An Examination of the Discriminant, Convergent, and Criterion-related Validity of the Emotional Competence Inventory

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Abstract

We found that self-ratings on the Emotional Competence Inventory (ECI) had small relationships with, but a distinct factor structure from, the Big Five personality dimensions. ECI self-ratings were unrelated to academic performance and general mental ability. ECI self-ratings had significant, albeit small, correlations with EC-related behaviors and peer nominations of influence during a leaderless group discussion, coworkers' ratings of managerial skills, and number of promotions received. However, with one exception, these significant relationships disappeared after controlling for personality and age.

Popular and academic interest in emotional intelligence has soared in recent years. Popular interest has been fueled largely by Daniel Goleman's *Emotional Intelligence* (1995) as well as a growing number of books and articles that describe the purported importance of emotional intelligence for work and leadership (Caruso & Salovey, 2004; Cherniss & Goleman, 2001; Emmerling & Cherniss, 2003; George, 2000; Goleman, 1998a; Goleman, 1998b; Goleman, 2000; Goleman, Boyatzis, & McKee, 2002). At the same time academic interest has grown at an exponential rate. A search of PsycINFO for the term 'emotional intelligence' from 1980 to 1989 yielded 4 citations, from 1990 to 1999 yielded 70 citations, and from 2000 through August 2004 yielded 456 citations. When the *Harvard Business Review* published Goleman's 1998 article on emotional intelligence, it attracted a higher percentage of readers than any other article published in that periodical for the previous 40 years (Cherniss, 2000).

The interest in emotional intelligence is likely to be related to the claims of some of its proponents. For example, Goleman (1995, p.36) stated that emotional intelligence provides one with "an advantage in any domain in life, whether in romance and intimate relationships or picking up the unspoken rules that govern success in organizational politics." Unfortunately, the explosion of interest in emotional intelligence (EI) has not been accompanied by any consensus about how it should be defined or measured, or even whether the concept meets scientific criteria for a meaningful psychological construct (Matthews, Zeidner, & Roberts, 2003).

In this paper, we first review several models of EI. We note the need for empirical research concerning the Emotional Competence Inventory (ECI), especially because this measurement tool was created primarily to reflect Goleman's EI model,

which has had enormous impact on popular conceptions of EI. This paper then extends existing research by presenting the results of an empirical study that examines the extent of overlap between self-ratings on the ECI and self-ratings of personality as well as the convergent and criterion-related validity of the ECI.

EI Models

Several models of EI have been developed. One major distinction between EI models is whether they are ability or mixed models.

Ability models of EI. Proponents of ability models of EI (e.g., Mayer, Salovey, & Caruso, 2000; Law, Wong, & Song, 2004) define EI as "a type of social intelligence that involves the ability to monitor one's own and others' emotions, to discriminate among them, and to use the information to guide one's thinking and actions" (Mayer & Salovey, 1993, p. 433). From this perspective EI subsumes Gardner's (1983) interpersonal and intrapersonal intelligences (Salovey & Mayer, 1989). That is, ability models view EI as a set of abilities not a constellation of personality traits or preferred ways of behaving.

Most proponents of ability models of EI argue that measures of EI should be performance tests (not self-reports) and focus only on emotional skills and abilities (Daus & Ashkanasy, 2003). The Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT; Mayer, Salovey, & Caruso, 2002; Mayer, Salovey, Caruso, & Sitaraneos, 2003) is based on an ability model of EI and assesses four skills: perceiving emotions, using emotions to facilitate thought, understanding emotions, and managing emotions.

MSCEIT requires examinees to view a series of faces and report the extent to which each of six emotions is present, answer questions about emotional scenarios and responses (e.g., judging how much joy one might experience while planning a party), and

solve emotional problems (e.g., deciding on an appropriate response when a friend calls after losing her job). Unlike other measures of EI (described below), MSCEIT is based on the premise that there are correct answers to each question. Although this performance-based scoring method (where the correct answer is based on a consensus or expert scoring protocol) has been questioned by some critics (Matthews, Zeidner, & Roberts, 2003; Zeidner, Matthews, & Roberts, 2001), Roberts, Zeidner, and Matthews (2001) conclude that performance-based measures of EI are more likely than self-report measures to assess EI as a construct distinct from personality. Another performance-based measure of EI that assesses the ability to recognize emotional expressions displayed by others was developed by Morand (2001).

Ciarrochi, Chan, and Caputi (2000) found that the Multi-factor Emotional Intelligence Scale (a precursor of MSCEIT) was not related to IQ but was related to specific personality measures (such as empathy) and life satisfaction. Caruso, Mayer, and Salovey (2002) found that MEIS was relatively independent of personality. Day and Carroll (2004) found that the four-factor model for the MSCEIT fit the data well and that MSCEIT subscales were modestly correlated with personality. One subscale, Emotional Perception, was related to performance on a cognitive decision-making task. Brackett and Mayer (2003) found that MSCEIT was discriminable from measures of personality and well-being, and Brackett, Mayer, and Warner (2004) recently found that EI was significantly related to maladjustment and negative behaviors (e.g., illegal drug and alcohol use, deviant behavior, and poor relations with friends) for male college students (but not for females.) after statistically controlling for scores on the Big Five and academic achievement. O'Connor and Little (2003) found MSCEIT was highly correlated

with cognitive ability but minimally related to personality. Ciarrochi, Chan, Caputi, and Roberts (2001) concluded that MSCEIT has little to no overlap with the Big Five personality constructs.

