Emotional Intelligence, Cognitive Intelligence, and Job Performance

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This paper examines how emotional intelligence and cognitive intelligence are associated with job performance. We develop and test a compensatory model that posits that the association between emotional intelligence and job performance becomes more positive as cognitive intelligence decreases. We report the results of a study in which employees completed tests of emotional intelligence and cognitive intelligence, and their task performance and organizational citizenship behavior were assessed by their supervisors. Hypotheses from the model were supported for task performance and organizational citizenship behavior directed at the organization, but not for organizational citizenship behavior directed at individuals. We discuss the theoretical implications and managerial ramifications of our model and findings.●

One of the most provocative ideas to emerge from recent discussions of management concerns the possibility that a new form of intelligence pertaining to emotions is related to the performance of organization members (Goleman, 1998; Caruso and Salovey, 2004). According to this idea, some organization members may perform effectively because they have high emotional intelligence. Emotional intelligence is a set of abilities that includes the abilities to perceive emotions in the self and in others, use emotions to facilitate performance, understand emotions and emotional knowledge, and regulate emotions in the self and in others (Mayer and Salovey, 1997). The concept of emotional intelligence has had an unusually important impact on managerial practice (Ashkanasy and Daus, 2002). Several organizations have incorporated emotional intelligence into their employee development programs (*Fast Company,* 2000), and some business schools have added the training of emotional competencies to their curriculums (Boyatzis, Stubbs, and Taylor, 2002). The appeal of emotional intelligence may reflect the idea that success is not simply determined by well-known abilities, such as verbal and quantitative abilities, but also by abilities pertaining to emotions.

Despite the popular interest, there is a paucity of studies on how emotional intelligence is related to job performance. As a result, knowledge of whether emotional intelligence is related to job performance and of the mechanisms that may underlie such a relation is limited. This uncertainty has contributed, in part, to criticisms of the scientific status of emotional intelligence in organizational research (Becker, 2003; Landy, 2005; Locke, 2005). Barrett and his colleagues (2001: 1) referred to emotional intelligence as "the Madison Avenue approach to science and professional practice," implying that the popularity of emotional intelligence rests on crafty advertising as opposed to rigorous scientific evidence.

The results of past research on emotional intelligence and job performance—defined as the degree to which an individual helps the organization reach its goals (Motowidlo, Borman, and Schmit, 1997)—are mixed. Some studies suggest that emotional intelligence and job performance are positively related. These studies found that emotional intelligence predicts the performance of undergraduate students on a single task (Lam and Kirby, 2002), the classroom performance of

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managers and professionals (Sue-Chan and Latham, 2004), the collection performance of account officers (Bachman et al., 2000), sales performance (Wong, Law, and Wong, 2004), and supervisory ratings of job performance (Slaski and Cartwright, 2002; Law, Wong, and Song, 2004). Another study found that the emotional intelligence of teams of students predicts the performance of these teams at the initial stages of a project (Jordan et al., 2002).

Other studies have suggested that there is no relation or an inconsistent relation between emotional intelligence and job performance. These studies have found no relation or an inconsistent relation between emotional intelligence and performance on particular tasks (Austin, 2004; Day and Carroll, 2004), academic performance (Petrides, Frederickson, and Furnham, 2004), and supervisory ratings of job performance (Sosik and Megerian, 1999; Janovics and Christiansen, 2001). One study found that the emotional intelligence of teams was related to one of six measures of team performance (Feyerherm and Rice, 2002), and a study of MBA students found that the emotional intelligence of groups was unrelated to group performance (Rapisarda, 2002).

The preceding review reveals a puzzling set of results that may arise from an emphasis on a potential linear effect of emotional intelligence on job performance. Researchers have built the case for emotional intelligence, in part, by arguing that it explains variance in job performance that is not explained by extant constructs such as cognitive intelligence (Mayer and Salovey, 1997; Goleman, 1998; Mayer, Salovey, and Caruso, 2000). This argument proposes, for instance, that emotional intelligence and cognitive intelligence make independent and complementary linear contributions to job performance. Linear effect models, however, may be overly simplistic and incomplete. The large variation across studies led the authors of a meta-analysis of emotional intelligence and workplace performance to suggest that moderating variables exist (Van Rooy and Viswesvaran, 2004). Arguments that abilities may compensate for one another also point to moderation. Carroll (1993) suggested that an individual who is low on an ability that is related to performance can compensate for that weakness by being high on a different ability that is also related to performance. Likewise, Viswesvaran and Ones (2002) hinted that some individual difference characteristics may compensate for low cognitive intelligence. Such compensatory effects form the basis of interactive models so that, for example, a specific ability predicts performance more strongly in a person who lacks other abilities than in a person who has other abilities that are related to performance.

Compensatory effects may explain why emotional intelligence predicted job performance in some past studies but not in others. If compensatory effects exist, emotional intelligence should predict job performance only some of the time, depending on the other abilities that individuals possess. Researchers have not considered compensatory effects in models of emotional intelligence and job performance. We introduce compensatory effects to the study of emotional intelligence by developing and testing a compensatory model

of how emotional intelligence and cognitive intelligence are jointly associated with job performance.

A COMPENSATORY MODEL OF EMOTIONAL INTELLIGENCE, COGNITIVE INTELLIGENCE, AND JOB PERFORMANCE

We propose a compensatory model in which cognitive intelligence moderates the association between emotional intelligence and job performance, so that the association becomes more positive as cognitive intelligence decreases. In our model, emotional intelligence is conceptualized as a set of abilities pertaining to emotions. Mayer and Salovey (1997) identified four subsets of abilities subsumed by emotional intelligence: the abilities to perceive emotions, use emotions to facilitate performance, understand emotions and emotional knowledge, and regulate emotions. Davies, Stankov, and Roberts (1998) proposed a similar model, but we focus on Mayer and Salovey's (1997) model because it was the only model that was supported by a confirmatory factor analysis (Mayer, Caruso, and Salovey, 2000) and for which a measure with desirable psychometric properties was available (Mayer, Salovey, and Caruso, 2002) when we initiated our study. Consistent with Wong and Law's (2002) reasoning, we treat emotional intelligence as a latent multidimensional construct (Law, Wong, and Mobley, 1998) and therefore focus on the broad construct of emotional intelligence rather than on each of its dimensions.

Emotional Intelligence as an Intelligence

In our compensatory model, emotional intelligence is conceptualized as a type of intelligence. There is a debate about the use of the term *intelligence* in *emotional intelligence* (Roberts, Zeidner, and Matthews, 2001; Becker, 2003; Brody, 2004). We use the term emotional intelligence for two reasons. First, the definition of emotional intelligence is consistent with extant definitions of intelligence. Schmidt and Hunter (2000: 3) defined intelligence as the "ability to grasp and reason correctly with abstractions (concepts) and solve problems." After defining intelligence, however, Schmidt and Hunter (2000) equated the terms intelligence and general intelligence on the basis of precedent and used the terms interchangeably. We disagree with Schmidt and Hunter (2000) because their definition of intelligence can be applied to specific content domains such as the domain of emotion and, therefore, intelligence does not always correspond to general intelligence. We use Schmidt and Hunter's (2000) definition of intelligence and qualify the term intelligence to indicate the content domain of interest. Hence, general intelligence is the general ability to reason correctly with abstractions (concepts) and solve problems. Emotional intelligence can be conceptualized as the ability to grasp and reason correctly with emotional abstractions (emotional concepts) and solve emotional problems.

