	.04	-.02	.06	.08*
Attractive	.07	-.05	.02	.03	.09†

NOTE: MSCEIT = Mayer-Salovey-Caruso Emotional Intelligence Test. $N = 4,553$ observations at Level 1 and 99 people at Level 2. † $p < .10$, two-tailed. * $p < .05$. ** $p < .01$.

were related to self-presentational success primarily in same- and opposite-sex interactions but not in mixed-sex interactions. These analyses found only isolated relationships between self-presentational success and the other three subscales of the MSCEIT.

Relationships between EI and social interaction controlling for the Big Five. An important goal of the present study was to evaluate the incremental validity of the MSCEIT in relation to Big Five traits. To do this, we examined a series of models that followed this form:

$$\beta_{0j} = \gamma_{00} + \gamma_{01} * (\text{MSCEIT score}) + \gamma_{02} * (\text{Big Five trait}) + \mu_{0j}$$

These analyses were conducted for all dependent variables that were significantly related to MSCEIT scores in the original analyses. If more than one Big Five trait was significantly related to a measure of social interaction, another analysis was conducted that included all significant Big Five traits as predictors. These analyses strongly

TABLE 7: Associations Between Managing Emotions Scores and Self-Presentational Success in Same-, Opposite-, and Mixed-Sex Interactions Estimated by Multilevel Modeling

Measure	Type of Interaction			
	Same	Opposite	Mixed	Overall
Friendly	.10*	.20**	.08	.14**
Liked	.10†	.18**	.08	.13**
Competent	.09*	.07	.01	.07†
Intelligent	.10*	.11*	.02	.09*
Interesting	.10*	.09†	.03	.09*
Honest	.10*	.09*	.00	.08*
Attractive	.07	.08	.12*	.09†

NOTE: $N = 4,553$ observations at Level 1 and 99 people at Level 2. † $p < .10$, two-tailed. * $p < .05$. ** $p < .01$.

supported the incremental validity of the MSCEIT. In the original analyses, Using Emotions scores were significantly related to enjoyment of everyday interactions and how interested, important, and safe people felt in these interactions. Managing Emotions scores were positively related to feeling wanted and important. All of these relationships remained significant after controlling for Big Five traits as described above. Moreover, the size of these coefficients did not change meaningfully.

The original analyses also found that Managing Emotions scores were positively related to reactions to opposite-sex interactions (for enjoyment and intimacy and feeling respected, important, interested, and wanted). When Big Five traits were included as predictors in these analyses, all of these relationships remained significant and were of approximately the same magnitude. Follow-up analyses of perceived self-presentational success provided only mixed support for the incremental validity of the MSCEIT over Big Five traits. Due to space constraints, we do not report these findings in detail.

Relationships between EI and social interaction controlling for other individual differences. Although the focus of this study entailed evaluating the incremental validity of the MSCEIT in relation to the Big Five, we also conducted exploratory analyses controlling for other self-reported attributes. These analyses were based on two composite scores reflecting the perceived quality of social interactions and self-presentational success. The models used were structurally similar to those used to control for the Big Five. For the sake of brevity, we merely summarize these results. The relationship between Using Emotions and the perceived quality of all interactions shared variance with several measures of self-presentational style and Self-Regard. The relationship between Managing Emotions and the perceived quality of opposite-sex interactions shared variance with measures of self-

esteem, goal orientation, and Secure Attachment. The relationship between Managing Emotions and self-presentational success in same-sex interactions shared variance with measures of self-esteem, goal orientation, and attachment, but there was little overlap for opposite-sex interactions.

The role of romantic partners. To try to understand why Managing Emotions scores were related to the perceived quality of opposite-sex interactions only, we undertook further analyses separating same-sex interactions, mixed-sex interactions, opposite-sex interactions with romantic partners, and opposite-sex interactions not involving romantic partners, at Level 1. For the sake of parsimony, these analyses used the composite measure of quality of interactions described above. Managing Emotions scores were positively related to the perceived quality of opposite-sex interactions with romantic partners ($\gamma_{12} = .27, p < .01$) but unrelated to the perceived quality of opposite-sex interactions that did not involve romantic partners ($\gamma_{22} = .07, p > .40$).

