Uncovering the role of emotional abilities in leadership emergence: A longitudinal analysis of

leadership networks

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Abstract

The aim of this paper is to investigate how different emotional abilities affect the emergence of task and relationship leaders in a group of 41 students. To conduct this investigation, leadership is envisioned as a dynamic network of leadership perceptions. The emergence of leadership and the role played by emotional abilities in this process are analyzed using Stochastic Actor Oriented Models (SAOMs). The results suggest that emotional abilities play complementary roles in emergent leadership. Whereas the abilities to perceive and manage emotions facilitate the emergence of relationship leaders, the abilities to use and understand them facilitate the emergence of task leaders.

Keywords: Leadership Emergence, Emotional Intelligence, SAOM.

INTRODUCTION

Leadership emergence is defined as a social process through which, over time and social interactions, some individuals gain leadership roles as a result of their group's acceptance and recognition (Côté, Lopes, Salovey, and Miners, 2010; Neubert and Taggar, 2004). A variety of studies have explored whether individuals endorsing specific traits or characteristics are more likely to emerge as leaders (Judge, Bono, Ilie, and Gerhardt, 2002; Yulk, 2009). Recently, a new individual difference, emotional intelligence (EI), has attracted considerable attention. EI is defined as a set of abilities concerned with processing emotions and emotional information (Mayer and Geher, 1996; Mayer and Salovey, 1997). The ability-based model of EI defines it as a multi-dimensional construct composed of a set of four interrelated emotional abilities: perceiving, using, understanding, and managing emotions (Mayer, Salovey, Caruso, and Sitarenios, 2003; Mayer, Salovey, and Caruso, 2004; Mayer, Roberts, and Barsade, 2008). In the latest review of the EI-leadership literature, Walter, Cole, and Humphrey (2011) report only a handful of studies that examined the relation between EI and leadership emergence (Côté et al., 2010; Kellet, Humphrey, and Sleeth, 2002, 2006; Wolff, Pescosolido, and Druskat, 2002). This scarcity of research is surprising, as early work on emergent leaders suggests that such individuals are skilled at perceiving and understanding emotional information (Wolff, 2002).

EI has recently generated a lively debate opposing scholars who, on the one-hand champion its benefits in organizational behavior and leadership studies (Ashkanasy and Daus, 2005; Daus and Ashkanasy, 2005) and, on the other, those who question its use and validity (Antonakis, Ashkanasy, and Dasborough, 2009). Reflecting the vivacity of the debate, most of

the EI-leadership emergence studies have been criticized for not controlling for personality and cognitive ability (therefore leaving open the possibility of alternative explanations), using student samples, not assessing EI using the ability-based test of EI, advocated by many as "the only valid measure capturing the core meaning of EI as a set of emotion-related abilities" (Walter et al., 2011: 52), and for using the overall score of EI rather than scores on separate emotional abilities (Fiori and Antonakis, 2011).

Côté and colleagues (2010) made an important contribution to the study of EI and leadership emergence in small groups by examining how the latter is associated with each of the different dimensions of the former. Indeed, greater attention was previously given on how the ability to perceive emotions (empathy) influences leadership emergence (Kellet et al. 2002, 2006; Wolff et al., 2002), leaving the role of other emotional abilities uninvestigated. Côté and colleagues' (2010) study was also the first to utilize an ability-based measure of EI to uncover the roles of all emotional abilities in leadership emergence while controlling for individuals' cognitive abilities and personality.

Nonetheless, as Côté et al. (2010) used a single measure of leadership emphasizing emergent leaders' inspiration and motivation over the group, their study left unexplored other facets of leadership. Namely, it is well established in the literature that effective leaders may focus on their followers or on the task at hand (Burke et al., 2006; Kellet et al., 2006; Yukl, 2009). Therefore, to refine our understanding of the role of EI in leadership emergence, this paper explores how the different ability-based emotional abilities affect the emergence of two types of leaders: relationship and task leaders. The first leadership criterion (*relationship leader*) emphasizes good relationships with followers and has a strong emotional content. The second

criterion (*task leaders*), on the other hand, emphasizes the task to be accomplished and has a strong cognitive content. By focusing on underrepresented leadership criteria, this study answers recent calls for more complete theoretical models linking emotional intelligence with leadership emergence (Walter et al., 2011).

