

Emotional Intelligence

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Abstract: We report the findings from two studies that examine the association between emotional intelligence and leadership emergence in small groups. In both studies, members of groups completed measures of emotional intelligence and other individual differences prior to working on a group project. Their peers rated their leadership emergence at the conclusion of the project. Overall emotional intelligence and a number of dimensions were associated with leadership emergence over and above cognitive intelligence, personality traits, and gender. These findings were observed when emotional intelligence was measured with an ability test but not when it was measured with a self-report scale. Among the dimensions of emotional intelligence, the ability to understand emotions was most consistently associated with leadership emergence.

Key words: emotional; intelligence; emotion; leadership; leadership emergence

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1. Emotional Intelligence and Leadership Emergence in Small Groups

Emotional intelligence is a set of abilities concerned with processing emotions and emotional information (Maywer & Salovey, 1997; Salovey & Grewal, 2005; Salovey & Mayer, 1990). This concept has generated considerable interest, but some researchers have questioned its validity (Landy, 2005; Roberts, Zeidner & Mastthews, 2001). Emotional intelligence remains controversial, in part, because there are only a few studies that tested whether it is associated with criteria over and above extant predictors, cognitive intelligence and personality traits. The paucity of studies impedes the assessment of incremental validity and leaves open the possibility that other individual differences cause spurious associations between emotional intelligence and criteria.

To evaluate completely the validity of emotional intelligence in applied research, studies that test its associations with new criteria over and above other individual differences are needed (Conte, 2005; Mathews, Zeidner & Roberts, 2002). Past research has shown that emotional intelligence is associated with task performance (Cote, & Miners, 2006), the success of formally appointed leaders (Rosete & Ciarrochi, 2005), and public speaking effectiveness (Rode et al., 2007) over and above both cognitive intelligence and personality traits. The goal of this research is to test whether emotional intelligence exhibits incremental associations with a new criterion, leadership emergence.

Leadership emergence represents the degree to which a person who is not in a formal position of authority influences the other members of a group (Lord, De Vader & Alliger, 1986; Schneier & Goktepe, 1983; Taggar, Hackett & Saha, 1999). In self-managing groups, no member is formally appointed as the leader. Instead, the

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members of self-managing groups assume roles that are flexible and dynamic, so that any member can provide leadership on a specific task. It is possible that one member, several members or no members of a group exhibit leadership emergence. Leadership emergence is a continuous variable because it reflects the degree to which each member exerts influence, rather than the presence or absence of leadership emergence in each member.

The definition of leadership emergence suggests that its correlates may differ from the correlates of the effectiveness of formally appointed leaders. Leadership emergence and leadership effectiveness differ conceptually because they reside at different levels of analysis (Judge, Ilies, Bono & Gerhardt, 2002). Leadership emergence is a within-group phenomenon, so that some members of a group exert more influence than the other members of the same group. Leadership effectiveness, in contrast, is a between-group phenomenon, so that some groups perform better than other groups because they have more effective leaders. Consistent with these arguments, three major traits of personality—conscientiousness, extraversion, and agreeableness—exhibit different associations with leadership emergence and leadership effectiveness (Judge et al., 2002). Similarly, the findings of past research on emotional intelligence and leadership effectiveness (Rosete & Ciarrochi, 2005) may not generalize to leadership emergence.

Early attempts to identify the characteristics of emergent leaders took a highly cognitive approach, focusing on behaviors such as gathering information, seeking opinions, and initiating ideas (Fisher, 1974; Stogdill, 1950). Failing to include emotional concepts in models of leadership emergence, however, may be a serious omission (Persosolido, 2002). A few studies have examined whether some emotional abilities are associated with leadership emergence in groups (Kellett, Humphrey & Sleeth, 2002, 2006; Offermann, Bailey, Vasilopoulos, Seal & Sass, 2004; Wolff, Perscosolido, & Druckat, 2002). The findings reveal that the abilities to perceive and to express emotions may be positively related to leadership emergence.

Our research extends these studies in three significant ways. First, we provide a stronger test of the incremental validity of emotional intelligence with respect to leadership emergence.

Past research has controlled for cognitive intelligence (Kellett et al., 2002, 2006) and some personality traits (Offermann et al., 2004) separately. Thus, we do not know whether emotional intelligence explains variance in leadership emergence that is not explained by both types of individual difference characteristics. In addition, no study has controlled for self-monitoring, a personality trait that reflects the tendency to monitor and to control one's behavior in social situations (Snyder, 1994). Self-monitoring has been linked to leadership emergence (Ellis, 1988; Gerland & Beard, 1979). To increase our confidence that emotional intelligence explains variance in leadership emergence that is not accounted for by extant individual differences, we simultaneously control for the Big Five personality traits (Studies 1 and 2), cognitive intelligence (Study 2), and self-monitoring (Study 2).

Second, we focus on both the broad construct of emotional intelligence and the specific abilities that comprise it to pinpoint how emotional intelligence may contribute to leadership emergence. Past research has examined whether leadership emergence associated with the ability to perceive emotions (Kellett et al., 2002; 2006; Wolff et al., 2006) and the ability to express emotion (Kellett et al., 2006). Other abilities included in models of emotional intelligence, such as the abilities to understand emotions and to regulate emotions (Mayer & Salovey, 1997; Salovey & Mayer, 1990), have not yet been examined in relation to leadership emergence. To fully understand how emotional intelligence is associated with leadership emergence, it is important to explain the other emotional abilities.