Discussion

As expected, we found evidence for the predictive and incremental validity of the MSCEIT. Scores on the using emotions subscale were positively related to the perceived quality of daily social interactions, and managing emotions scores were positively related to the perceived quality of interactions with members of the opposite sex. Moreover, managing emotions scores were positively related to perceived self-presentational success in social interaction due to higher perceived achievement exceeding higher expectations. This is interesting because effective emotional regulation requires balancing goals and expectations. Finally, relationships between MSCEIT scores and the perceived quality of social interactions were unchanged when individual differences in the Big Five personality traits were controlled. Controlling for the Big Five diminished relationships between managing emotions scores and self-presentational success in five of the seven self-presentational dimensions that were measured. Nonetheless, managing emotions scores were still significantly associated with a composite score of self-presentational success in opposite-sex interactions when the Big Five traits were controlled.

Why was the relationship between managing emotions scores and the perceived quality of social interactions significant and consistent for opposite-sex interactions only? One explanation is that opposite-sex interactions are more arousing and challenging due to gender differences and romantic attraction and one's ability to manage emotions reveals itself most clearly in emotionally challenging interactions. The results were consistent with this explanation. The relationship

between managing emotions scores and the perceived quality of social interactions was significant only for interactions with romantic partners.

The Managing Emotions subscale of the MSCEIT was positively, although modestly ($r_s < .40$), associated with Extraversion, Agreeableness, Openness, emotional stability, self-esteem, acceptance of others, secure attachment, a growth-seeking goal orientation, and positive self-presentational strategies. Correlations between the other three MSCEIT subscales and trait measures were less consistent. Perceiving and using emotions scores correlated with some self-presentational motives and scores on the understanding emotions subscale correlated with self-regard and confidence in school abilities. The general pattern of weak correlations between the MSCEIT and personality measures is similar to those found in other studies (Brackett & Mayer, 2003; Brackett, Mayer, et al., 2004; Lopes, Salovey, & Straus, 2003; Roberts et al., 2001) and suggests that the MSCEIT is not simply another measure of personality.

Further research is needed to clarify how relationships between EI and social adaptation vary as a function of individual differences other than the Big Five personality traits. In the present study, relationships between MSCEIT scores and the perceived quality of social interaction remained significant when the Big Five, gender, or self-deceptive enhancement were controlled for but revealed some overlap with measures of self-esteem, goal orientation, and self-presentational style. Thus, the relationships observed between emotional competencies and quality of social interaction could be partly due to an association with self-esteem or self-presentational strategies.

The responses that our German sample provided to the MSCEIT were similar to those of the normative sample of 5,000 individuals from various English-speaking nations, indicating that cultural differences did not grossly distort responses to the MSCEIT. This suggests that ability measures of emotional competencies designed to tap into the more universal aspects of emotional information processing may be cross-culturally valid, at least among nations with a similar level of economic development and sharing the same cultural heritage. One limitation of the present study is that participants were predominantly young and female and most of their social interactions occurred outside of formal organizations, which may limit the generalizability of our findings.

GENERAL DISCUSSION

Study 1 found that high scores on the managing emotions subscale of the MSCEIT were associated with higher quality of relationships with friends, as perceived by self and peers. Study 2 found that the self-perceived

quality of daily social interactions was positively correlated with MSCEIT scores for using emotions (for all interactions) and managing emotions (for interactions with individuals of the opposite sex). In both studies, relationships remained significant controlling for the Big Five personality traits. Our results indicate that unlike some self-report measures of emotional intelligence, an ability test such as the MSCEIT has discriminant validity in relation to well-studied personality traits. Study 1 found that the managing emotions subscale of the MSCEIT explained friends' ratings of quality of social interaction better than the Big Five personality traits or a self-report measure of emotional regulation.

The studies reported here are among the first to examine the incremental validity of an ability measure of emotional intelligence using friends' reports of relationship quality and a diary study of social interaction. They provided converging evidence for the predictive and incremental validity of the MSCEIT, replicating and extending previous findings based on self-reports of relationship quality (Brackett, Mayer, et al., 2004; Lopes, Salovey, & Straus, 2003). The use of peer reports allowed us to avoid distortions in indicators of social adaptation due to self-enhancement and socially desirable responding. The use of a diary study of social interaction allowed us to examine different types of social interactions and also minimized biases associated with single instances of self-assessment, such as distortions due to memory loss or the influence of unusual events.