Second, the construct of emotional intelligence meets the conceptual, correlational, and developmental criteria of an intelligence proposed by Mayer, Caruso, and Salovey (2000), based on their review of the research on intelligence. To

meet the conceptual criterion of an intelligence, a construct must reflect abilities rather than tendencies to act in certain ways (Carroll, 1993). This criterion is based on an important distinction between abilities and personality traits. Abilities reflect "the possible variations over individuals in the liminal [threshold] levels of task difficulty . . . at which, on any given occasion in which all conditions appear to be favorable, individuals perform successfully on a defined class of tasks" (Carroll, 1993: 8). As such, abilities represent what a person can do in specific situations—situations in which conditions are favorable. By contrast, personality traits represent what a person typically does across situations and over time (McCrae and John, 1992). Mayer and Salovey's (1997) model of emotional intelligence focuses strictly on abilities and hence satisfies the conceptual criterion of an intelligence. Mixed models of emotional intelligence include abilities, personality traits, and various other concepts (Bar-On, 2001; Tett, Fox, and Wang, 2005). For example, Bar-On's (2001) model includes, among other characteristics, social responsibility and optimism, which are rarely considered to be abilities. Mixed models include concepts that are outside the definition of abilities and hence do not meet the conceptual criterion of an intelligence.

To meet the correlational criterion of an intelligence (Carroll, 1993; Neisser et al., 1996), a construct must correlate with yet be different from other intelligences. Correlations between emotional intelligence and cognitive and verbal intelligence have been found to range from .05 (Ciarrochi, Chan, and Caputi, 2000) to .45 (Schulte, Ree, and Carretta, 2004). These findings suggest that as much as 20 percent of emotional intelligence overlaps with other intelligences and, therefore, over 80 percent of emotional intelligence is separate from other intelligences. These findings reveal that emotional intelligence meets the correlational criterion of an intelligence.

To meet the developmental criterion of an intelligence, a construct must have the potential to improve over time. Empirical evidence accords an important role to experience and learning in the development of emotional intelligence. There is considerable evidence that the familial environment affects children's development of emotional abilities (Saarni, 1999). There is also evidence that individuals can be trained to recognize emotions in photographs of facial expressions (Elfenbein, 2006) and to use better strategies to manage their emotions (Totterdell and Parkinson, 1999). Normative data showing that older individuals obtain higher emotional intelligence test scores than younger individuals (Mayer et al., 2003) also suggest that emotional intelligence meets the developmental criterion of an intelligence.

Emotional Intelligence and Cognitive Intelligence

Emotional intelligence and cognitive intelligence are related yet distinct constructs in our compensatory model. In the dominant model of mental abilities, the different abilities are structured hierarchically (Carroll, 1993). General intelligence (or g) is "the general efficacy of intellectual processes" (Ackerman, Beier, and Boyle, 2005: 32) and is at the apex. Gener-

al intelligence is implied by positive correlations among ability measures and is reflected in performance on all mental tasks (Spearman, 1904; Jensen, 1998). General intelligence subsumes several sets of abilities that represent specializations of general intelligence into broad content or process areas in ways that reflect experience and learning (Carroll, 1993).

We conceptualize emotional intelligence and cognitive intelligence as separate broad sets of abilities that are subsumed under general intelligence in the hierarchical model. Emotional intelligence represents the specialization of general intelligence in the area of emotions in ways that reflect experience and learning about emotions. This conceptualization is consistent with Carroll's (1993) finding, for example, that general intelligence subsumes the psychological ability, defined as the "ability to judge correctly the feelings, moods, motivations of individuals" (Wedeck, 1947: 133). Cognitive intelligence represents the specialization of general intelligence in the domain of cognition in ways that reflect experience and learning about cognitive processes such as memory (Schaie, 2001; Brody, 2004). This conceptualization is consistent with Carroll's (1993) finding of eight broad sets of cognitive abilities.

Emotional intelligence and cognitive intelligence should be positively associated because they are both subsumed under general intelligence. The research reviewed above reveals that people with high cognitive intelligence tend to have high emotional intelligence and that people with low cognitive intelligence tend to have low emotional intelligence. Emotional intelligence and cognitive intelligence are separate constructs, however, because they represent the specialization of general intelligence in separate content domains. The influence of the familial environment explains, in part, why emotional intelligence and cognitive intelligence do not correspond perfectly. Parents who talk about emotions with their children and use emotions in explanations of their discipline tactics facilitate children's development of emotional abilities (Cassidy et al., 1992; Denham et al., 1997). Individuals raised in familial environments that are favorable to the development of emotional abilities may thus have high emotional intelligence despite having low cognitive intelligence. Conversely, individuals raised in emotionally impoverished familial environments may have low emotional intelligence despite having high cognitive intelligence.

Emotional Intelligence, Cognitive Intelligence, and Job Performance

Cognitive intelligence is positively related to the dimensions of job performance—task performance and organizational citizenship behavior (OCB)—in most, if not all jobs (Motowidlo and Van Scotter, 1994; Schmidt and Hunter, 1998; Chan and Schmitt, 2002). Task performance concerns the core substantive duties that are formally recognized as part of a job, and OCB concerns activities that contribute to the achievement of the objectives of an organization but that are not necessarily formally recognized as part of a job (Organ, 1988; Borman and Motowidlo, 1997; Rotundo and Sackett, 2002). In theory, cognitive intelligence enhances task performance through the

knowledge of facts, procedures, and rules relevant to the technical core of the job (Motowidlo, Borman, and Schmit, 1997). Cognitive intelligence enhances OCB through the knowledge of facts, procedures, and rules relevant to effective helping, cooperating, and endorsing the organization (Motowidlo, Borman, and Schmit, 1997).

Individuals with low cognitive intelligence may reap relatively large returns from high emotional intelligence because they tend to exhibit low job performance in most, if not all jobs. When job performance is low, the room for correction and improvement is large. For example, a salesperson who fails to hold the interest of potential customers has high potential for reducing mistakes in the future. Job performance that is not attained through cognitive intelligence may be attained through emotional intelligence via multiple complementary mechanisms. The first mechanism concerns expertise at identifying and understanding the emotions of other individuals. In most, if not all jobs, organization members interact with supervisors, coworkers, support staff, and outsiders such as customers, clients, or patients. These individuals publicly display their emotions through facial, vocal, and bodily signals that provide important information about their goals, attitudes, and intentions (Rafaeli and Sutton, 1987; Sutton, 1991). This information may, in turn, be converted into high task performance by individuals with high emotional intelligence and low cognitive intelligence. An employee who accurately detects colleagues' emotions may facilitate coordination and interpersonal functioning that may, in turn, enhance task performance (Law, Wong, and Song, 2004). Information about other people's goals, attitudes, and intentions may also be converted into frequent OCB by individuals with high emotional intelligence and low cognitive intelligence. For example, these individuals can detect other individuals' sadness and anxiety, which often signal a need for assistance (Eisenberg, 2000), and therefore they may exhibit frequent OCB.

A second mechanism by which emotional intelligence may enhance the job performance of individuals with low cognitive intelligence concerns how regulating emotion influences the quality of social relationships. Employees who generate and display genuine emotions elicit more favorable reactions than employees who choose to display fake emotions (Grandey, 2003; Grandey et al., 2005). Employees who display genuine concern about their coworkers' problems should build stronger relationships than employees whose concern seems less genuine. Individuals with high emotional intelligence and low cognitive intelligence may employ their abilities to manage emotions to develop good social relationships (Wong and Law, 2002) that may in turn enhance task performance via advice and social support (Sparrowe et al., 2001; Pearce and Randel, 2004). Good social relationships may also compel employees to engage in OCB frequently to benefit close colleagues.

A third mechanism by which emotional intelligence may enhance the job performance of individuals with low cognitive intelligence concerns the effects of emotions on how people think and act (Loewenstein and Lerner, 2003; Seo,

Feldman Barrett, and Bartunek, 2004). Emotionally intelligent individuals with low cognitive intelligence may achieve high levels of task performance and OCB in most, if not all jobs by managing their emotions in ways that enhance their motivation and the quality of their decisions (Law, Wong, and Song, 2004). A manager who understands that anger tends to lead people to underestimate the degree of risk in situations (Lerner and Keltner, 2001) may suppress anger before making an important financial decision and, in turn, exhibit good task performance. In addition, an organization member who understands that motivation is often enhanced by positive emotions (Erez and Isen, 2002) and successfully boosts positive emotions may exert more effort to engage in OCB.