Third, there remains a debate about how best to assess emotional intelligence. There have been discussions of the validity of self-report versus ability-based measures of emotional intelligence (Brackett & Mayer, 2003;

Brackett, Rivers, Shiffman, Lerner & Salovey, 2006; Conte, 2005; Roberts et al., 2001). No past study, however, has directly compared the validity of the ability test and self-report scale approaches to measuring emotional intelligence with respect to the criterion of leadership emergence. In this research, we compare the criterion validity and incremental validity of the two approaches to inform future decisions about measurement.

2. The Construct of Emotional Intelligence

Researchers have proposed several models of emotional intelligence that can be broadly categorized as either ability or mixed models (Mayer, Salovey & Caruso, 2000). Ability models define emotional intelligence strictly as a set of abilities pertaining to emotions and emotional information processing (Mayer & Salovey, 1997). Mixed models lump together abilities pertaining to emotions, personality traits, motivational factors, and other concepts (Bar-On, 2001; Goleman, 1998). Abilities are defined as “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, p. 8). As such, abilities are distinct from other individual differences such as personality traits, which reflect how people typically behave across situations and over time (McCrae & John, 1992). Because intelligence is one of its constituent terms, it is important to treat emotional intelligence as a set of abilities, and to exclude other individual differences from the construct (Mayer & Ciarrochi, 2006). Accordingly, we did not adopt a mixed model of emotional intelligence in our research and, instead, we selected ability model.

We chose Mayer and Salovey’s (1997); Salovey & Mayer, 1990) ability model of emotional intelligence because it is the ability model that has undergone the most development and refinement, gained the greatest acceptance among researchers, and served as the basis for the most measures (Spector & Johnson, 2006). This model proposes that emotional intelligence is a set of four emotion-related abilities. The ability to perceive emotions represents the ability to detect and decipher emotions in faces, pictures, voices, and cultural artifacts, and to identify one’s own emotions. The ability to use emotions is the ability to harness emotions to facilitate cognitive activities such as information processing and decision-making. The ability to understand emotions represents the ability to comprehend emotion language, the distinctions among discrete emotions, and the causes and consequences of emotions. Finally, the ability to manage emotions is the ability to change emotions in oneself and others.

3. Emotional Intelligence and Leadership Emergence

Roles typically evolve in small groups, allowing some individuals who do not possess formal authority to stand out exhibit leadership; this is termed leadership emergence (Lewis, 1973; Slater, 1955). Past research has found that individual differences such as cognitive intelligence, traits of personality, and demographic characteristics predict who takes on a leadership role (Eagly & Karau, 1991; Smith & Foti, 1998; Taggar et al., 1999). We propose that emotional intelligence explains variance in leadership emergence that is not accounted for by these individual differences.

Emotionally intelligent individuals may exhibit more leadership emergence in small groups than their counterparts because of several complementary mechanisms. The first mechanism concerns accurate social perception (Chowdry & Newcomb, 1952). Displays of emotions communicate important information to other (Frijda & Mesquita, 1994). For instance, negotiators’ displays of emotion provide information about their

determination and tenacity, and counterparts use this information to guide their behavior (Sinaceur & Tiedens, 2005; Van Kleef, De Dreu & Mantead, 2004). Equipped with the ability to perceive others' emotions and to understand the distinctions among them, emotionally intelligent individuals may gain considerable knowledge of other group members' attitudes, goals, and interests. This knowledge should allow them to influence the other group members by identifying, understanding, and addressing their unstated needs (George, 2000; Wolff et al., 2002). This knowledge should also help them influence the other group members by creating goals that they might accept (Conger & Kamungo, 1998). This influence should contribute to emotionally intelligent individuals' emergence in small groups.

Emotional intelligence may also be associated with leadership emergence in small groups via the direct influence of emotions on cognitive activities, such as the amount of risk people are willing to take and how systematically people process information (Loewenstein & Lerner, 2003; Schwarz, 2002). Equipped with the abilities to understand the consequences of emotions and to use emotions to facilitate thinking, emotionally intelligent individuals may process information deeply and make decision that improve the performance of their groups. For instance, people who understand that they may be overly optimistic when they feel positive emotions (Lerner & Keltner, 2001) may wait until they are in a neutral state to process information about the group task and, in turn, may make more helpful suggestions. By making helpful suggestions, emotionally intelligent individuals may influence the group task and, in turn, emerge as leaders.

The effective management of emotions is an additional process by which emotional intelligence may be associated with leadership emergence in small groups. Individuals may influence their groups by changing other members' emotional reactions to particular courses of action such as change initiatives (George, 2000; Huy, 2002). Emotional abilities may develop, at least in part, from trial-and-error learning (Cote, Miners & Moon, 2006). According to this reasoning, emotionally intelligent individuals have applied various emotion management strategies in the past, observed their different impact on emotions, and learned which strategies are the most effective. They can apply this knowledge to select the best strategies to influence the emotions (e.g., excitement, dejection) of the other group members. These arguments are supported by findings that emotionally intelligent individuals generally select strategies that are considered ineffective, such as recalling positive memories, and refrain from using strategies considered ineffective, such as avoiding problems (Ciarrochi, Chan & Caputi, 2000; Matthews et al., 2006). Emotionally intelligent individuals may also implement emotion management strategies effectively. Through trial-and-error, they may have accumulated extensive practice in applying strategies and perfected their implementation (Cote et al., 2006; Salovey, Bedell, Detweiler & Mayer, 1999). By selecting and implementing the most effective strategies, emotionally intelligent individuals should achieve a pronounced influence on others' emotions, and emerge as leaders as a result.