This paper adopts a unique and innovative network approach to investigate to what extent the different components of EI influence the emergence of relationship and task leaders. Based on the model of distributed leadership (Carson, Tesluk, and Marrone, 2007; Mehra et al., 2006), leadership is envisioned as a network of leadership perceptions, where nodes and directed ties symbolize actors and leadership perceptions, respectively. The direction of the tie distinguishes the leaders, who receive the tie, from the followers, who send it. A network representation of leadership allows the possibility for multiple leaders to emerge (without imposing a restricted number of leaders to emerge), treats leadership as a social process involving an interactive group of leaders and followers (Pescosolido, 2002), and better preserves information about higher order hierarchical structures in leadership (Mehra et al., 2006). While scholars recognize the benefits of representing leadership as a network, almost no research has attempted to explore how leadership networks evolve over time (Emery, Daniloski, and Hamby, 2011). To investigate how emotional abilities affect the emergence of relationship and task leaders, two types of leadership networks (one for each leadership style) were captured at *three distinct points in time* and analyzed using Stochastic Actor-Oriented Models (SAOMs) run in SIENA (Snijders, 2001, 2005; Snijders, van de Bunt, and Steglich, 2010).

To overcome existing criticisms (Antonakis et al., 2009), this study embraces strong methodological rigor. First, emotional abilities are assessed using the Mayer-Salovey-Caruso

Emotional Intelligence Test (MSCEIT; Mayer et al., 2003), the only established standardized test of the ability-based model of EI. The MSCEIT provides scores on the four emotional abilities making up emotional intelligence, that is, the abilities to perceive, use, understand, and manage emotions. Second, to reduce the possibility of alternative explanations, personality, gender, and cognitive ability are incorporated as controls into the models. As stated by Fiori and Antonakis (2011: 330), "it is imperative that *any* research efforts using the MSCEIT factors as independent variables control for personality and general intelligence. If not, the effects of EI might be overstated and the coefficient of the EI factors will be confounded with the effects of the variables with which it is correlated." The network approach adopted in this paper allows including another type of control variable: dyadic covariates. Dyadic covariates allow to control to which extent the evolution of leadership networks is linked to other social relationship, such as friendship. By using score of separate emotional abilities and by controlling for personality, gender, cognitive ability, and dyadic covariates, this study will be able to draw stronger conclusions regarding the relevance of emotional abilities in leadership emergence (Fiori and Antonakis, 2011; Walter et al., 2011).

In sum, this is the first investigation to employ the ability-based test of EI to undercover the role of separate emotional abilities in the emergence of relationship *and* task leadership. By conducting a longitudinal analysis of leadership networks, this paper not only provides novel evidence that EI facilitates leadership emergence, it also highlights a new application for advanced social network analysis which provide another, but different, statistical assessment that individual differences are related the emergence of leadership in groups.

Two types of effective leadership behavior are well established in the literature: person-focused and task-focused leadership (Burke et al., 2006; Kellet et al., 2006; Yukl, 2009). Each leadership style fulfills a particular role within a group (Burke et al., 2006): relationship leaders provide leadership through reinforcing group behavior, creating satisfying social interactions, and enhancing collaboration among group members, while task leaders provide leadership through organizing, planning, and improving activities (Yukl, 2009). Emotional abilities can enhance skills and behaviors associated with each leadership style (George, 2000). As emotionally intelligent individuals exhibit leadership behaviors, they are more likely to be perceived as leaders by their group. This paper reviews how, by affecting group as well as cognitive processes, emotional abilities may impact the emergence of relational and task leadership.

Emergence of Relationship Leaders

Relationship leaders are concerned with maintaining or improving the positive interpersonal relationships within their groups, in order to reinforce and guide group behavior (Wolff et al., 2002). By enhancing a network of cooperative relationships among group members, relationship leaders build mutual trust, solidarity, commitment, and loyalty (Yulk, 2009). Relationship leaders show support and recognition towards their followers. They listen carefully to others to understand their concerns (Kellet et al., 2006), in order to encourage them and provide appropriate coaching and mentoring to help them develop their skills and competencies (Yulk, 2009). In sum, relationship leaders primarily exhibit people-oriented behaviors. Research has shown that emotionally intelligent individuals tend to be more open and

agreeable than others (Mayer et al., 2004), have more positive social interactions (Lopes et al., 2004), and mentor others. Thus, it is intuitive to argue that individuals with greater emotional abilities will be more likely to be perceived and recognized as relationship leaders by the rest of their group. More precisely, three emotional abilities are likely to facilitate the emergence of relationship leaders: the abilities to perceive, to understand, and to manage emotions.

Perceiving emotions (or emotional recognition)*,* is the ability to identify emotions in oneself and others, and accurately communicate one's feelings, and express related needs, by paying attention to language, sounds, gestures, appearances, and behavior (Mayer et al., 2004). By accurately identifying others' emotions, these individuals gain considerable knowledge of other group members' emotional states, attitudes, goals, and interests (Côté et al., 2010). Such emotional knowledge, combined with their ability to express emotional information appropriately, allows them to provide social support, maintain positive relationships within the group (Côté et al., 2010), enhance collaboration (George, 2000) and, ultimately, influence the group's social dynamics (Wolff et al., 2002). Individuals with greater emotional recognition are therefore more likely to fulfill the role of relationship leader. Previous research by Kellet and colleagues (2002, 2006) revealed a positive relationship between empathy, that is, the ability to understand and communicate others' emotions and feelings, which is closely related to emotional recognition (Gotty et al., 2010), and the emergence of relationship leaders.