The preceding discussion suggests that emotional intelligence may positively relate to the job performance of organization members with low cognitive intelligence and, as such, compensate for low cognitive intelligence. Emotional intelligence, however, should become less positively associated with job performance as cognitive intelligence increases. Individuals with high cognitive intelligence are expected to exhibit high job performance and hence leave little room for correction and improvement. For example, a doctor who makes few diagnostic errors has little potential for reducing errors in the future. Although emotional intelligence may help individuals with high cognitive intelligence identify other people's emotions, manage their own emotions, improve their own decisions, and enhance their own motivation, emotional intelligence should contribute little to their job performance because they already achieve high job performance. The compensatory model thus suggests the following hypotheses:

Hypothesis 1: The association between emotional intelligence and task performance becomes more positive as cognitive intelligence decreases.

Hypothesis 2: The association between emotional intelligence and organizational citizenship behavior (OCB) becomes more positive as cognitive intelligence decreases.

METHOD

Participants and Procedure

The participants were 175 full-time employees of a large public university. Their mean age was 41 (s.d. = 11, range = 22 to 65), and 67 percent were female. Participants had an average of 19 full years of work experience (s.d. = 11, range = 0 to 49 full years) and had worked at the university for an average of 10 full years (s.d. = 9, range = 0 to 37 full years). We coded participants' jobs using the Occupational Information Network (O*NET; United States Department of Labor, 2001), a classification system that covers all occupations in which work is performed for pay or profit. We coded jobs using participants' descriptions of their occupations and work tasks. Occupations were represented as follows: building and grounds cleaning (1, or 1 percent); business and financial operations (12, or 7 percent); computer and mathematical (28, or 16 percent); education, training, and library (49, or 28 percent); installation, maintenance, and repair (1, or 1 per-

cent); legal (1, or 1 percent); management (37, or 21 percent); office and administrative support (41, or 23 percent); personal care and service (1, or 1 percent); and protective service (3, or 2 percent). We did not code the job of one person who did not answer the questions concerning occupation and work tasks.

We recruited participants via an e-mail message sent to approximately 750 managerial, administrative, and professional staff. The message invited full-time employees of the university who had been working in their job under the same supervisor for at least three months to participate in a study of important work outcomes. Before taking part in the study, participants obtained a verbal agreement from their supervisors that they would provide ratings of job performance, to maximize the response rate. To maximize the rate of response to our e-mail invitation, we stressed the confidentiality of the information provided (Fink, 1995). We emphasized the importance of research to the status of the organization, because individuals are motivated to enhance the status of the groups to which they belong (Ellemers, Wilke, and van Knippenberg, 1993). We provided a monetary incentive (Fink, 1995). Finally, we indicated that participants would receive a report on the results. This technique is effective because people like to learn about their own behavior and that of their colleagues (Alreck and Settle, 2004).

We obtained a response rate of 23 percent, which is a conservative estimate calculated with the assumption that each person received, opened, and read the e-mail invitation. This response rate is similar to the typical response rate for mailed organizational surveys (Fink, 1995; Alreck and Settle, 2004). To ascertain the degree of similarity between our sample and the entire managerial, administrative, and professional workforce of the organization, we compared their demographic characteristics. The sample did not differ from the organization's workforce with respect to the percentage of women [67 percent in our sample compared with 62 percent in the organization, $t(174) = 1.44$, $p = .15$], tenure in the organization [116 months in our sample compared with 126 months in the organization, $t(173) = 1.25$, $p = .21$], the percentage of individuals with a Bachelor-level education [59 percent in our sample compared with 66 percent in the organization, $t(174) = 1.84$, $p = .07$], and the percentage of individuals with a Ph.D.-level education [2 percent in our sample compared with 2 percent in the organization, $t(174) = .30$, $p = .76$]. The percentage of individuals with a Master's-level education was smaller in our sample (10 percent) than in the organization (22 percent) [$t(174) = 5.18$, $p < .001$]. The average age in our sample was slightly younger than in the organization's workforce [41 in our sample compared with 43 in the organization, $t(171) = 3.05$, $p < .01$].

There were two stages of data collection. In the first stage, we scheduled interested potential participants for a 100-minute session held in a laboratory room. A total of 205 individuals completed the first stage. No more than five participants were scheduled for each session. During this session, participants provided informed consent and completed a series of tests and questionnaires, including tests of emo-

tional intelligence and cognitive intelligence. We administered the test of cognitive intelligence first because it requires a standard procedure. The order in which the other tests and questionnaires were administered was randomly assigned and counterbalanced to alleviate fatigue and carryover effects (Bickart, 1993). Participants completed all tests and questionnaires on a computer except for the test of cognitive intelligence, which they completed using paper and pencil. Participants were compensated $75 CAD.

In the second stage of data collection, we contacted the supervisor of each participant via e-mail within one week of the participant's completing the laboratory session. Supervisors provided informed consent and completed measures of participants' job performance on a questionnaire on the Internet. Supervisors who preferred to complete the questionnaire on paper received a paper copy along with a self-addressed stamped envelope. Supervisors were compensated $25 CAD. Once supervisors completed the job performance measures, the participants received an additional $25 CAD, for a total of $100 CAD. We obtained assessments of job performance for 175, or 85 percent, of the 205 employees. Some of the employees were rated by the same supervisor. The 175 assessments were provided by 106 supervisors. The 175 participants for whom measures of job performance were available are the focus of the study.

Measures

Emotional intelligence. We administered the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT; Mayer, Salovey, and Caruso, 2002), a 141-item ability test of emotional intelligence. The MSCEIT contains tasks that ask respondents to identify emotions in photographs of faces and in images and landscapes, compare different emotions to different sensations such as colors, indicate how emotions influence thinking and reasoning, assemble emotions into complex feelings, identify how emotions transition from one to another, and rate the effectiveness of different emotion regulation strategies in both intrapersonal and interpersonal contexts. The MSCEIT is scored by the test publisher using a copyrighted scoring system. Respondents receive credit to the extent that their answers match the answers provided by experts who are members of the International Society for Research on Emotion. Total scores are converted to interpretable normalized standard scores with a mean of 100 and a standard deviation of 15. Analyses repeated using a different scoring system that involves comparing respondents' answers to those of a large normative sample of lay people from around the world produced virtually the same results. For the sake of brevity, we report only the results with the expert scoring system.

We chose the MSCEIT for several reasons. The MSCEIT is an ability test in which respondents are presented with emotional problems and asked to choose the best answer among a set of options (Mayer, Caruso, and Salovey, 2000). The ability test approach to measuring emotional intelligence addresses some of the serious limitations of the competing self-report and peer-report approaches. The self-report approach,

consisting of measuring emotional intelligence through self-reports using Likert-type scales, is limited because (1) people tend to have inflated views of their abilities, with narcissism explaining approximately 20 percent of the variance in self-reported abilities (Gabriel, Critelli, and Ee, 1994), (2) people tend to fake responses and report having higher abilities than they believe they have (Donovan, Dwight, and Hurtz, 2003), and (3) people cannot know with confidence whether their abilities are higher than their colleagues' abilities (Paulhus, Lysy, and Yik, 1998). The peer-report approach, consisting of asking peers to provide ratings of a target's emotional intelligence using Likert-type scales, is also limited because (1) peers may lack opportunities to ascertain threshold levels that determine ability levels, and (2) there may be few directly observable outcomes of some emotional abilities, such as the ability to understand emotions. We also chose the MSCEIT because it exhibits a high test-retest correlation (.86; Brackett and Mayer, 2003) and high internal reliability (above .90; Brackett and Mayer, 2003; Mayer et al., 2003). In addition, there is compelling evidence for its validity. A confirmatory factor analysis of 2,112 responses showed that the factor structure of the responses corresponds to the conceptual model (Mayer et al., 2003). Studies have also shown appropriate discriminant validity with personality traits (Brackett and Mayer, 2003) and criterion validity with outcomes such as the quality of social interactions (Lopes et al., 2004, 2005).