On the basis of the preceding arguments, we predicted that emotional intelligence is positively associated with leadership emergence. Because the proposed mechanisms involve all four specific abilities from Mayer and Salovey's (1997) model of emotional intelligence, we also predicted that each of the abilities positively relates to leadership emergence.

3.1 Overview of the Present Research

We tested the predictions in two separate studies. In Study 1, we examined whether the emotional intelligence of members of small self-managing groups was related to their leadership emergence throughout the duration of a project. To compare the validity of different approaches to measuring emotional intelligence, we

used both an ability test and a self-report scale. In the ability test approach, respondents solve a series of problems, such as detecting how much anger a person expresses in a picture (Mayer, Caruso & Salovey, 2000). In the self-report scale approach, respondents indicate the degree to which they agree with statement such as “I am skilled at recognizing emotions” Both approaches are used widely, and we compared their criterion and incremental validity. We conducted Study 2 in a similar context, modifying how the groups were formed and adding more control variables.

3.2 Study 1

3.2.1 Participants

The participants were 138 undergraduate students in a commerce program enrolled in an organizational behavior course. The sample included 97 woman and 41 men who were members of 41 groups, for an average of 3.4 members group. The member of participants in each group ranged from two to six. Some of the groups had a small number of participants because the other members of the group did not agree to participate in the research. The mean age was 21 years.

3.2.2 Procedure

Students were invited to participate in a study of emotional intelligence. They were asked to indicate on a consent form whether they authorized the use of data collected in class for research purposes. Research assistants responsible for creating data files discarded the data provided by the individuals who did not agree to participate. Out of 274 students who were invited to participate, 145 agreed. Out of these 145 individuals, two did not complete. We did not include there seven individuals in the sample, but we retained the ratings that they provided about the participants. In total, 138 out of 274 students participated in the study, for a response rate of 50%. The gender breakdown among the participants (71% female) was not significantly different from the gender breakdown among the non-participants (61% female), $t(272): 1.75, p: 0.08, d: 0.21$, but the participants performed better in the course ($M: 75\%, SD: 6\%$) than the non-participants ($M: 73\%, SD: 8\%, t(271): 2.32, p: 0.05, d: 28$).

We first asked the participants to complete the measures of emotional intelligence and the personality traits are included in the analyses. We then informed them that the project required groups to act as management consultants by collecting and analyzing information about an organization and recommending solutions to a problem in the organization. After they learned the requirements of the project, the students formed their own groups. The groups then selected an organization to study in large North American city; established a contact person in the organization who could grant access to organizational information and members; identified a problem faced by the organization; created a survey and interview questions; collected information from organization members; analyzed the problem using the information they gathered; and produced a report recommending solutions for the organization. The projects lasted 10 weeks and were worth 40% of their grade.

Immediately after the groups completed the projects, each student who agreed to participate in study (i.e., the 138 participants and the seven individuals who either did not complete the test of emotional intelligence or receive ratings of leadership emergence) completed the paper questionnaire included the peer-reports of leadership emergence and questions about demographic characteristics. The students were informed that their responses would be confidential. Each student rated the degree to which each of the other group members exhibited leadership emergence throughout the duration of the project, using the items described below. The participants were debriefed and given their project grades after the data collection for this study ended.

We close this group project for several reasons. First, the group project afforded many opportunities for

members to influence their peers. For instance, group members had opportunities to generate and convince others of their ideas concerning the organization to study, the methodology to gather the relevant information, the analysis of data, and the action items designed to solve the problem faced by the organization. The task afforded participants opportunities to influence others by setting goals such as interviewing a certain number of members of the organization. Thus, we could expect differences in how much the different group members exhibited leadership emergence. Second, the duration of the task ensured that participants had a substantial amount of information to rate each other's leadership emergence. We could thus expect that they would agree with each other to a sufficient degree when rating it. Finally, participants had worked on similar group projects in other courses, providing them with enough familiarity with the behaviors involved in influencing a small group to rate how much their peers exhibited these behaviors. Past research with groups working on similar projects revealed that leader emerge in these groups and that leadership emergence can be reliably measured (Taggar et al., 1999)

Measures Emotional intelligence-ability test. We used the 141-item Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT V2.0; Mayer, Salovey & Caruso, 2002), an ability test that contains emotional problems and tasks that ask respondents to, for example, identify emotions in photographs of faces; indicate how emotions influence thinking and reasoning; assemble emotions into complex feelings; and rate the effectiveness of different emotion regulation strategies in both intrapersonal and interpersonal contexts. The MSCEIT was scored based on the match between the answers of respondents and those provided by experts (Mayer et al., 2002). Analyses using a different scoring algorithm that involves comparing respondents' answers to those of a large normative sample of thousands of lay people from various English-speaking nations (a technique known as consensus-base measurement; Legree, Psotka, Tremble & Bourne, 2005) revealed the same conclusions as the analyses using the experts coring algorithm. We used five scores generated by the MSCEIT: (a) overall emotional intelligence and the abilities to (b) perceive, (c) use, (d) understand, and (e) manage emotions.

We chose the MSCEIT for several reasons. The MSCEIT is based on Mayer and Salovey's (1997) theoretical model, and it covers both the broad domain of emotional intelligence and specific emotional abilities. Its reliability is high (i.e., test-retest correlation $-.86$; split-half reliability estimates above $.90$; Brackett & Mayer, 2003; Mayer, Salovey, Caruso, & Sitarenios, 2003). There is evidence for its validity, including studies showing discriminant validity with respect to personality traits and cognitive intelligence (Brackett & Mayer, 2003); Cote & Miners, 2006), and studies showing criterion validity with criteria such as social functioning (Brackett et al., 2006) and job performance (Cote & Miners, 2006).