As expected, the ability to manage emotions was more reliably associated with the quality of social interactions than the other emotional competencies assessed by the MSCEIT. Four other studies have found relationships between the managing emotions subscale and outcomes reflecting social and emotional adaptation and weaker (or no) relationships between such outcomes and the other three subscales of the MSCEIT (Lopes, Côté, Grewal, et al., 2004; Lopes, Salovey, Côté, & Beers, in press; Lopes, Salovey, & Straus, 2003). The ability to manage emotions is likely to contribute to warm, smooth, and spontaneous social interactions to the extent that it enhances positive emotions, preempts conflict and tension, and facilitates executive functions as well as a flexible focus of attention. Such reasoning is consistent with the research that has found relationships between sociability and positive emotionality (e.g., Argyle & Lu, 1990; Furr & Funder, 1998). In addition, items on the managing emotions subscale of the MSCEIT ask participants to rate the effectiveness of different responses to vignettes depicting emotionally challenging personal and interpersonal situations. Thus, the content of this subscale seems to be more directly related

to social adaptation than the content of the other subscales of the MSCEIT.

Further research is needed to understand how, and in what specific contexts, the ability to manage emotions influences social interactions. The present studies did not examine mediators but provide food for thought. For example, the finding that managing emotions scores are most reliably associated with the perceived quality of interactions with individuals of the opposite sex, and more particularly with romantic partners, suggests that emotional regulation skills could make more of a difference when social interactions are highly arousing. We also found that managing emotions scores were positively related to friends' ratings of emotional support. Furthermore, we found that the association between managing emotions scores and the perceived quality of social interactions shared variance with measures of positive self-presentational strategies. These findings suggest that people with strong emotional skills may use emotional support to enhance their relationships with friends and rely on positive self-presentational strategies to interact with others more effectively.

Other studies suggest that affect probably does not fully mediate the link between scores on the managing emotions subscale of the MSCEIT and various indicators of social adaptation (Lopes, Salovey, Côté, & Beers, in press; Lopes, Salovey, & Straus, 2003). In fact, it seems paradoxical that the managing emotions subscale of the MSCEIT correlates only weakly or nonsignificantly with Extraversion and Neuroticism, two traits associated with positive and negative affect, respectively (Watson, 2000). Such low correlations may indicate that there is a wide gap between people's knowledge of effective strategies for managing emotions and their actual capacity to manage emotions in real life. An alternative explanation, however, is that people develop emotional regulation skills to compensate for their temperamental reactivity (dampening the observed association between acquired emotional regulation skills and emotional balance). In fact, research suggests that people can compensate for earlier temperamental dispositions as they grow older and develop social and emotional skills (e.g., Kagan, 1998).

Larsen (2000) proposed that traits such as Extraversion and Neuroticism may be more closely associated with temperamental dispositions reflecting emotional reactivity, whereas traits such as Agreeableness and Conscientiousness may be more closely associated with acquired self-regulation capacities. This also would explain why knowledge about managing emotions (as assessed by the MSCEIT) is more strongly associated with Agreeableness (and social adaptation) than with Neuroticism and Extraversion. In fact, the most consistent relationship observed between the managing emo-

tions subscale of the MSCEIT and the Big Five personality traits, across a number of studies, is with Agreeableness.

Our findings suggest that both emotional competencies and personality traits are related to social adaptation. This is consistent with the results of four other studies (Lopes, Côté, Grewal, et al., 2004; Lopes, Côté, Salovey, & Beers, 2003; Lopes, Salovey, & Straus, 2003) where scores on the MSCEIT and the Big Five personality traits independently accounted for significant variance in indicators of social and emotional adaptation. These findings suggest that we need to take into account both emotional competencies and dispositions to understand social adaptation.

The fact that only two out of four subscales of the MSCEIT were associated with indicators of social adaptation suggests that it may be more useful to study emotional intelligence as a set of competencies rather than as a single, global score. This raises questions about the unity of emotional intelligence as a theoretical construct. Further research is needed to understand the impact of the four emotional competencies assessed by the MSCEIT on adaptation in various realms of life and to evaluate to what extent these competencies represent a cohesive domain of intelligence.