Cognitive intelligence. We administered the Culture Fair Intelligence Test, Scale 3, Form A (Cattell, 1973) to assess cognitive intelligence. Fifty items are divided into four timed subtests that involve different perceptual tasks to avoid reliance on a single skill. The first 13-item subtest lasts three minutes and presents the respondent with an incomplete series of figures. The respondent chooses, from among the choices provided, the answer that best continues the series. The second 14-item subtest lasts four minutes and presents the respondent with five figures and asks which two figures are in some way different from the three others. The third 13-item subtest lasts three minutes and asks the respondent to choose one of six figures that completes a matrix of figures. The final 10-item subtest lasts two and a half minutes and requires the respondent to select, from five provided choices, the one that duplicates the conditions in a comparison figure. Correct answers are counted, and raw totals are converted to interpretable normalized standard scores with a mean of 100 and a standard deviation of 15 using a conversion table in the manual.

We chose the Culture Fair Intelligence Test for several reasons. The test exhibits adequate internal reliability (.74; Cattell, 1973). The validity of the test is supported by considerable evidence. The test correlates highly with other tests of cognitive intelligence, including the Wechsler Adult Intelligence Scale (r = .74) and the General Aptitude Test Battery (r = .74; Cattell, 1973). The test predicts job outcomes (e.g., Turnage and Muchinsky, 1984), memory performance (e.g., Maylor, 1993), and processing speed (e.g., Smith and Stanley, 1987). Finally, at 12.5 minutes, with 10 additional minutes of instructions, it is shorter than other valid tests such as the

standard form of Raven's Progressive Matrices and the Weschler Adult Intelligence Scale. Given the long duration of our study, a longer test may have resulted in a decline in the quality of the data due to fatigue.

Job performance. We administered a five-item scale adapted from McCarthy and Goffin (2001) to assess task performance. Supervisors rated employees' (1) effectiveness in displaying job knowledge and skill, (2) effectiveness in verbal and written communication, (3) effectiveness in taking charge when required, (4) degree to which they set high standards and strive to meet them, and (5) quickness in learning, on scales of 1, "strongly below average," to 7, "strongly above average."

We administered a 16-item scale from Lee and Allen (2002) to assess organizational citizenship behavior (OCB). Supervisors indicated the degree to which employees engaged in 16 behaviors at work on scales of 1, "not at all," to 5, "very much." Eight items assessed OCB directed at individuals (OCBI; e.g., "help others who have been absent"), and eight items assessed OCB directed at the organization (OCBO; e.g., "defend the organization when other employees criticize it"). Consistent with past research (Williams and Anderson, 1991; Organ, 1997), we analyzed the dimensions of OCB separately because different results are often obtained for them.

We chose supervisory ratings of task performance and OCB because of the several advantages that they provide (Rynes, Gerhart, and Parks, 2005). Supervisors provide the majority of the performance ratings in organizations (Bretz, Milkovich, and Read, 1992). Supervisory ratings can be used for virtually any type of job, including jobs in which objective performance is difficult or impossible to measure (Landy and Farr, 1980). A different approach would have required us to exclude participants in jobs such as manager from the study and, in turn, would have reduced our ability to generalize from the results. A broad range of important job behaviors, including variables that are not under the employee's control but that influence performance, can be included in the measurement. For these reasons, researchers consider supervisory ratings to be most likely valid reflections of actual performance (Arvey and Murphy, 1998; Guion, 1998). Although performance ratings collected for research purposes exhibit a .58 correlation with ratings collected for administrative purposes, and both types of ratings exhibit similar correlations with other variables, ratings obtained for research purposes exhibit less leniency error than those obtained for administrative purposes (Harris, Smith, and Champagne, 1995). Accordingly, we ensured supervisors that performance ratings were obtained solely for research purposes.

Control variables (psychological). We controlled for leader-member exchange to rule out an alternative explanation of any results. Leader-member exchange denotes the quality of the relationship between an employee and the employee's supervisor (Graen and Uhl-Bien, 1995). Evidence linking emotional intelligence to the quality of social relationships (Lopes et al., 2004) suggests that emotional intelligence may be

related to leader-member exchange. Moreover, leader-member exchange is related to job performance (Gerstner and Day, 1997), and supervisors may provide lenient ratings to subordinates with whom they have good relationships. Thus, individuals with high emotional intelligence and low cognitive intelligence could have received high ratings because they developed good relationships with their supervisors. To rule out this possibility, supervisors completed the LMX7 measure for leaders (Graen and Uhl-Bien, 1995), as recommended by Gerstner and Day (1997) following their literature review and meta-analysis. Using supervisors' assessments of leader-member exchange may yield a conservative test because supervisors provided the ratings of job performance and, therefore, the ratings of job performance may be biased most by the supervisors' assessments of leader-member exchange. The LMX7 measure includes seven items rated on 5-point scales with varying anchors. For example, the anchors to the item "How would you characterize your working relationship with your employee?" range from 1, "extremely ineffective," to 5, "extremely effective."

Controlling for leader-member exchange by itself is insufficient to rule it out completely as an alternative explanation of any results because we predicted an interaction. The interaction between leader-member exchange and cognitive intelligence may carry a joint association of emotional intelligence and cognitive intelligence with job performance, even in the presence of leader-member exchange by itself (Hull, Tedlie, and Lehn, 1992). That is, there could be an interaction between leader-member exchange and cognitive intelligence that looks essentially the same as the hypothesized interaction between emotional intelligence and cognitive intelligence, so that the association between leader-member exchange and job performance becomes more positive as cognitive intelligence decreases. We verified that this was not the case by including both leader-member exchange and the interaction term for leader-member exchange and cognitive intelligence as control variables (Hull, Tedlie, and Lehn, 1992).

We also controlled for the Big Five traits of personality that reflect typical ways of acting at a broad level of analysis (McCrae and Costa, 1987; McCrae and John, 1992) because they may act as confounding third variables. Agreeableness represents the tendency to be warm and cooperative; conscientiousness reflects the degree to which people are organized, hardworking, and dependable; emotional stability is the tendency to avoid negative emotional experiences and fluctuations in emotions; extraversion concerns individuals' level of gregariousness, assertiveness, and sociability; and openness to experience concerns people's typical levels of creativity and curiosity. The Big Five traits are conceptually related to the emotion system (Izard, 2001), and a quantitative review revealed that the Big Five traits exhibit correlations ranging from .06 to .21 with emotional intelligence (Mayer, Salovey, and Caruso, 2004). Moreover, every Big Five trait is related to job performance, either universally or in certain jobs (Barrick, Mitchell, and Stewart, 2003). To verify that the Big Five traits did not produce spurious associations between emotional

intelligence and job performance, we administered the 50-item version of the International Personality Item Pool (Goldberg, 1999). This scale contains 10 self-descriptive items for each of the Big Five traits, anchored at 1, "very inaccurate," and 5, "very accurate." Correlations between scores obtained with this scale and the NEO-PI-R, another widely used measure of the Big Five traits, average .77 (Goldberg, 1999).

Control variables (demographic). To conduct conservative tests of the hypotheses, we controlled for education level, the number of hours worked per week, and occupation. Education level was coded as follows: high school degree (1), community college degree (2), some university (3), university degree (4), Master's degree (5), and Ph.D. or Medical Doctor (6). Education level was positively correlated with OCBO. The number of hours worked per week was positively correlated with both task performance and OCBO. Participants in management occupations exhibited higher levels of task performance and both dimensions of OCB than participants who were not in these occupations. Participants in office and administrative occupations exhibited lower levels of task performance and OCBO than participants who were not in these occupations. Finally, participants in computer and mathematical occupations exhibited lower levels of OCBO than participants who were not in these occupations.[1] We created dummy codes for management, office and administrative support, computer and mathematical, and other occupations. We used other occupations as the comparison category. Neither emotional intelligence nor job performance was related to age, gender, tenure in the organization, or total years of work experience. Subsidiary analyses showed that the substantive conclusions were virtually identical when we also controlled for these demographic variables.