Some researchers have developed self-report EI measures purportedly based on the view that EI is an ability. For example, Schutte, Malouff, Hall, Haggerty, Cooper, Golden, and Dornheim (1998) created a 33-item self-report EI scale and showed that it had good internal consistency and test-retest reliability, was correlated with theoretically related constructs (e.g., alexithymia, attention to feelings, clarity of feelings, mood repair), was not related to cognitive ability, and was positively associated with the personality disposition of openness to experience. Wong and Law (2002) developed a 16-item self-report (or multi-source rating) measure of EI, the Wong and Law EI Scale (WLEIS). Law, Wong, and Song (2004) used confirmatory factor analysis to show that WLEIS was conceptually distinct from (albeit moderately correlated with) the big-five personality dimensions.

Mixed models of EI. Proponents of mixed models of EI (e.g., Bar-On, 1997; Cooper, 1997; Cooper & Sawaf, 1998; Goleman, 1995, 1998) view EI as combination of abilities, personality-like traits, motivation, and skills. For example, Goleman (1998, Appendix 1) stated that EI "refers to the capacity for recognizing our own feelings and those of others, for motivating ourselves, and for managing emotions well in ourselves and our relationships...abilities distinct from, but complementary to academic intelligence." Bar-On (1997) has said that EI is "an array of personal, emotional, and social competencies and skills that influence one's ability to succeed in coping with environmental demands and pressures, and directly affect one's overall psychological

well-being." Cooper & Sawaf (1998, p. xiii) defined EI as "the ability to sense, understand, and effectively apply the power and acumen of emotions as a source of human energy, information, connection, and influence."

Perhaps the most widely known measures based on mixed models of EI are the Bar-On Emotional Quotient Inventory (EQi; Bar-On, 1997) and the Emotional Competence Inventory (ECI; Boyatzis, Goleman, & Rhee, 2000; Sala, 2002), which is based largely on Goleman's well-known writing about EI. Many other EI measures have been developed such as those by Bedwell, Hesson-McInnis, and Binning (2000), Tapia (2001), and Fox and Spector (2000). Unlike most researchers, Fox and Spector measured separate components of EI (e.g., empathy, self-regulation of mood, and self-presentation). Jordan, Ashkanasy, Härtel, and Hooper (2002) recently developed a measure of workgroup emotional intelligence.

Proponents of mixed models of EI argue that it is distinct from personality and general cognitive ability. But critics argue that scales used to measure mixed models of EI yield merely self- (or others') perceptions rather than an estimate of a person's actual emotional ability (Daus & Ashkanasy, 2003). They also point to evidence that self-report scales (such as ECI and EQi) overlap with personality measures (e.g., Brackett & Mayer, 2003; Ciarrochi, Chan, Caputi, & Roberts, 2001; Davies, Stankov, & Roberts, 1998; Dawda & Hart, 2000; MacCann, Matthews, Zeidner, & Roberts, 2003; Saklofske, Austin, & Minski, 2003; van der Zee, Thijs, Schakel, 2002) and argue that this overlap with personality means these EI measures lack discriminant validity. In contrast, self and other ratings of EI tend to have very little relationship with traditional measures of intelligence or general mental ability (e.g., Derksen, Kramer, & Katzko, 2002; MacCann,

Matthews, Zeidner, & Roberts, 2003; Saklofske, Austin, & Minski, 2003). Finally, critics argue that proponents of mixed models have made unsupported and sweeping claims (Matthews, Zeidner, & Roberts, 2003; Thingujam, 2002) and that these mixed models should not be called emotional intelligence (Caruso, 2003).

The Emotional Competence Inventory. The ECI is a self-report and other-report EI measure designed to assess the emotional competencies identified by Goleman (1998a). Its development was also influenced by Hay/McBer's *Generic Competency Dictionary* and an earlier questionnaire developed by Boyatzis (e.g., Boyatzis, 1994; Boyatzis, Baker, Leonard, Rhee, & Thompson, 1995; Boyatzis, Leonard, Rhee, & Wheeler, 1996). The ECI assesses 18 emotional competencies organized into four clusters: self-awareness, self-management, social awareness, and social skills. Self-awareness refers to knowing one's internal states, preferences, resources, and intuitions. Self-management refers to managing one's internal states, impulses, and resources. Social awareness refers to how people handle relationships and one's awareness of others' feelings, needs, and concerns. Social skills refer to adeptness at inducing desirable responses in others. Boyatzis, Goleman, and Rhee (1999) outlined the rationale for the clustering and organization of emotional intelligence competencies.