3.2.3 Emotional Intelligence-Self-report Scale

We used the 33-item self-report emotional intelligence scale developed by Schutte et al. (1998). This scale asks respondents to indicate the degree to which they agree with statements such as "I am aware of my emotions as I experience them" and "I have control over my emotions" on a scale of 1 (strongly disagree) to 7 (strongly agree). Although the scale was originally developed to measure one broad factor, subsequent analyses uncovered dimensions. We focused on four scores generated by the scale: (a) the overall emotional intelligence score, and scores for the three dimensions identified by Petrides and Furnham (2000), namely, the abilities to (b) perceive, (c) use, and (d) manage emotions.

We chose this scale for several reasons. It assesses both the broad domain of emotional intelligence and some specific emotional abilities that are included in Mayer and Salovey's (1997) model. Its reliability is high (i.e., test-retest correlation $-.78$; internal reliability estimates above $.86$; Schutte et al., 1998). There is evidence for its validity, including studies showing discriminant validity with respect to personality traits and cognitive

intelligence (Schutte et al., 1998), and studies showing criterion validity with criteria such as grade point average (Schutte et al., 1998) and coping styles (Goldenberg, Matheson & Mantler, 2006).

3.2.4 Leadership Emergence

We assessed leadership emergence with peer-ratings, using five items from the Conger-Kanungo leadership scale (Conger & Kanungo, 1994; Conger, Kanungo & Menon, 2000). We asked participants to rate the extent to which each of the five items was characteristic of each of their peers on a scale of 1 (very uncharacteristic) to 10 (very characteristic). We asked the participants to write each of their peers' initials above one of 10 scale options. We chose the items from the Conger-Kanungo leadership scale that were the most relevant to the group task that the participants performed: "The person provided inspiring strategic and group goals". "The person consistently generated new ideas for the future of the group". "The person readily recognized new environmental opportunities (favourable physical and social conditions) that facilitated achievement and group objectives". And "The person was inspirational and able to motivate by articulating effectively the importance of what group members are doing" (Conger et al., 2000, p. 759). Ties were not allowed so as to counteract the biasing tendency to rate others as highly similar to one another (Paulhus & Reynolds, 1995).

We collected the ratings of leadership emergence from peers to eliminate alternative explanations of any results pertaining to common methods of measurement such as social desirability and acquiescence (Podsakoff, MacKenzie, Lee & Podsakoff, 2003). We chose Conger and Kanungo's scale because, consistent with our definition of leadership emergence, it assesses the degree to which each member influenced the others. This enable us to treat leadership emergence as a continuous variable rather than a discrete phenomenon. This scale also enable us to identify multiple emergent leaders in each group rather a single leader or a predetermined number of leaders. This scale exhibits internal reliability higher than .80 (Conger et al., 2000). It has demonstrated criterion validity with respect to criteria such as the satisfaction of subordinates and the performance of groups, and discriminant validity with respect to concepts such as how much the person is trusted and respected (Conger et al., 2000).

We computed the average deviation (ADMJ) index (Burke & Dunlap, 2002) of inter-rater agreement that represents the degree to which the raters deviated, overall, from the average rating assigned to each participant. We used only the observation with more than one peer rating ($n=113$) to calculate ADMJ. The participant received different numbers of ratings because (a) some participants failed to provide ratings of others and (b) the information contained in the questionnaires was sensitive and, consistent with the ethical principle of voluntary participation, participants could skip any question that they did not feel comfortable answering. One participant had five raters, 43 had four raters, 40 had three raters, 30 had two raters, and 24 had one rater. The number of obtained was 381 out of a possible 386 provided by the 145 rates. Five ratings are missing because some of the raters neglected to rate at least one of their peers. Low values of ADMJ represent low deviations, overall, from the average rating assigned to a participant and, therefore, high inter-rater agreement. Across participants, ADMJ was 1.08, which is lower than the lower limit of 1.67 calculated using the procedures described by Burke and Dunlap (2002).

We also computed the ICC(2), which estimates the reliability of the ratings of each participant (Bliese, 2000; Klein et al., 2000). The ICC(2) was 0.72, which exceed 0.70, the commonly used rule of thumb to infer that reliability is adequate (Klein et al., 2000). The statistics revealed reasonable agreement and consistency among the raters and, therefore, we computed a leadership emergence score for each participant by first averaging scores across raters for each item (if applicable), and then averaging scores across the items.

3.2.5 Control Variables

We controlled for the participants' Big Five personality traits (Coldberg, 1993; McCrae & Costa, 1987). 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 level of creativity and curiosity. The Big Five traits were related to both emotional intelligence (Cote & Miners, 2006) and leadership emergence ratings (Judge et al., 2002) in some studies. Thus, the Big Five traits could create a spurious relationship between emotional intelligence and leadership and leadership emergence. We used the International Personality Item Pool (Goldberg, 1990) scales to measure these traits. These scales contain 50 self-descriptive items (10 for each trait) anchored at 1 (very inaccurate) and 5 (very accurate). There is extensive reliability and validity evidence for these scales (see Goldberg 1999). Their internal reliability coefficients were .79 or higher in the validation sample. The correlations between these scales and the NEO-PI-R, another widely used measure of the Big Five traits, average .77, supporting their convergent validity. Comparative validity analyses reveal that these scales predict criteria at least as strongly as other scales. Two participants who did not complete these scales were excluded from the hierarchical linear modeling analyses.