Analysis

Construct adequacy and discriminant validity of the test of emotional intelligence. We used confirmatory factor analysis to test whether the observed measures were associated with their respective constructs. We examined the fit of the model and verified that each indicator loaded significantly with its intended construct. We then formally assessed the discriminant validity of the test of emotional intelligence by testing additional models that constrain the association between two latent constructs to 1 and using a chi-square test of the difference in fit between the model with the unconstrained association and the model with the constrained association (Bagozzi and Phillips, 1982; Anderson and Gerbing, 1988). Discriminant validity is inferred if the model with the constrained association provides a significantly worse fit to the data than the model with the unconstrained association. Additional evidence of discriminant validity is provided if the 95-percent confidence interval for the latent correlation between two constructs in the unconstrained model does not include 1.

We tested a model linking the constructs of emotional intelligence, cognitive intelligence, agreeableness, conscientiousness, emotional stability, extraversion, openness to experi-

1 There are at least three explanations of the differences in job performance across occupations. First, managers may have exhibited higher performance than nonmanagers because strong performers were promoted to managerial jobs. Second, differences in job performance across occupations may have emerged as a result of the characteristics of group leaders, given evidence that the productivity of business units depends on the transformational qualities of leaders (Howell and Avolio, 1993). Third, the university may have had more success recruiting and retaining high-performing employees in some occupations than in others. For these reasons, the differences in job performance across occupations most likely reflect true variance.

ence, leader-member exchange, task performance, OCBI, and OCBO to their measured indicators. To reduce the number of estimated parameters, we used the four subtests of the emotional intelligence test that correspond to the abilities to perceive, use, understand, and regulate emotions and the four subtests of the cognitive intelligence test as indicators. We aggregated the items from the measures of each of the Big Five traits, leader-member exchange, and the OCB dimensions by randomly assigning them to three aggregate indicators per construct (Bagozzi and Edwards, 1998). We did not aggregate the task performance items because there were only five of them. The theorized eleven-factor model, χ^2 (574, N = 175) = 913.97, $p < .001$, CFI = .90, NNFI = .88; SRMSR = .070, RMSEA = .058, provided a reasonable fit to the data (Browne and Cudeck, 1993; Hu and Bentler, 1999). Each item loaded significantly with its intended construct, as evidenced by the t-values greater than 6.70 ($ps < .01$). The results of the tests of discriminant validity, displayed in table 1, support the discriminant validity of the test of emotional intelligence.

Analytical strategy. We used hierarchical multiple regression to test the hypotheses. We centered the continuous predictors to facilitate the interpretation of the findings (Cohen et al., 2003). We entered education level, the number of hours worked per week, the dummy codes for occupation, the Big Five traits, leader-member exchange, the leader-member exchange by cognitive intelligence interaction, emotional intelligence, and cognitive intelligence in step 1 and the emotional intelligence by cognitive intelligence interaction in step 2. If the change in R^2 in step 2 is significant, we can conclude that the interaction between emotional intelligence and cognitive intelligence is a unique predictor of job performance (Aiken and West, 1991; Cohen et al., 2003). Five participants did not reveal their educational level, the number of hours they worked per week, or both. We conducted the analyses using listwise deletion, resulting in a sample of 170 participants. Analyses repeated using the mean replacement procedure revealed the same substantive conclusions. Graphical and statistical analyses (Fox, 1991; Roth and Switzer, 2002; Cohen et al., 2003) revealed that our substantive conclusions were not unduly influenced by any outliers or influential observations.

Table 1

Tests of Discriminant Validity of the Emotional Intelligence Measure

Construct	Latent correlation with emotional intelligence	95-percent confidence interval for the latent correlation	$\Delta\chi^2$ (1)
Agreeableness	.27	.07 to .47	94.83***
Conscientiousness	−.25	−.43 to −.07	133.32***
Emotional stability	.07	−.11 to .25	144.70***
Extraversion	.10	−.08 to .28	142.74***
Openness to experience	.14	−.08 to .36	97.02***
Leader-member exchange	.25	.07 to .43	135.38***
Cognitive intelligence	.68	.54 to .82	35.25***
Task performance	.35	.17 to .53	114.97***
OCBO	.37	.21 to .53	111.44***
OCBI	.20	.02 to .38	134.77***

***$p < .001$.

RESULTS

Descriptive statistics, internal reliability coefficients, and correlations among the variables are shown in table 2. The means and standard deviations for emotional intelligence and cognitive intelligence were close to the normative means and standard deviations of 100 and 15, respectively. Both emotional intelligence and cognitive intelligence were positively correlated with all three dimensions of job performance. Agreeableness and extraversion were positively correlated with task performance and OCBO. Openness to experience was positively correlated with OCBO. None of the personality traits was correlated with OCBI. [2]

Emotional intelligence, cognitive intelligence, and task performance. Hypothesis 1 predicted that the association between emotional intelligence and task performance will become more positive as cognitive intelligence decreases. The results shown in table 3 reveal that the interaction between emotional intelligence and cognitive intelligence predicted task performance. The interaction, graphed in figure 1, is consistent with hypothesis 1. The simple slope representing the association between emotional intelligence and task performance at one standard deviation in cognitive intelligence below the mean, calculated using the procedures described by Aiken and West (1991), is positive and significant, $\beta = .26$, $t(154) = 3.19$, $p < .01$. In contrast, the simple

2
Although some past research has found that conscientiousness is correlated with job performance (Barrick and Mount, 1991; Hurtz and Donovan, 2000), our nonsignificant correlation is consistent with other research. In their meta-analysis, Tett, Jackson, and Rothstein (1991) found a 95-percent confidence interval for the uncorrected correlation between conscientiousness and job performance ranging from –.11 to .35, which would include our correlation of –.06. Past research also suggests that conscientiousness is negatively related to aspects of learning such as acquiring skills and declarative knowledge (Martocchio and Judge, 1997; Colquitt, LePine, and Noe, 2000), which reveals a potential "dark side" to conscientiousness.

Table 2

Means, Standard Deviations, Reliabilities, and Correlations*

Variable	N	Mean	S.D.	1	2	3	4	5	6	7
1. Education	171	3.49	1.29	—						
2. Number of hours worked per week	173	40.53	5.33	.19•	—					
3. Computer and mathematical occupations	175	.16	.37	–.04	–.12	—				
4. Management occupations	175	.21	.41	.24••	.28•••	–.23••	—			
5. Office and admin. support occupations	175	.23	.42	–.37•••	–.16•	–.24••	–.29•••	—		
6. Other occupations	175	.39	.49	.15•	–.01	–.35•••	–.41•••	–.44•••	—	
7. Agreeableness	175	4.28	.47	.10	.11	–.10	.06	–.03	.04	(.75)
8. Conscientiousness	175	4.01	.58	–.07	.09	–.09	.06	.06	–.03	.13
9. Emotional stability	175	3.52	.81	.07	.12	–.12	.11	.01	–.02	.18•
10. Extraversion	175	3.39	.77	.14	.17•	–.12	.10	–.05	.05	.34•••
11. Openness to experience	175	3.83	.49	.22••	.01	–.04	.02	–.09	.10	.25••
12. Leader-member exchange	175	4.17	.56	–.04	.12	–.21••	.22••	–.05	.02	.04
13. Emotional intelligence	175	97.49	16.57	.00	.10	–.11	.13	.04	–.04	.23••
14. Cognitive intelligence	175	102.80	17.56	.24••	.13	–.01	.07	–.23••	.16•	.00
15. Task performance	175	5.35	1.17	.14	.24••	–.11	.21••	–.24••	.11	.17•
16. OCBO	175	3.71	.91	.23••	.27•••	–.21••	.31•••	–.21••	.08	.21••
17. OCBI	175	3.83	.73	.09	.11	–.14	.29•••	–.09	–.05	.10

Variable	8	9	10	11	12	13	14	15	16	17
8. Conscientiousness	(.78)									
9. Emotional stability	.29•••	(.90)								
10. Extraversion	.01	.21••	(.87)							
11. Openness to experience	.03	.15•	.32•••	(.70)						
12. Leader-member exchange	.05	.06	–.09	.00	(.85)					
13. Emotional intelligence	–.14	.03	.08	.11	.19•	(.92)				
14. Cognitive intelligence	–.21•••	-.07	.08	.09	.20•	.47•••	(.81)			
15. Task performance	–.06	.05	.18•	.13	.60•••	.32•••	.35•••	(.91)		
16. OCBO	.04	.08	.22••	.15•	.61•••	.27•••	.35•••	.65•••	(.94)	
17. OCBI	–.08	.03	.13	-.01	.59•••	.15•	.28•••	.60•••	.78•••	(.91)

• $p < .05$; •• $p < .01$; ••• $p < .001$.
* Values in parentheses along the diagonal are alpha coefficients.