A study by Murensky (2000) examined the correlation between ECI self-ratings and the five-factor model of personality. ECI self-ratings were significantly correlated with extraversion (r ranged from .24 to .49), agreeableness (r .20 to .28), and conscientiousness (.21 to .39) but were unrelated to neuroticism and agreeableness. Also, only 3 of 20 ECI scales were significantly related to scores on Watson-Glaser Critical Thinking Appraisal, a measure of cognitive ability. The three significant correlations

pointed to small, negative relationships between ECI and critical thinking. Proponents of ECI argue that this latter finding provides evidence for the discriminant validity of ECI.

Meta-analysis of EI Measures

Van Rooy and Viswesvaran (2004) state that "there is a serious lack of research examining the predictive validity of existing measures of EI; even less is known about its predictive validity in work situations" (p. 75). Van Rooy and Viswesvaran's (2004) recent meta-analysis found that the mean correlation between EI measures (of all types) and work-related outcomes was .24. However, this effect size is difficult to interpret because it is based on different measures of EI (including measures based on ability models and measures based on mixed models). Moreover, only 27% of the variance in observed correlations was due to sampling error thereby suggesting that validity is likely moderated by the type of EI measure or other factors (e.g., type of criterion, job, work setting).

Van Rooy and Viswesvaran (2004) also reported a mean predictive validity of .20 for six studies that used the ECI but this effect size is also difficult to interpret because it was apparently based on a mix of outcome measures (including academic, work-related, and other variables). Also, this meta-analysis did not describe the incremental validity of ECI above and beyond personality. Moreover, only 20% of the variance in observed ECI correlations was due to sampling error thereby suggesting that validity of ECI is likely moderated by other factors (e.g., type of criterion).

Finally, Van Rooy and Viswesvaran (2004) found that mixed model EI measures (such as ECI) were generally unrelated to cognitive ability (mean correlation = .09). The

mean correlation between EI measures (of all types) and personality ranged from .23 (with agreeableness and openness to experience) to .34 (with extraversion).

The Current Study

This study extends the emerging literature on EI by examining the extent of overlap between ECI self-ratings and a well-established measure of the Big Five personality dimensions and by determining whether self-ratings of EC and personality have distinct factor structures. We also present evidence concerning the convergent validity of ECI self-ratings by examining whether such ratings are related to the extent to which participants demonstrate EC-related behaviors during a leaderless group discussion. Finally, we go beyond previous research by examining the criterion-related validity of ECI self-ratings for predicting work-related outcomes after controlling for personality.

Despite the widespread popularity of Goleman's writings and the growing attention to the Emotional Competence Inventory (an August 20, 2004 search on Google of the term 'Emotional Competence Inventory' yielded 855 sites), there is a dearth of research on the its criterion-related validity. In its discussion of criterion-related validity, the ECI technical manual (Sala, 2002) describes only eight studies; none of these were published in peer-reviewed journals or presented at peer-reviewed conferences. (Four of these studies were included in the Van Rooy and Viswesvaran meta-analysis described above.) A search of the PsycINFO database (August 20, 2004) for the term 'Emotional Competence Inventory' also yielded no peer-reviewed empirical studies concerning the ECI's criterion-related validity. In writing about his EI model, Goleman often refers to studies showing the relationship between EI-related dispositions and competencies (e.g.,

self-confidence, empathy, achievement orientation, conscientiousness) and work performance, without presenting evidence concerning the criterion-related validity of the ECI itself (Goleman, 2001). Mayer (1999) argues that this amounts to "using a catchy new name to sell worthy, old-fashioned personality research and prediction."

As noted above, a study by Murensky (2000) found small correlations between the ECI measures and several personality dimensions. Many studies have shown that there is a consistent, albeit small, relationship between personality and job performance (Barrick & Mount, 1991; Mount, Barrick, & Stewart, 1998), leadership (Judge, Bono, Ilies, & Gerhardt, 2002; Lord, DeVader, & Alliger, 1986), and team effectiveness (Barrick, Stewart, Neubert, & Mount, 1998). Taken together, these findings point to the need to examine whether the ECI can predict work-related outcomes beyond what could be predicted by personality.

Based on the literature reviewed above, we examined five research questions.

1. What is the extent of overlap between ECI self-ratings and the Big Five personality dimensions (neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness)?
2. Do ECI self-ratings and the Big Five personality dimensions have distinct factor structures (i.e., discriminant validity)?
3. Are ECI self-ratings related to EC behaviors exhibited during a leaderless group discussion (i.e., convergent validity)?
4. Are ECI self-ratings related to measures of work-related outcomes (peer nominations of influence in a leaderless group discussion, number of

promotions received, and coworker feedback concerning managerial skills)?

5. Are ECI self-ratings significantly related to work-related outcomes *after* controlling for the Big Five personality dimensions?