We also controlled for the participants' gender because it was related to both emotional intelligence (Brackett et al., 2006; Myer et al., 2003) and leadership emergence (Eagly & Karau, 1991) in past research.

3.2.6 Results

The means, standard deviations, internal reliability coefficients, and correlations among the variables are displayed in Table 1. Overall emotional intelligence and the abilities to perceive and understand emotions, measured with the ability test, were significantly and positively correlated with leadership emergence. With respect to the self-report scale, only the ability to perceive emotions was significantly and positively correlated with leadership emergence. Consistent with the results of a meta-analysis (Van Rooy, Viswesvaran & Pluta, 2005), the ability test and the self-report scale of emotional intelligence were not significantly correlated with each other. We discuss this finding in the general discussion section of this article.

We used hierarchical linear modeling to test incremental validity because the participants were nested within groups and, thus, behaviors and responses from individuals in the same group were non-independent. Results of traditional regression analyses would likely be biased because these analyses assume that observations are independent, an assumption that is often violated when individuals belong to separate groups (Kenny, Mannetti, Pierro, Livi & Kashy, 2002). We used the MIXED procedure of version 8.02. of SAS.

We developed hierarchical models that tested whether a person's emotional intelligence predicts his or her leadership emergence, controlling for his or her gender and big Five personality traits, and taking into account the hierarchical structure of the data, there were two levels in the hierarchical models; the individual level and the group level. At the individual level, leadership emergence was regressed on gender, the Big Five personality traits, and emotional intelligence. The continuous predictors were centered around their means to fully separate within-group variance from between-group variance (Hofmann & Gavin, 1998). When the predictors are centered around their group means, the parameter estimates represent the degree to which higher scores on the predictors then the other members of the group are associated with higher ratings of leadership emergence than the members. There were no predictors at the group level. The slopes were fixed because the groups were small (Kenny et al., 2002).

We tested the international validity of each emotional intelligence variable that was significantly correlated with leadership emergence. We did not test the incremental validity of the emotional intelligence variables that were not correlated with leadership emergence because any associates would constitute suppressor effects that are difficult to interpret in the absence of relevant theoretical frameworks (Tzelgov & Henik, 1991).

The results shown in Table 2 reveal that overall emotional intelligence, measured with the ability test, was positively related to leadership emergence over and above gender and the Big Five personality traits. The abilities to perceive and understand emotions, measured with the ability test, also predicted leadership emergence above and beyond the control variables. The self-judged ability to perceive emotions, measured with the self-report scale, did not predict leadership emergence above and beyond the control variables.

As indices of effect size, we calculated both pseudo R-squared and effect size r_s . Pseudo R-squareds indicate how much the variance in residuals of the individual-level model decreased when we added emotional intelligence to a model that only included the control variables in these residuals. In comparison, the entire set of Big Five traits of personality explained 3.31% of the variance in the residuals when we added them to a model that only included gender and overall emotional intelligence. In separate models, the abilities to perceive and understand emotions, measured with the ability test, explained 10.88% and 5.13% of the variance in the residuals, respectively. We calculated effect size r_s using the formula provided by

Rosenthal and Rosnow (2007): $r - 0.00$. The effect size r_s are reported in Table 1. They indicate that emotional intelligence was a more potent predictor of leadership emergence than the competing predictors. We discuss the size of these incremental effects in the general discussion section of this article.

3.2.7 Discussion

The findings from Study 1 provide some support for the notion that the emotional intelligence of members of small groups is associated with leadership emergence. The results with the ability test versus the self-report scale of emotional intelligence were different. In particular, the hierarchical linear models supported the incremental validity of the ability test but not self-report scale of emotional intelligence.

3.3 Study 2

We conducted study 2 to replicate and extend the findings from Study 1. First, we added two more control variables, cognitive intelligence and self-monitoring, to provide a more stringent test of incremental validity, and to ensure that these individual differences did not cause spurious associations between emotional intelligence and leadership emergence. Second, we randomly assigned the participants to groups to rule out the possibility that self-selection into group explains the results of Study 1. Finally, we allowed ties in the ratings of leadership emergence to ensure that our decision to forbid ties in Study 1 did not bias the results by creating artificial distinctions between individuals. We only used an ability test of emotional intelligence in Study 2 because it was the measurement approach to emotional intelligence that exhibited incremental validity in Study 1.

3.3.1 Method

(1) Participants

The participants were 165 undergraduate students in a commerce program enrolled in an organizational behavior course (92 women and 73 men). They were members of 36 groups, for an average of 4.6 members per group. The number of participants per group ranged from three to seven. The mean age was 20 years.

(2) Procedure

The procedure was the same as in Study 1 except that we (a) administered measures of cognitive intelligence

and self-monitoring in addition to the measures of emotional intelligence and the Big five personality traits, (b) randomly assigned the participants to groups, and (c) allowed ties in the ratings of leadership emergence. Out of 185 students who were invited to participate, 173 agreed. Out of these 173 individuals, eight did not complete the test of emotional intelligence. We removed these eight individuals from the analyses but we retained the ratings that they provided about the participants. In total, 165 out of a possible 185 individuals participated in the study, for a response rate of 89%. The gender breakdown among the participants (55% female) was not significantly different from the gender breakdown among the non-participant (37% female), $t(180): 1.52, p: 0.13, d: 0.37$, and the participants' performance in the course ($M: 73\%$, $SD: 7\%$) was not significantly different than the non-participants' performance ($M: 71\%$, $SD: 6\%$), $t(181): 1.93, p: 0.06, d: 0.44$.