Table 3

Hierarchical Multiple Regression of Job Performance (N = 170)

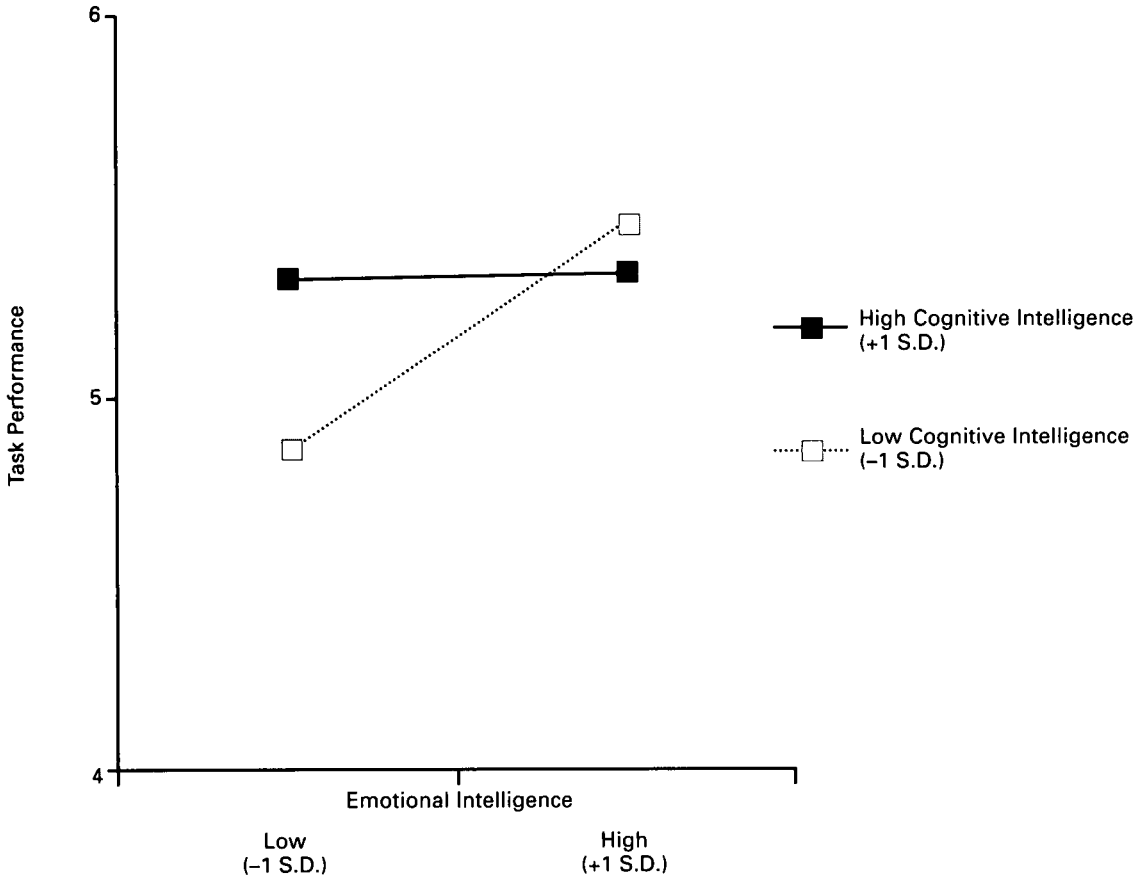
	Task Performance				OCBO				OCBI			
	Step 1		Step 2		Step 1		Step 2		Step 1		Step 2	
Variables Entered	B	β	B	β	B	β	B	β	B	β	B	β
Constant	5.19		5.24		3.52		3.57		3.57		3.59	
Education	.04	.04	.03	.04	.09*	.13*	.09*	.13*	.03	.04	.02	.04
Number of hours worked per week	.02	.10	.02	.09	.02	.10	.01	.07	−.01	−.03	−.01	−.05
Computer and mathematical occupations	.05	.02	.03	.01	−.11	−.05	−.13	−.05	.06	.03	.04	.02
Management occupations	−.08	−.03	−.07	−.02	.19	.09	.20	.09	.32*	.18*	.32**	.18**
Office and administrative support occupations	−.39*	−.15*	−.33	−.12	−.14	−.07	−.09	−.04	.11	.06	.14	.08
Agreeableness	.15	.06	.16	.07	.19	.10	.20	.10	.14	.09	.14	.09
Conscientiousness	−.05	−.02	−.01	−.01	−.05	−.03	−.01	−.01	−.12	−.09	−.10	−.08
Emotional stability	−.06	−.04	−.07	−.05	−.03	−.03	−.04	−.03	−.01	−.01	−.01	−.01
Extraversion	.25*	.17*	.22*	.15*	.19*	.16*	.16*	.14*	.14*	.15*	.13*	.14*
Openness to experience	.03	.01	.06	.03	.01	.01	.05	.03	−.14	−.10	−.13	−.09
Leader-member exchange	1.13***	.54***	1.12***	.54***	.89***	.54***	.88***	.54***	.72***	.55***	.72***	.55***
Leader-member exchange × Cognitive intelligence	−.01	−.08	−.00	−.03	−.01	−.08	−.00	−.03	−.01	−.09	−.00	−.05
Emotional intelligence	.01*	.15*	.01	.13	.00	.06	.00	.04	−.00	−.09	−.00	−.10
Cognitive intelligence	.01	.12	.01	.07	.01*	.15*	.01	.09	.01*	.21*	.01*	.17*
Emotional intelligence x Cognitive intelligence			.00*	−.17*			−.00**	−.20**			.00	−.12
ΔR^2	.50***		.02*		.56***		.03**		.46***		.01	
ΔF	11.25***		6.78*		14.14***		11.34**		9.41***		3.22	
D.f.	14, 155		1, 154		14, 155		1, 154		14, 155		1, 154	

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

slope representing the association between emotional intelligence and task performance at one standard deviation in cognitive intelligence above the mean is not significant, $\beta = .01$, $t(154) = .09$, $p = .93$. Thus, hypothesis 1 is supported.

Emotional intelligence, cognitive intelligence, and organizational citizenship behavior (OCB). Hypothesis 2 predicted that the association between emotional intelligence and OCB will become more positive as cognitive intelligence decreases. We conducted two tests of this hypothesis, one with OCBO and one with OCBI. The results shown in table 3 reveal that the interaction between emotional intelligence and cognitive intelligence predicts OCBO. The interaction, graphed in figure 2, is consistent with hypothesis 2. The simple slope representing the association between emotional intelligence and OCBO at one standard deviation in cognitive intelligence below the mean is positive and significant, $\beta = .19$, $t(154) = 2.54$, $p < .05$. In contrast, the simple slope representing the association between emotional intelligence and OCBO at one standard deviation in cognitive intelligence above the mean is not significant, $\beta = -.11$, $t(154) = -1.35$,

Figure 1. Moderating effect of cognitive intelligence on the association between emotional intelligence and task performance.