Method

Overview

As part of their participation in a graduate course, students from three universities completed self-ratings on the Emotional Competency Inventory and the NEO Five Factor Inventory. They also received multi-rater feedback from coworkers about their managerial skills and provided information concerning their years of work experience, the number of promotions they had received since completing their undergraduate degree, their academic performance (undergraduate grade point average), and their scores on the Graduate Management Admission Test (GMAT - a surrogate measure of general mental ability; see Frey & Detterman, 2004). They also participated in a leaderless group discussion (LGD) with 6 to 10 participants in each group. At the end of the LGD, participants nominated the three peers who most contributed to the group's decision. The LGD sessions were also videotaped and participants' behaviors related to emotional competence were rated by two trained assessors using a codebook adapted from Boyatzis (2003). We then examined the relationships between three predictors (personality, academic performance, and self-ratings of emotional competence) with four criteria (emotional competence behaviors displayed during the LGD, LGD peer nominations, promotions, coworkers' ratings of managerial skills).

Participants

The age of participants ranged from 20 to 63 (M = 31.23, SD = 8.16, n = 324). Forty percent were female and 44% identified themselves as minority. On average, participants had 8.46 years of work experience (SD = 8.30) since completing their undergraduate degree. The mean undergraduate grade point average (GPA) was 3.23 (SD = .41, n = 297). The mean GMAT score was 540.23 (SD = 60.02, n = 149).

Measures

Personality. Participants (n = 321) completed the NEO Five Factor Inventory (NEO-FFI) Form S, which consists of 60 items and yields scores for five personality factors: neuroticism (N), extraversion (E), openness to experience (O), agreeableness (A), and conscientiousness (C). Respondents use a five-point scale (strongly disagree to strongly agree) to indicate the extent to which each statement accurately describes them. Published internal consistency coefficients for the NEO-FFI scales are 0.86, 0.77, 0.73, 0.68, and 0.81 for N, E, O, A, C, respectively (Costa & McCrae, 1992). The corresponding internal consistency coefficients for our sample were 0.84, 0.76, 0.68, 0.71 and 0.81. Consistent with previous research (e.g., Ackerman, Kanfer & Goff, 1995), correlations among the five-factors in our sample were low to moderate (see Table 1).

Emotional competence. Participants (n = 298) completed self-ratings on the Emotional Competence Inventory – Version 2 (ECI). The ECI is a 73-item inventory where respondents indicate the degree to which each statement accurately describes them on a 5-point scale (1= never; 2 = rarely; 3 = sometimes; 4 = often; 5 = consistently). The ECI assesses 18 competencies organized into four clusters (number of items are in parentheses): *self-awareness* - emotional self-awareness (3), accurate self-assessment (4),

and self-confidence (4); *self-management* - emotional self-control (4), trustworthiness (4), adaptability (5), achievement orientation (4), initiative (4), optimism (4); *social awareness* - organizational awareness (4), service orientation (4), empathy (4); and *social skills* - developing others (4), inspirational leadership (4), influence (4), change catalyst (5), conflict management (4), teamwork and collaboration (4). Internal consistency coefficients for self-ratings reported in the ECI Technical Manual for self-awareness, self-management, social awareness, and social skills were .61, .79, .71, and .92, respectively. In the present study, the corresponding values were .52, .83, .70, and .87.

We conducted a confirmatory factor analysis using Lisrel 8.5 to evaluate whether the 18 competencies loaded on the four ECI clusters as hypothesized. Bentler (1990) recommended that the comparative fit index (CFI) should exceed .90 to be considered a good fit. Byrne (1998) and Steiger (1990) recommended that the root mean square error of approximation (RMSEA) should be less than .08 or .10, respectively. Results showed a good fit to the hypothesized loadings (RMSEA = .07, CFI = .96). Correlations among the five ECI clusters are presented in Table 2.

Coworker ratings of managerial skills. Participants were asked to select three to ten coworkers to provide ratings of their managerial skills. Coworkers' ratings were anonymous. Ratings were returned to the researchers and participants who were rated by three or more coworkers received a feedback report that contained the average and standard deviation of the ratings they received on each item. The feedback report was provided only to the participant and ratings did not affect course grades in any way. Participants received their feedback after completing the other measures (e.g., NEO, ECI) and after participating in the leaderless group discussion. Ratings were provided on 40

items using a 1 (not at all) to 5 (to a very great extent) scale. Items assessed a broad range of managerial skills including time management, seeking feedback from others, problem solving, communication, influence, motivating others, conducting meetings, making presentations, empowering others, resolving conflicts, and teamwork. Correlations among the 40 items were very high (internal consistency = .89). Consistent with other multi-rater research (e.g., Reilly Smither, and Vasilopoulos, 1996), we therefore calculated each participant's average rating across raters and items. Hereafter we refer to this score as coworker ratings of managerial skills. Coworker ratings of managerial skills were available for 161 participants. (Participants did not seek coworker feedback if they had been working at an employer for a short time, were self-employed, between jobs, or attending graduate school full-time.)

Leaderless group discussion (LGD) peer nominations. Six to 10 participants were assigned to each group. Each group was told they were the board of directors for an aerospace company and their task was to select a new CEO (because the current CEO would be retiring in 90 days) as well as a 'second-in-command' in case the selected CEO was not able to fulfill the obligations of the position. Each participant read a one-page overview of the company's business and a brief description of seven candidates. Each group was asked to come to a consensus decision. On average, groups completed the task in 40 to 50 minutes. These group discussions were videotaped.