3.3.2 Measures

(1) Emotional Intelligence

Emotional intelligence was assessed using the MSCEIT, as in Study 1.

(2) Leadership Emergence

Leadership emergence was assessed with peer-ratings and the five items from the Conger–Kanungo leadership scale that we used in Study 1. Unlike Study 1, however, ties were allowed so that raters could give the same rating to any number of peers.

We computed the ADMJ index of inter-rater agreement, using only the observation with more than one peer rating ($n: 163$). One participant had seven raters, six had six raters, 41 had five rates, 79 had four raters, 31 had three raters, five had two raters, and two had one rater. We obtained 669 out of a possible 694 ratings provided by 173 raters (i.e., the 165 participants and the eight individuals who provided ratings but did not complete the test of emotional intelligence). Across participants, ADMJ was 1.14. This value is lower than the cut-off value of 1.67 recommended by Burke and Dunlap (2002) and, hence, it reveals high agreement among raters. The ICC(2) was 0.79, which exceeds the rule of thumb of 0.70 (Klein et al., 2000) and, thus, it reveals adequate consistency between the raters. Accordingly, we computed a leadership emergence score for each participant by first averaging score across raters for each item (if applicable) and then averaging scores across the five items.

3.3.3 Control Variables

We controlled for cognitive intelligence, which exhibit small to moderate correlations with emotional intelligence (Mayer, Salovey, & Caruso, 2004) and leadership emergence (Smith & Foti, 1998; Taggar et al., 1990) in past research. It was thus important to rule out the possibility that it created a spurious association between emotional intelligence and leadership emergence. We measured it with the Wonderlic Personnel Test (Wonderlic, 1992), a 12-minute, 50-question paper-pencil test. There is extensive evidence supporting the psychometric properties of this test. In past research, the test-retest reliabilities ranged from 0.82 and 0.94, the alternate form reliabilities ranged from .73 to .95, and the internal reliability was adequate (Cronbach α .88; Wonderlic, 1992). Convergent validity is evidenced by strong correlations with other measures such as the Weschler Adult Intelligence Scale (e.g., r s: 0.85 to 0.91 in four samples in Dodrill & Warner, 1988). Criterion validity is evidenced, for example, by a meta-analytic correlation of .64 with job performance (Hunter & Hunter, 1984).

We also controlled for self-monitoring. High self-monitors may develop both high emotional intelligence and emerge as leaders as a result of paying considerable attention to other people. It was therefore important to rule out the possibility that it created a spurious association between emotional intelligence and leadership emergence. We measured self-monitoring with Snyder's (1974) 25-item questionnaire. Participants indicated whether each of the items (e.g., "I find it hard to imitate the behavior of other people") is true or false. A recent meta-analysis (Day,

Shleicher, Unckless & Hiller, 2002) revealed that the internal reliability of this questionnaire is 0.71 and that it exhibits criterion validity with respect to, for example, leadership effectiveness (r : 0.21) and job involvement (r : 0.22). One participant who did not complete this scale was excluded from the hierarchical linear modeling analyses.

As in Study 1, we used the International Personality Item Pool (Goldberg, 1999) scales to measure and control for the Big Five personality traits. We also controlled for gender.

3.3.4 Results

The means, standard deviations, internal reliability coefficients, and correlations among the variables are displayed in Table 3. As in Study 1, emotional intelligence was significantly and positively correlated with leadership emergence. The abilities to use, understand, and manage emotions were all positively correlated with leadership emergence. Consistent with past research (Mayer et al., 2004), emotional intelligence was significantly and positively correlated with cognitive intelligence.

We examined the incremental validity of overall emotional intelligence and the abilities that were significantly correlated with leadership emergence. We developed hierarchical models that tested whether a person's emotional intelligence predicts his or her leadership emergence, controlling for his gender, cognitive intelligence, Big Five personality traits, and self-monitoring, and taking into account the hierarchical structure of the data. There were two levels in the model. At the individual level, leadership emergence was regressed on gender, cognitive intelligence, the Big Five personality traits, self-monitoring and emotional intelligence. The continuous predictors were centered around their group means. There were no predictors at the group level. We fixed the slopes because the groups were small.

The results shown in Table 4 reveal that overall emotional intelligence was positively related to leadership emergence over and above the control variables. As in Study 1, we calculated pseudo R-squareds and effect size r s as indices of effect size. The pseudo R-squareds reveal that overall emotional intelligence explained 3.00% of the variance in the residuals of the individual-level model predicting leadership emergence, compared to a model that only included the control variables. In comparison, cognitive intelligence predicted 1.58%, self-monitoring predicted 0.69% and the entire set of Big Five traits of personality explained 0.18% of the variance in the residuals when they were added to models that included all of the other predictors. As in Study 1, the ability to understand emotions predicted leadership emergence above and beyond the control variables, explaining 10.72% of the variance in the residuals. In a separate model, the ability to use emotions was also a unique significant predictor of leadership emergence, explaining 3.42% of the variance in the residuals. The ability to manage emotions, however, was not a significant unique predictor. The effect size r s, which are reported in Table 2, also indicate that emotional intelligence was the most potent predictor of leadership emergence.

The proportions of variance explained were smaller in Study 2 than in Study 1, potentially because we controlled for cognitive intelligence, a construct that shows some overlap with emotional intelligence, in Study 2 but not in Study 1. To examine this possibility, we ran the hierarchical linear models again without cognitive intelligence, and re-calculated the pseudo R-squareds. The proportion of variance explained by overall emotional intelligence and abilities to understand and use emotions were 5.29%, 14.55%, and 5.03%, respectively, in these models. This suggests that failing to control for cognitive intelligence may produce inflated estimates of the unique proportion of variance explained by emotional intelligence.