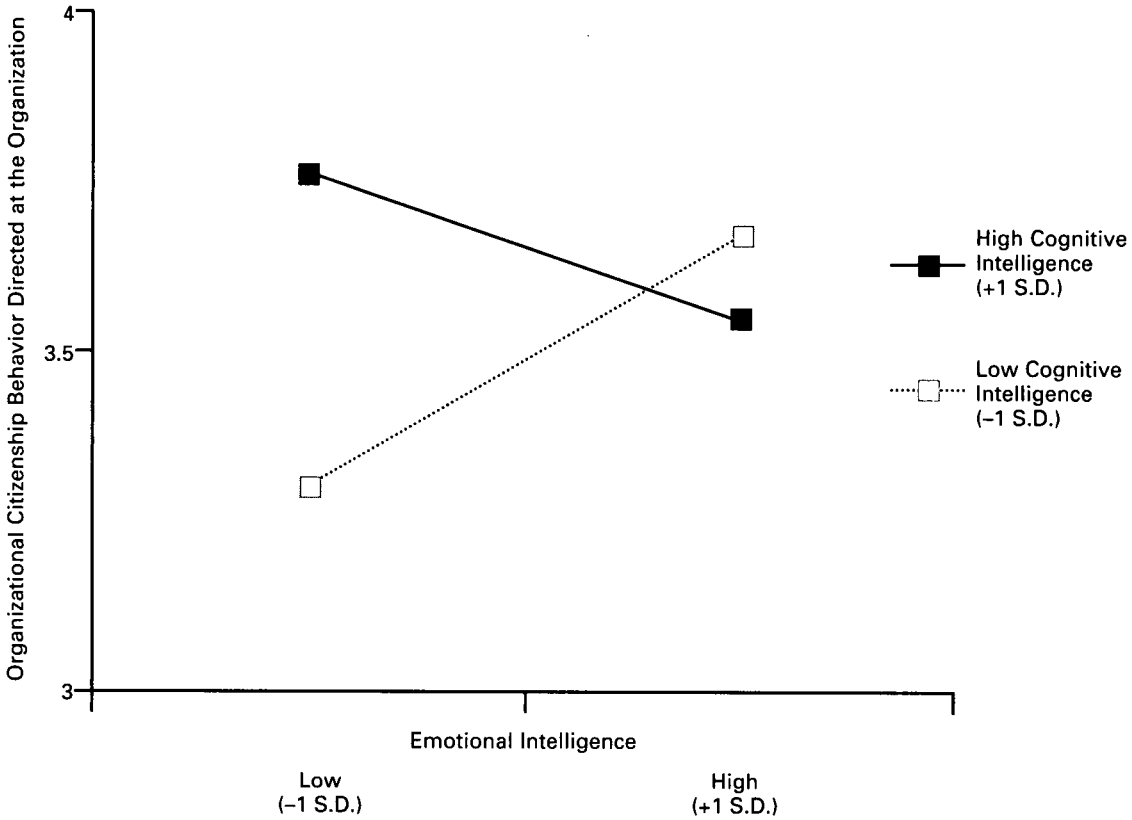


p = .18. Inspection of table 3 also reveals that the interaction of cognitive intelligence and emotional intelligence is not related to OCBI. The hypothesized interaction between emotional intelligence and cognitive intelligence is found for OCBO, but not for OCBI. Thus, hypothesis 2 is partially supported.

Mediational Analyses

We measured leader-member exchange to rule out its potential mediational effects. The analyses reported in table 3, however, do not represent complete tests of mediation. Accordingly, we conducted additional analyses to test for mediation. Both partial and full mediation can be ruled out if the predictor is not related to the potential mediator (James and Brett, 1984; Kenny, Kashy, and Bolger, 1998). The predictor, the emotional intelligence by cognitive intelligence interaction, did not predict two potential mediators, leader-member exchange, $\beta = -.04$, $t(171) = .48$, $p = .63$, or the leader-member exchange by cognitive intelligence interaction, $\beta = .01$, $t(171) = .20$, $p = .84$. There was no evidence that leader-member exchange mediated the associations among emotional intelligence, cognitive intelligence, and job performance.

Figure 2. Moderating effect of cognitive intelligence on the association between emotional intelligence and organizational citizenship behavior directed at the organization.



We also examined whether the Big Five traits acted as mediators. The predictor, the emotional intelligence by cognitive intelligence interaction, did not predict five potential mediators: agreeableness, $\beta = .01$, $t(171) = .07$, $p = .94$; conscientiousness, $\beta = .12$, $t(171) = 1.58$, $p = .12$; emotional stability, $\beta = -.04$, $t(171) = -.45$, $p = .66$; extraversion, $\beta = -.13$, $t(171) = 1.65$, $p = .10$; or openness to experience, $\beta = .06$, $t(171) = .76$, $p = .45$. There was no evidence that the Big Five traits mediated the associations among emotional intelligence, cognitive intelligence, and job performance.

Subsidiary Analyses Involving the Emotional Demands of Jobs

We examined whether the emotional demands of the job affected how emotional intelligence and cognitive intelligence were associated with job performance. In the compensatory model, emotional intelligence compensates for low levels of cognitive intelligence in most, if not all jobs, because effective social interaction, good decisions, and high motivation contribute to job performance in most, if not all jobs. Our theorizing differs from that of Wong and Law (2002), who proposed that emotional intelligence is more strongly related to job performance in emotionally demanding jobs than in other jobs. Wong and Law (2002) found that the interaction between employee-rated emotional demands and emotional

intelligence was a significant predictor of job performance. The interaction between supervisor-rated emotional demands and emotional intelligence, however, was not a significant predictor of job performance by conventional standards.

To shed further light on this issue, we created emotional demands scores for each participant's job using two items from the generalized work activities section ("assisting and caring for others" and "performing for or working with the public") and three items from the work context section ("deal with external customers," "frequency in conflict situations," and "deal with angry/unpleasant people") of O*NET (Glomb, Kammeyer-Mueller, and Rotundo, 2004). The additional "providing a service to others" item used by Glomb, Kammeyer-Mueller, and Rotundo (2004) was removed from O*NET during its most recent revision and, therefore, we did not use it. We computed a score for the emotional demands corresponding to each O*NET job code by standardizing within each of the five scales and then summing the standardized scores. The internal reliability coefficient was .92. For example, the O*NET code 113031.02, which represents the job of financial manager, corresponded to scores of 1.83, 3.33, 2.75, 3.17, and 2.50 for the five items listed above. The standardized scores were –.17, 1.19, .39, 1.66, and .77. The emotional demands score for this O*NET code was the sum of these scores, 3.83. We used the scores associated with each O*NET code to assign each participant the appropriate emotional demands score. Emotional demands scores could not be calculated for 26 participants because of information missing in O*NET.

We regressed job performance on all of the control variables, emotional intelligence, cognitive intelligence, emotional demands, the three two-way interactions, and the three-way interaction of emotional intelligence, cognitive intelligence, and emotional demands (Aiken and West, 1991). The three-way interaction was not a significant predictor of task performance, $\beta = -.05$, $t(128) = -.56$, $p = .58$; OCBO, $\beta = -.12$, $t(128) = -1.57$, $p = .12$; or OCBI, $\beta = -.16$, $t(128) = -1.78$, $p = .08$, revealing no evidence that emotional intelligence and cognitive intelligence predicted job performance differently in jobs with different emotional demands.

DISCUSSION

Past research has implicitly or explicitly proposed that emotional intelligence and cognitive intelligence relate to job performance in independent and complementary linear ways (Goleman, 1998; Mayer, Salovey, and Caruso, 2000). The present study reveals, instead, that emotional intelligence and cognitive intelligence are compensatory with respect to task performance and organizational citizenship behavior directed at the organization (OCBO). Emotional intelligence becomes a stronger predictor of task performance and OCBO as cognitive intelligence decreases. Our results reveal that employees with low cognitive intelligence perform tasks correctly and engage in OCBO frequently if they are emotionally intelligent.