At the end of each group discussion, each member voted anonymously for the three peers who most contributed to the group's decision (self-nominations were permitted). These peer nominations were anonymous and collected in writing. To adjust for group size, the number of nominations each participant received was divided by

'LGD group size – 1.' To correct for skewness, the resulting distributions were then normalized. In total, LGD peer nominations were available for 269 participants. Peer nominations have been shown to be reliable and valid measures job performance and potential (Kane and Lawler, 1978).

Leaderless group discussion (LGD) behaviors. Two expert judges, each with greater than 20 years of assessment experience, evaluated the videotapes of LGD sessions using a codebook developed by Boyatzis for analyzing behavior related to emotional intelligence (Boyatzis, 2003; see also Boyatzis, 1998). The codebook presented examples of EC behaviors to guide ratings of each participant on each emotional competency. Sample tapes were reviewed and the codebook was amended by a team of three doctoral-level industrial and organizational psychologists. The amendments involved eliminating behaviors that were not likely to be observed in the videotapes. After reviewing the codebook and rating forms (included in the Appendix), the judges observed five videotapes (to become familiar with target behaviors and the rating process). To determine the level of inter-rater reliability, both judges evaluated 104 participants, with each judge rating each participant on each of 14 competencies (see Appendix). Each of the two judges then independently evaluated half of the remaining participants. In total, LGD behavior ratings were available for 276 participants.

A principal components analysis of the judges' ratings yielded one large factor with an eigenvalue of 11.14 that accounted for 80% of the variance. All other eigenvalues were less than .61. We therefore created an overall EC behavior score for each participant (the participant's average rating across the 14 competencies). As noted above, there were ratings from two judges for 104 participants; the reliability (intraclass

coefficient) for two raters was 0.77. Since, for many of the participants, there was only one rating, we used the Spearman-Brown formula to calculate the reliability for one rater (0.62).

Because the content of these ratings (emotional competencies) closely parallels the content of the ECI, we considered the correlation between ECI self-ratings and judges' ratings of EC behaviors as a measure of the convergent validity of the ECI.

Number of promotions. Because number of promotions was positively correlated with age ($r = .21$, $p < .01$), we adjusted number of promotions to account for age using the formula (10 * 'number of promotions')/age, which was then normalized. We hereafter refer to this variable as age-adjusted number of promotions. This variable was available for all participants.

Results

Discriminant Validity

We first sought to examine whether the NEO and ECI measure distinct constructs. Correlations between the NEO five factors and the ECI four clusters are presented in Table 3. ECI self-ratings for all four clusters were negatively related to neuroticism. ECI self-ratings were positively correlated with the other four NEO factors. The strongest correlation was between extraversion and ECI social skills ($r = .57$), with most of the remaining correlations ranging between .20 and .40. Note that these correlations are similar in magnitude to the meta-analytic correlations between EI and personality reported in Van Rooy and Viswesvaran's (2004).

One method of assessing the discriminant validity of a measure is to show that the measure has a latent structure that is distinct from the latent structure of relevant but conceptually distinct variables. We therefore used Lisrel 8.5 to conduct a confirmatory factor analysis of the NEO and ECI. To do so, we first randomly grouped NEO items to form three indicators (each consisting of 4 items) for each NEO factor and used these indicators as input to the confirmatory factor analyses. This practice is quite common in the literature (e.g., Drasgow and Kanfer, 1985; Law, Wong, & Song, 2004; Lynn, Reilly & Akgün, 2000; Mathieu & Farr, 1991; Mathieu, Hofmann, & Farr, 1993). We also included the 18 ECI competency scores. Our CFA tested whether these 33 variables fit the hypothesized latent structure of five NEO factors and four ECI clusters. Results indicated a good fit (CFI = .94, RMSEA = .07). These results indicate that NEO and ECI, while moderately correlated, appear to measure distinct constructs.

We also examined the correlation between the four ECI clusters and undergraduate GPA and GMAT scores. These correlations ranged from -.08 to +.08 and none reached statistical significance (all *p* values > .29), thereby indicating that ECI self-ratings were independent of academic performance and general mental ability.

Convergent Validity

Self-ratings on all four ECI clusters were positively related to judges' ratings of EC behaviors during the LGD (r = .17, .18, .25. .25, all p < .01, for self-awareness, self-management, social awareness, social skills, respectively).

EC behaviors during the LGD were also related to neuroticism (r = -.13, p < .05), extraversion (r = .15, p < .05), agreeableness (r = .13, p < .05), and conscientiousness (r =

.20, p < .05). The relationship between LGD behaviors and openness to experience approached significance (r = .11, p = .07).

Criterion-Related Validity

We next examined whether ECI self-ratings were related to work-related outcome measures (LGD peer nominations, age-adjusted number of promotions received, and coworker ratings of managerial skills). We also examined the relationship between personality and these measures of work-related outcome measures. Table 4 presents these correlations.