One concern with this line of research is that observed effect sizes tend to be modest. However, given the large number of skills that people draw on for interacting with others, any one skill is likely to have a modest impact on the quality of social interactions. Moreover, social adaptation depends not just on one's level of skill but also on one's capacity to flexibly coordinate many different skills, choose the right people to interact with, and mold one's environment in accordance with one's strengths and weaknesses. Outcomes of social encounters also may reflect the interaction of skills, personality traits, and motivational factors. All this leads to variability in outcomes, dilutes main effects associated with specific competencies, and makes it difficult to predict social adaptation from individual difference variables.

Another concern with ability measures of emotional intelligence is that there are no absolute right and wrong answers for social and emotional problems and consensus scoring may reflect conformity rather than skill (Roberts et al., 2001). In the present studies, we used expert rather than consensus scoring, although the two scoring methods yield similar results. The fact that different subscales of the MSCEIT have different correlates suggests that this measure is not tapping into a uniform dimension reflecting conformity. Rather, specific emotional competencies, such as managing emotions, have unique predictive validity. We were able to control for individual differences in socially desirable responding in

Study 1 and this did not undermine our findings. Other studies also have found MSCEIT scores to be unrelated to social desirability bias (Barchard, 2001; Lopes, Salovey, & Straus, 2003). Furthermore, the confound with conformity is a challenge in the assessment of all sorts of abilities: social, emotional, practical, and creative (Sternberg, 1999). In the realm of emotions, skill and conformity cannot be easily disentangled because emotional skills necessarily reflect attunement to social norms and expectations. In fact, high agreement between expert and consensus scores suggests that experts generally view consensual responses as correct. Our finding of high correlations between consensual responses across cultures also helps to validate consensus scoring.

We should note that IQ was not measured in the present studies. Nevertheless, other studies have found that the relationship between EI and the quality of social relationships is not explained by traditional measures of crystallized or fluid intelligence (Lopes, Salovey, Côté, & Beers, in press; Lopes, Salovey, & Straus, 2003). In fact, correlations between ability measures of EI and measures of both crystallized and fluid intelligence are small in college samples (see also Barchard, 2001; Roberts et al., 2001).

To summarize, we found an association between an ability measure of emotional management and the quality of social interactions, evaluated by self and peers. Our findings provided partial support for the criterion and incremental validity of EI and suggest that developing a better understanding of emotion management strategies may contribute to the quality of social interactions. Further research is needed to evaluate the predictive validity of emotional competencies, the cohesiveness of EI as a theoretical construct, and the impact of emotional skills training on social relationships.

NOTES

1. Correlations between the four subscales of the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) were low in Study 1, ranging from .29 to -.04. The only correlation that was statistically significant was that between the subscales assessing managing and using emotions ($r = .29$). These low values could be due to sampling variability, especially considering that confidence intervals for correlations are very wide for small samples. The correlations between the four subscales of the MSCEIT observed in the normative sample range from .27 to .51 (Mayer, Salovey, & Caruso, 2002).

2. The test was translated into German and back-translated into English by two independent teams led by Schütz, who made final revisions in consultation with the authors of the test.

3. In selecting MSCEIT items with positive item-total correlations in the present sample, we excluded eight items included in the scores computed for North American samples and included nine items excluded for North American samples.

4. Following the MSCEIT manual (Mayer et al., 2002), we computed task scores as the mean of raw item scores for each scale, subscale scores as the mean of corresponding task scores, and a total score as the mean of all task scores.

5. We could not evaluate factor structure adequately because of a modest sample size. Direct comparisons of means were not possible because a slightly different scoring system was used for this sample. Nonetheless, a comparison based on the scoring system used for the normative sample indicated that differences were small. The means for the present sample were 98.3, 97.6, 101.2, and 92.2, respectively, for subscales 1 to 4 of the MSCEIT, compared to 100 for the normative sample.

6. The exception to this pattern was a significant positive coefficient between Using Emotions and calmness in same-sex interactions ($\gamma_{11} = 0.19, p < .05$).

7. Defining self-presentational success as the difference between goals and outcomes was the most straightforward approach. Nevertheless, because this measure was a difference score, relationships between MSCEIT scores and success might reflect relationships between MSCEIT scores and either goals or outcomes, or both. Further analyses revealed that MSCEIT Managing Emotions scores that were related to self-presentational success were significantly associated with higher perceived achievement but not with higher goals.

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Received February 3, 2003

Revision accepted September 11, 2003