3.3.5 Discussion

The findings from Study 2 extend those of the first study and increase our confidence in the association

between emotional intelligence and leadership emergence. Three out of the four correlations remained significant after controlling for cognitive intelligence and self-monitoring in addition to the Big Five personality traits and gender. These results provide further evidence of the incremental validity of emotional intelligence and leadership emergence is not spuriously caused by cognitive intelligence or self-monitoring. The random assignment to groups in Study 2 provides assurance that the association is not an artifact of self-selection groups.

4. General Discussion

This research supports the proposition that emotional intelligence is positively related to leadership emergence in small groups. In two studies, group members with higher overall emotional intelligence exhibited more leadership emergence than their peers during a group project. The control variables raise doubt about several alternative explanations of the results. For example, we are reassured that the associations between emotional intelligence and leadership emergence did not occur because cognitive intelligence acted as a third variable that caused both high emotional intelligence and high leadership emergence.

Our findings inform the debate about the utility of emotional intelligence for understanding behavior in group and organizational settings (Ashkanasy & Daus, 2005; Conte, 2005; Lndy 2005; Matthews et al., 2002; Murphy, 2006). One criticism that has been leveled is that emotional intelligence is overly similar to extant individual difference constructs and hence cannot improve predictions of criteria. Although several studies on emotional intelligence and criteria are now published, few of them simultaneously control for cognitive intelligence and personality traits. The literature thus provides limited information about the incremental validity of emotional intelligence. Our findings provide evidence of both the criterion and incremental validity of emotional intelligence measured with an ability test. As such, our results increase our confidence that emotional intelligence is a useful construct that can enhance the understanding and prediction of behavior.

The analyses of the dimensions of emotional intelligence identified the ability to understand emotions as the most consistent predictor of leadership emergence. These are consistent with some past studies that show the importance of aspect of the ability to understand emotions, namely, emotional differentiation (distinguishing among different discrete emotions) and emotional knowledge (knowing the causes and the consequences of different discrete emotions). For instance, individuals who carefully distinguish among their emotions, as opposed to treating them interchangeably, make the best investment decisions (Seo & Barell, 2007). Individuals with high ability to understand emotions are less likely to fall prey to the ease of recall decision bias than their counterparts (Bountempo & Brockner, 2008). Individuals are more willing to negotiate again with opponents with high rather than low ability to understand emotions, independently of how they objectively perform during a negotiation (Mueller & Cuthan, 2006). Our findings are thus consistent with other evidence that the ability to understand emotions is important in applied settings.

Our results inform discussions about how best to measure emotional intelligence (Btackett et al., 2006; Conte, 2005; Mayer et al., 2000). In study 1, three of the ability test scores and one of the self-report scale scores were correlated with leadership emergence. Only the ability test scores, however, exhibited incremental validity over and above the Big Five personality traits and gender. The self-report scale may have failed to provide incremental validity for at least three reasons. The first reason concerns the biases that are inherent to judging one's own abilities. Most people believe that they are above average on several abilities, such as the abilities to drive and to get along with other people (Dunning, Heath & Suls, 2004). In particular, nearly 80% of people believe that their

emotional intelligence is higher than average (Brackett et al., 2006). Believing that one has strong emotional abilities may have some beneficial effects, but it may not contribute to leadership emergence, because it may not drive the mechanisms that we described at the outset (i.e., accurate social perception, optimized thinking, and effective emotion management). The second reason why the self-report scale of emotional intelligence may not exhibit incremental validity concerns faking. Two recent studies showed that deliberate faking can increase scores on self-report scales of emotional intelligence by almost a full standard deviation (Day & Carrol, 2008; Grubb & McDaniel, 2007). Scores that are contaminated by faking are less likely to predict some criteria, such as leadership emergence.

The third reason why the self-report scale of emotion intelligence may not exhibit incremental validity concerns contamination in the measure. Self-report of emotional intelligence appear to capture, to some degree, personality traits. To examine this possibility we regressed each overall emotional intelligence measure in Study 1 on the Big Five personality traits. The traits accounted for 27% of the variance in the self-report scale and 15% of the variance in the ability test of emotional intelligence. This reveals that the self-report scale of emotional intelligence overlaps with personality to a greater extent than the ability test. This explains why the self-report scale of emotional intelligence correlates with leadership emergence, yet does not exhibit incremental validity over and above personality.

Although ability tests have limitations that we discuss below, they circumvent the issue of biased self-judgments, because a person's ability level is determined using criteria that are identified by the test developers and that are the same for all test-takers. Ability tests also circumvent the issue of faking because individuals cannot pretend to know the answers to problems that they cannot solve (except by chance). In support of these arguments, Day and Carroll (2008) found that respondents were unable to fake the ability test of emotional intelligence that we used in the present research (i.e., the MSCEIT). Finally, ability tests circumvent the issue of contamination by personality traits by capturing content and using a methodology that is consistent with the standard way in which abilities are measured (Mayer et. al., 2000). We can therefore be more confident that variations in ability test scores reflect variations in actual emotional intelligence.