LGD peer nominations. We examined the correlations between ECI self-ratings and LGD peer nominations. LGD peer nominations were positively related to ECI self-awareness (r = .18, p < .01), social awareness (r = .16, p < .05), and social skills (r = .20, p < .01). The correlation between LGD peer nominations and self-management was not significant (r = .11, p = .08).

LGD peer nominations were positively related to extraversion (r = .12, p < .05) and openness to experience (r = .15, p < .05) but were not significantly related to neuroticism (r = -.05, p = .40), agreeableness (r = .03, p = .66), or conscientiousness (r = .06, p = .31).

Age-adjusted number of promotions received. Self-ratings on all four ECI clusters were positively related to age-adjusted number of promotions received (r = .15, .21, .20. .24, all p < .01, for self-awareness, self-management, social awareness, social skills, respectively).

Age-adjusted number of promotions received was also related to neuroticism ($r = -.17$, $p < .01$) and openness to experience ($r = .14$, $p < .05$) but was unrelated to extraversion ($r = .09$, $p = .10$), agreeableness ($r = .03$, $p = .59$), and conscientiousness ($r = .11$, $p = .06$).

Coworker ratings of managerial skills. Self-ratings on three ECI clusters were positively related to coworker ratings of managerial skills ($r = .17$, $p < .05$; $r = .29$, $p < .01$; $r = .28$, $p < .01$, for self-management, social awareness, social skills, respectively). The correlation between ECI self-awareness and coworker ratings of managerial skills was not significant ($r = .11$, $p = .19$).

Coworker ratings of managerial skills were also related to neuroticism ($r = -.20$, $p = .01$) and conscientiousness ($r = .20$, $p = .01$), but were unrelated to extraversion ($r = -.08$, $p = .34$), openness to experience ($r = -.11$, $p = .16$), and agreeableness ($r = .14$, $p = .08$).

Taken together, these correlations provide some evidence concerning the criterion-related validity of ECI self-ratings for predicting work-related outcomes. That is, ECI self-ratings are positively related to several work-related outcomes including peer nominations following a leaderless group discussion, promotions received, and coworkers' evaluations of participants' managerial skills. However, the correlations between ECI self-ratings and these work-related outcomes were generally small and it is noteworthy that each of these work-related outcomes was also significantly related to at least two personality factors (see Table 4). There were also small to moderate correlations between ECI self-ratings and self-ratings of personality. Hence, we conducted a series of hierarchical regression analyses to determine whether ECI self-

ratings explained unique variance in these work-related outcomes above and beyond any variance accounted for by personality.

In each of these hierarchical regression analyses, we entered age and personality (i.e., the NEO five-factor scores) on the first two steps of the analysis and then entered the four ECI clusters on the third step. We controlled for age because, consistent with Carson, Carson, and Birkenmeier (2000) and Goleman (1998c), we found significant positive correlations between age and all four ECI clusters ($r = .17, .22, .22. .23$, all $p < .01$, for self-awareness, self-management, social awareness, social skills, respectively). We did not control for undergraduate GPA or GMAT scores because, as noted above, ECI self-ratings were unrelated to these measures of academic performance and general mental ability. Results of these hierarchical regression analyses are presented in Table 5. After controlling for age and personality, the relationship between ECI self-ratings and LGD peer nominations approached but did not reach significance ($\Delta R^2 = .03$, $p < .10$). ECI self-ratings were unrelated age-adjusted number of promotions after controlling for age and personality. ECI self-ratings explained 12% of the variance in coworker ratings of managerial skills after controlling for age and personality ($\Delta R^2 = .12$, $p < .01$).

Discussion

The Emotional Competence Inventory was developed based principally to capture Goleman's (1998a) widely known, mixed-model view of EI. Consistent with other research on mixed models and self-report measures of EI, we found that ECI self-ratings had small to moderate correlations (.22 to .57) with the Big Five dimensions of personality. However, our confirmatory factor analysis showed that the factor structure of ECI was distinct from the factor structure of the Big Five personality dimensions,

thereby providing some evidence concerning the discriminant validity of ECI self-ratings. Also consistent with previous research, we found no relationship between ECI self-ratings and academic performance or general mental ability.

We also found some evidence for the convergent validity of ECI self-ratings. That is, ECI self-ratings were significantly related to judges' ratings of EC behaviors demonstrated during a leaderless group discussion. However, because the magnitude of these correlations was quite small (.17 to .25), the data provide only weak evidence of convergent validity.

With respect to criterion-related validity, we found that ECI self-ratings had positive, albeit small (.11 to .29), correlations with several measures of work-related outcomes. It is noteworthy that these correlations did not suffer from same-source bias (as would be the case when a self-report ECI measure is correlated with self-reports of life satisfaction, e.g., Law, Wong, and Song, 2004). Although ECI self-ratings did not predict two of the three criteria *after* controlling for personality and age, they did explain significant variance (12%) in coworkers' ratings of managerial skills after controlling for personality and age.