Our findings provide a potential way to reconcile the divergent findings in past research. Presumably, past studies that found an association between emotional intelligence and job

performance had samples of employees with, on average, lower cognitive intelligence than studies that did not find this association. It is difficult to ascertain whether this is the case, however, because only some of the past studies measured cognitive intelligence, and different measures of cognitive intelligence with scores calculated on different scales were administered.

Our findings address the controversy about the usefulness of emotional intelligence for organizational research and managerial practice. Landy (2005) and Zeidner, Matthews, and Roberts (2004) argued against using emotional intelligence to predict job performance unless it makes an incremental linear contribution to prediction. Our results suggest that this argument is overly simplistic. Predictors of job performance such as emotional intelligence may be important in ways other than their incremental linear effects (Murphy, 1996; Hough, 2003). Our results show that emotional intelligence is an important predictor of task performance and OCBO because of its interactive effect with cognitive intelligence. Our results also reveal that using cognitive intelligence tests alone to predict performance entails risk, because employees with low cognitive intelligence can perform effectively if they have high emotional intelligence.

Our hypothesis concerning OCBI was not supported. One possible explanation concerns how abilities and personality traits may predict job performance criteria differently (Hough, 2003). For example, one study found that cognitive intelligence predicts the technical proficiency of soldiers better than their personal discipline, and the opposite is true for personality traits (McHenry et al., 1990). Task performance concerns core substantive duties, and OCBO includes taking action to protect the organization from potential problems and offering ideas to improve the functioning of the organization. The behaviors encompassed by task performance and OCBO may depend on abilities more than does OCBI, which focuses, in large part, on helping others.

Future Directions

Our performance measures consisted of ratings by the supervisors. These measures may be limited by the relatively low interrater reliability of supervisory ratings, which implies that any one supervisory rating includes measurement error (Viswesvaran, Ones, and Schmidt, 1996). We are encouraged by evidence that supervisors agree with each other to a greater extent when they provide ratings for research purposes ($r = .67$ between two raters; Harris, Smith, and Champagne, 1995) than in general (interrater reliability = .52; Viswesvaran, Ones, and Schmidt, 1996). Even so, future research with performance measures other than supervisory ratings, if available, would help to address this limitation of our study.

Our measures of performance invite some alternative explanations of the results. One alternative explanation is that the emotional intelligence of individuals with low cognitive intelligence enhances their likeability and, in turn, their performance ratings. Our research design sheds light on the viability of this alternative explanation. Leader-member exchange is

related to how much the supervisor likes the employee (Dockery and Steiner, 1990), and the mediation analyses revealed no evidence of an intervening role of leader-member exchange. The mediation analyses also revealed no evidence of intervening roles of agreeableness or extraversion that reflect, in part, likeability (Costa and McCrae, 1992; Lopes et al., 2005). The supportive results for task performance and OCBO, but not OCBI, also argue against an alternative explanation based on liking. It is difficult to explain why likeable employees may have received inflated ratings on only two of the three criteria. Finally, past research showing that supervisors like subordinates who perform well (Robbins and DeNisi, 1994) suggests that strong performance by the subordinate leads to both high ratings and liking from the supervisor and casts further doubt on the possibility that individuals with high emotional intelligence and low cognitive intelligence received high ratings because they were liked. Even so, a direct test of the potential role of supervisors' liking of employees is needed.

Another alternative explanation is that emotional intelligence assisted individuals with low cognitive intelligence to manage their impressions well and, in turn, receive high performance ratings. There is conceptual and empirical evidence that subordinates who manage their impressions successfully develop good relationships with their supervisors (Liden and Mitchell, 1989; Wayne and Green, 1993). Therefore, the control for leader-member exchange casts some doubt on a role for impression management. It is also difficult to explain why employees who managed impressions well may have received inflated ratings of task performance and OCBO but not OCBI. From a different perspective, impression management could be viewed as a job skill that supervisors should take into account when rating performance because it may help employees to perform tasks correctly and engage in OCBO frequently. In future research, it would be useful to examine whether impression management plays a substantive role in the associations between emotional intelligence, cognitive intelligence, and job performance.

It would also be interesting for future research to examine whether emotional intelligence is associated with job performance in individuals with low cognitive intelligence because it helps them reach advantageous positions in social networks. Emotional intelligence may help individuals develop links to friends and coworkers that provide assistance that, in turn, contributes to high performance (Mehra, Kilduff, and Brass, 2001; Sparrowe et al., 2001). In addition, individuals who connect disparate groups achieve high performance by brokering between these groups (Burt, 1992). Establishing these connections may often be emotionally challenging because different groups often have different norms and cultures that may be incongruent with one another. Emotional intelligence may help individuals with low cognitive intelligence manage the emotional discomfort of connecting disparate groups and, in turn, achieve high performance.

Emotionally intelligent individuals with low cognitive intelligence may also achieve high job performance because they manage conflict successfully. Past research has found that

relationship conflict, a form of conflict that concerns interpersonal disagreements and incompatibilities, impedes performance because it consumes resources and distracts organization members from tasks (e.g., Jehn, 1997; Jehn and Mannix, 2001). In addition, negative emotions exacerbate the detrimental impact of relationship conflict on performance (Jehn, 1997). Evidence that emotionally intelligent individuals tend to develop close social relationships (e.g., Lopes et al., 2004, 2005) suggests that, compared with their counterparts, they may have less relationship conflict and manage relationship conflict more effectively when it arises.

Exploring the potential role of emotional contagion in the associations between emotional intelligence, cognitive intelligence, and job performance represents another interesting avenue for future research. Emotional contagion is a process by which organization members catch other people's emotions by mimicking their facial expressions and, in turn, experiencing the emotions that they are mimicking (Hatfield, Cacioppo, and Rapson, 1992; Barsade, 2002). Emotional contagion has implications for aspects of performance such as the expenditure of effort, cooperation, and coordination between people (Barsade, 2002; Sy, Côté, and Saavedra, 2005). Emotionally intelligent people with low cognitive intelligence may use emotional contagion to influence other people's emotions and behaviors in ways that enhance their own performance.

It is important to examine further whether the associations between emotional intelligence, cognitive intelligence, and job performance depend on the nature of the job. Our measure of the emotional demands of jobs was based on five job activities and work context items from O*NET that may not capture the entire construct of emotional demands. In addition, the statistical power that was available to detect small-sized ($f^2 = .02$) and medium-sized ($f^2 = .15$) effects (Cohen, 1988) of the interaction between emotional intelligence, cognitive intelligence, and emotional demands was .39 and .99, respectively. Thus, although we can be confident that our analyses would have detected medium-sized effects, we cannot be confident that small-sized effects do not exist. Studies with more complete measures of emotional demands and larger samples are needed.

Finally, future research should examine how to improve the measurement of emotional intelligence. We used an ability test of emotional intelligence to circumvent the limitations of commonly used self-report and peer-report measures. Despite its advantages, this test may not reflect exactly how people process emotional information in real-life social interactions (Matthews, Zeidner, and Roberts, 2002). In addition, the test may require some cognitive abilities such as abilities in the domain of language to complete successfully. We do not consider the potential measurement overlap to be problematic because a substantial degree of overlap would have caused a poor fit in our confirmatory factor analysis and made it difficult to detect the hypothesized interactions. Even so, it will be important to replicate the findings as tests of emotional intelligence are improved.

It is commonly believed that organizations that attract and retain the smartest people will have a competitive advantage, because cognitive intelligence helps workers to process increasingly technical and large amounts of information (Schmidt and Hunter, 1998, 2000; Michaels, Handfield-Jones, and Axelrod, 2001). Our results showing that emotional intelligence compensates for low cognitive intelligence suggest that this common belief represents just one approach to building a successful organization. Organizations can also be successful if they attract and retain people who have high emotional intelligence.

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