To the extent that self-report scales of emotional intelligence are contaminated by beliefs about emotional abilities, faking, and personality traits, it should not be surprising to find that they do not correlate highly with ability tests of emotional intelligence. Indeed, a recent meta-analysis revealed a true score correlation of .14 between ability tests and self-report scales of emotional intelligence (Van Rooy et al., 2005). The 80% confidence interval for this correlation ranged from -.08 to .35 (Van Rooy et al., 2005). The correlation between the ability and the self-report scale that we found in Study 1 falls within this interval. Taken together, the data presented in this article, along with data from other studies (Brackett & Mayer, 2003; Brackett et al., 2006; Goldenberg et. al., 2006) cast serious doubt on the validity of the self-report approach to measuring emotional intelligence.

5. Applied Implications

The findings provide some evidence that ability tests are currently the best choice for assessing emotional intelligence in applied settings. The incremental validity analyses showed that practitioners who use measures of cognitive intelligence and personality traits may enhance their predictions of leadership emergence with an ability test emotion- al intelligence, but not with a self-report scale. This suggests that practitioners must avoid treating different measures of emotional intelligence as interchangeable simply because they share the same label. To

select an appropriate measure, we suggest looking beyond the label and examining whether a measure is an ability test or a self-scale (for further discussion, see Mayer, Salovey & Caruso, 2008).

We use two approaches to interpret the meaningfulness of the incremental effects of emotional intelligence. The first approach consists of comparing the incremental effects of emotional intelligence to what typically represents a reasonable incremental contribution to a regression equation. A synthesis of the incremental effects that have been reported in the literature reveals that semi partial r 's of .15 to .20 represent reasonable contributions to regression equations (Hunsley & Mayer, 2000). Five of the six significant incremental effects of emotional intelligence in our studies were similar to those of other variables that improve predictions of psychological criteria. The second approach consists of comparing the incremental effects of emotional intelligence to those of the other predictors in our studies. Emotional intelligence improved predictions of leadership emergence more than the Big Five traits of personality in both studies, and both cognitive intelligence and self-monitoring in Study 2. Thus, the incremental effects of emotional intelligence were stronger than those of the other variables in our studies. We should be concerned about the incremental effects of emotional intelligence on leadership emergence because they were larger than those of the other predictors in our studies and similar to reasonable incremental effects in psychology in general.

We identified the ability to understand emotions as the most consistent predictor of leadership emergence among the facets of emotional intelligence. Practitioners who do not have the time to administer an entire emotional intelligence test may choose to administer the subset of questions that capture the ability to understand emotion. In addition, training efforts may focus on this ability. Trainees may learn to differentiate among the different discrete emotions (e.g., anxiety, anger, embarrassment) that are experienced during group tasks. To do this, trainees may regularly ask themselves how they are feeling, identify the sources of their emotions, and monitor the effects of their emotions (Seo & Barrett, 2007). They may also learn about emotion categories so that they can accurately identify feelings and avoid using different terms interchangeably. This knowledge may help them to precisely identify and describe their emotions and those of their peers during group tasks.

6. Limitations and Future Research Directions

Additional research is needed to advance our understanding of the role of emotional intelligence in small groups and other applied settings. Although the measures of emotional intelligence and leadership emergence were separated by 10 weeks, we cannot prove causality because the design of the studies was non-experimental. The samples consisted of students working on a group project and, therefore, the generalizability of the findings to members of different groups is limited.

In Study 1, we obtained a low response rate, the non-participants received a lower grade in the course than the participants, and we did not randomly assign the participants to groups. We are reassured by the consistency of several of the findings across the two studies. In Study 2, we obtained a larger rate of 89%, the non-participants' performance in the course did not differ from participants' performance, and we randomly assigned the participants to groups. Had the low response rate, the difference in performance among the participants and the non-participants, and the lack of random assignment affected the results in Study 1, we would likely not have found several consistent results in Study 2.

We used a single measure of leadership emergence that emphasizes inspiration and motivation. This measure may have more emotional content than alternative measures, and it is unknown whether similar results would be

obtained with other measures of leadership emergence. Also, as noted at the outset, the correlates of leadership emergence and the effectiveness of formally appointed leaders often differ (Judge et al., 2002). The specific results of our studies, such as the consistent association between the ability to understand and leadership emergence, do not directly inform what makes formally appointed leaders effective.

There are also limitations to the ability test of emotional intelligence (Conte, 2005; Marhews et al., 2002). The test does not assess abilities during real-time emotional events. The Validity of the test across cultures has not yet been carefully examined and, thus, the generalizability of the findings to different cultures is unknown. Although the reliabilities for overall emotional intelligence were satisfactory, the reliabilities for some of the branches were low. There is also concern that the test may capture conformity to social norms or the opinions of experts rather than abilities (Conte, 2005; Roberts et al., 2001). However, emotional intelligence was significantly and positively correlated with openness to experience, a trait that partly reflects the willingness to engage in unusual thoughts and activities, in both studies and in past research (Mayer et al., 2004). This casts some doubt that individuals achieve high scores on the emotional intelligence because they conform to the opinions of other people. Moreover, social desirability does not correlate with scores on the test (Lopes, Salovey, & Straus, 2003). Future research should examine whether the associations hold with other measures of emotional intelligence.

Another important goal of future research is to increase our understanding of the mechanisms by which emotional intelligence is associated with leadership emergence. Our findings suggest a potentially important role of the ability to understand emotions in leadership emergence. It would be interesting to examine whether specific aspects of this ability, such as differentiating among discrete emotions, contribute to leadership emergence. It would also be interesting to study whether contextual factors influence how much emotional intelligence is associated with leadership emergence. Emotional intelligence may be a more important contributor to leadership emergence in some groups than others, and examining moderators represents an important extension of the present research.

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