Taken together, these results are unlikely to satisfy either proponents or critics of Goleman's view of EI. First, although the factor structure of ECI appears distinct from the factor structure of the Big Five personality dimensions, there is nonetheless a good deal of overlap between ECI self-ratings and personality. Second, correlations examining convergent validity were statistically significant but quite small in magnitude. Third, although ECI self-ratings had small, positive relationships with several criteria of work-

related outcomes, these relationships (with one exception) disappeared after controlling for personality and age.

Limitations and Directions for Future Research

Matthews et al. (2003) noted that it is likely that ECI will have some utility because it assesses so many disparate concepts. Indeed, this may explain the relatively strong correlation between ECI self-ratings and coworkers' ratings of managerial skills (which included ratings of influence, motivating others, resolving conflicts, and teamwork) in the present study. But Matthews et al. (2003) also point out that more sophisticated techniques exist for assessing many of the competencies comprising ECI. Future research should examine the relationship between ECI and other measures of these constructs as well as whether ECI is a better predictor of work-related criteria than these other measures.

This study examined only self-ratings on ECI. Van Rooy and Viswesvaran's (2004) meta-analysis found the validity of others' rating of EI (.24) to be nearly identical to the validity of self-report EI measures (.23). Still, to the extent that people are poor judges of their own emotional competencies, self-ratings may be poor indicators of EI and related competencies. It would be helpful for future research to examine 360-degree ratings on ECI to determine whether such ratings are independent of personality and general mental ability. It will also be important for any ECI studies based on 360-degree ratings to examine the extent of overlap between ECI and other 360-degree rating instruments. It is noteworthy that ECI assesses a number of competencies (e.g., adaptability, initiative, service orientation, developing others, leadership, influence, conflict management, teamwork and collaboration) that are very similar to skills assessed

by other 360-degree rating instruments. Stated differently, proponents of ECI must demonstrate that ECI 360-degree ratings are reasonably independent of ratings from other well-known 360-degree rating instruments (Leslie & Fleenor, 1998).

Also, the validity of EI might differ depending on the type of job (Van Rooy & Viswesvaran, 2004). Future research can examine the predictive validity of ECI and other EI measures for jobs that differ in terms of intellectual and interpersonal demands. For example, EI measures might be more related to jobs that require interpersonal skill and empathy (e.g., sales and other customer contact jobs, team leadership) than jobs that do not (e.g., software development, engineering).

Finally, we think future research needs to compare the criterion-related validity of mixed-model measures of EI (such as ECI and EQi) and ability-model measures of EI (such as MSCEIT). Only then will we understand whether the relative value of these measures for predicting work-related criteria.

Until greater scientific consensus emerges about the definition of EI, how it should be best measured, and the criterion-related validity of various measures of EI, we agree with Matthews et al. (2003) that the benefits of EI may reside mainly in raising awareness of emotional issues and motivating educators and managers to take emotional issues seriously.

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Table 1

Correlations among NEO factors

	N	E	O	A	C
Neuroticism (N)					
Extraversion (E)	-.41 **				
Openness to Experience (O)	-.08	.28 **			
Agreeableness (A)	-.33 **	.34 **	.10 *		
Conscientiousness (C)	-.37 **	.27 **	.06	.24 **	

** $p < .01$, * $p < .05$

Table 2

Correlations among ECI clusters

	Self-awareness	Self-management	Social awareness	Social skills
Self-awareness				
Self-management	.51			
Social awareness	.50	.66		
Social skills	.54	.79	.70	

For all correlations, $p < .01$

Table 3

Correlations between NEO Five Factors and ECI Four Clusters

	NEO Five Factors				
ECI Clusters	Neuroticism	Extraversion	Openness	Agreeableness	Conscientiousness
Self-awareness	-.37 **	.38 **	.30 **	.26 **	.25 **
Self-management	-.47 **	.47 **	.33 **	.22 **	.26 **
Social awareness	-.39 **	.38 **	.27 **	.24 **	.37 **
Social skills	-.42 **	.57 **	.34 **	.22 **	.26 **

** $p < .01$, $n = 297$

Table 4

Correlations between ECI, Personality, and Work-Related Outcomes

	EC Behaviors during LGD	LGD Peer Nominations	Age-adjusted number of promotions	Coworker Ratings of Managerial Skills
ECI Clusters				
Self-awareness	.17**	.18**	.15**	.11
Self-management	.18**	.11	.21**	.17*
Social Awareness	.25**	.16*	.20**	.29**
Social Skills	.25**	.20**	.24**	.28**
Personality				
Neuroticism	-.13*	-.05	-.17**	-.20*
Extraversion	.15*	.12*	.09	.08
Openness to Experience	.11	.15*	.14*	-.11
Agreeableness	.13*	.03	.03	.14
Conscientiousness	.20*	.06	.11	.20*

** $p < .01$, * $p < .05$

Table 5

Results of Hierarchical Regression Analyses

	LGD Peer Nominations		Age-adjusted number of promotions		Coworker Ratings of Managerial Skills	
	R^2	ΔR^2	R^2	ΔR^2	R^2	ΔR^2
1. Age	.018	.018*	.045	.045**	.022	.022+
2. NEO Five Factors	.045	.027	.082	.037*	.122	.100*
3. ECI Clusters	.076	.031+	.100	.018	.241	.119**

** $p < .01$, * $p < .05$, + $p < .10$

Appendix

Codebook (Boyatzis, 2003; modified)

(1) Emotional Self-Awareness (Recognizing one's emotions and their effects)

- Expresses own feelings

(2) Accurate Self-Assessment (Knowing one's inner resources, abilities, and limits)

- Acknowledges own strengths and areas of weakness
- Has a sense of humor about self
- Is not defensive in receiving new information or perspectives about oneself

(3) Self-Confidence (A strong sense of one's self-worth and capabilities)

- Acts independently without the need for supervision
- Is confident in own ability
- Decisive
- Presents self in an assured, forceful, impressive, and unhesitating manner
- Has "presence" (e.g., stands out in a group)
- Speaks out for a course of action one believes in even when others disagree

(4) Conscientiousness (Taking personal responsibility for own performance)

- Shows attention to detail (i.e., double checks information for accuracy)
- Is organized and careful in own work

(5) Adaptability (Being flexible in responding to change)

- Willingly changes ideas or perceptions based on new information or contrary evidence
- Applies standard procedures flexibly (e.g., alters normal procedures to fit a specific situation)
- Is comfortable with ambiguity
- Adapts by changing overall strategy, goals, or projects to fit the situation

(6) Achievement Orientation (Striving to improve or meet a standard of excellence)

- Sets own standards and uses them to judge performance
- Expresses dissatisfaction with the status quo and seeks ways to improve performance
- Sets measurable and challenging goals for oneself and others
- Makes decisions, sets priorities, and chooses goals on the basis of calculated cost-benefit analyses
- Anticipates obstacles to a goal in order to overcome them

(7) Initiative (Displays proactivity)

- Finds and acts upon opportunities
- Acts rather than simply waiting to study one's options

(8) Empathy (Sensing others' feelings, perspectives, and takes an active interest in their concerns)

- Asks questions to understand another person

- Respects, treats with courtesy, and relates well to people of diverse background
- Responds to stereotyping by stating and appreciating person's uniqueness
- Demonstrates an ability to see things from someone else's perspective
- Understands the underlying causes for someone's feelings, behavior, or concern

(9) Organizational Awareness (Reading social and political currents ("Airsopac"))

- Accurately reads key relationships and social networks in groups, organizations, or the larger world
- Understands the organization's values and culture
- Understands political forces at work in the organization
- Understands the history and reasons for continuing organizational issues

(10) Inspirational Leadership (Inspiring and guiding individuals and groups)

- Leads by giving direction and by using one's formal authority
- Consistently and visibly leads by example and uses a clear standard for teams and colleagues
- Inspires others to action by articulating a compelling mission or vision

(11) Influence (Wielding effective tactics for persuasion)

- Expresses concern with own image and reputation, or his/her organization's
- Uses factual arguments to persuade and influence others
- Gains the buy-in of influential parties and enlists their help in convincing others (within the team)
- Gets people to "buy-in" or take ownership of ideas or plans

(12) Communications (Listening openly and sending convincing messages)

- Uses non-verbal cues like tone of voice to focus on the message
- Uses examples and/or visual aids to effectively clarify or emphasize the message
- Effective in give-and-take with an audience
- Invites dialogue when communicating
- Fine tunes delivery in accord with audience's mood and emotional reaction

(13) Conflict Management (Negotiating and resolving disagreements)

- Brings disagreements and grievances into the open
- Communicates the positions of those involved in a conflict to all concerned
- Focuses disagreements on the issues or actions involved rather than the person
- Helps de-escalate conflicts
- Finds a common ideal to which all parties in a conflict can endorse

(14) Teamwork & Collaboration (Working with others and creating group cooperation and/or collaboration toward shared goals)

- Maintains cooperative working relationships
- Shares information to foster collaboration
- Expresses positive expectations and respect for others at work
- Values, solicits, and uses others' input

Codebook Rating Form

	MEASURES	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	Emotional Self-Awareness Recognizing one's emotions and their effects					
2	Accurate Self-Assessment Knowing one's inner resources, abilities, and limits					
3	Self-Confidence A strong sense of one's self-worth and capabilities					
4	Conscientiousness Taking personal responsibility for own performance					
5	Adaptability Being flexible in responding to change					
6	Achievement Orientation Striving to improve or meet a standard of excellence					
7	Initiative Displays proactivity					
8	Empathy Sensing others' feelings, perspectives, and takes an active interest in their concerns					
9	Organizational Awareness Reading social and political currents ("Airsopac" Case)					
10	Inspirational Leadership Inspiring and guiding individuals and groups					
11	Influence Wielding effective tactics for persuasion					
12	Communications Listening openly and sending convincing messages					
13	Conflict Management Negotiating and resolving disagreements					
14	Teamwork & Collaboration Working with others and creating group cooperation and/or collaboration toward shared goals					