Managing emotions (or emotion regulation) can also facilitate a person's emergence as a relationship leader. This emotional ability reduces, enhances, or modifies emotional responses in oneself and others (Mayer et al., 2004; Eisenberg et al., 2000). That is, management of emotions is "the tool through which we create and maintain positive affective states" (Joseph and

Newman, 2010: 56). Managing their emotions permits these individuals to model appropriate emotional responses for each circumstance (George, 2000) and to have a pronounced influence on others' emotions (Côté et al., 2010). As described by Pescosolido (2002: 586), "leaders manage group emotional responses by first empathizing and identifying with the collective emotional state of group members, and understanding what factors in the situation are causing this emotional state. They then craft a response to the situation that is causing the emotional reaction, and communicate their response to the group both verbally and by taking action". Managing emotions is therefore an important emotional ability as it facilitates the creation of satisfying and positive social interactions (Lopes, Salovey, and Strauss, 2003). Therefore, people with greater abilities in this regard are more likely to emerge as relationship leaders.

Understanding emotions: In order to effectively manage emotions, relationship leaders need to understand their causes, consequences, and evolution (Mayer et al., 2004). This ability to understand emotions includes having a grasp on the emotional lexicon, the manner in which emotions combine, progress, and transition from one to another (for example, emotions may transit from annoyance, to anger, to rage or from distraction, to surprise, to amazement), and the outcomes of emotional experiences (Mayer et al., 2004). It is a crucial ability for relationship leaders if they aim to manage their followers' emotions: recognizing emotional triggers allows relationship leaders to (i) anticipate how followers are likely to feel when confronted by a particular emotional trigger and (ii) intervene accordingly by managing emotions before they get out of hand. Individuals with a greater ability to understand emotions are therefore more likely to emerge as relationship leaders.

Emergence of Task Leaders

Task leaders fulfill a different role: they are directed towards helping the group to achieve its goals (Taggar, Hackett, and Saha, 1999). Task leaders are instrumental individuals, who excel at organizing, planning, specifying goals and procedures, and improving activities (Yulk, 2009). Intuition would advocate that only cognitive abilities, and not emotional ones, are related to a person's emergence as a task leader. Researchers have challenged this premise, however: as emotions have a direct influence on cognitive activities (Côté et al., 2010; Loewenstein and Lerner, 2003), emotional intelligence can help task leaders achieve their goals (Humphrey, 2002). Indeed, O'Boyle Jr. and colleagues' meta-analysis (2011) found a positive correlation between emotional intelligence and job performance. Another study found a positive correlation between empathy and task leadership emergence (Kellet et al., 2006). Yet, no study has investigated how the ability-based model of emotional intelligence (Mayer et al., 2008) is related to the emergence of task leadership. As the role of emotional abilities in the emergence of task leadership remains unknown, this study explores the potential impact of each emotional ability on the emergence of task leaders. Due to the exploratory nature of this research, all emotional abilities will be discussed.

One emotional ability is particularly likely to facilitate the emergence of task leaders. *Using emotions* entails the ability to make adequate use of emotions when engaging in cognitive enterprises such as reasoning, problem solving, and decision making (Mayer et al. 2004). Using emotions enhances cognitive enterprises in several ways. It facilitates the adoption of multiple perspectives so as to assess a problem from all sides (Jordan, Ashkanasy, and Härtel, 2002). Broadening one's perspectives enhances creativity, careful information processing, integrative thinking, attention to detail, and the detection of errors and problems (George, 2000; Ellis et al., 1997). The ability to use emotions also allows task leaders to direct attention to urgent concerns

(George and Brief, 1996), avoid rigidity effects, and elicit responses from followers (Lewis, 2000).

Complementing the ability to use emotions, *understanding emotions* helps task leaders to adjust their behavior or take action to counterbalance the undesired consequences of emotions. For example, since experiencing a positive mood can lead to over-optimism and misjudging a situation (George, 2000), task leaders wait until they are in a neutral state to process information and provide recommendations on the task at hand (Côté et al., 2010). Past research suggests that understanding one's emotions is positively linked to making better investment decisions (Seo and Barrett, 2007), negotiation skills (Mueller and Curhan, 2006), and recall judgment bias (Buontempo and Brockner, 2008). By processing information more deeply, individuals with a greater ability to use and understand emotions are likely to improve their group's reasoning, problem solving, and decision making. These individuals are therefore more likely to emerge as task leaders.

The ability to *perceive emotions* potentially influences group processes and accomplishments. Emotional recognition may assist task-related cognitive processes as it is instrumental in effective communication, problem solving, and decision making (Kellet et al., 2006; Humphrey, 2002). Indeed, perceiving emotions allows task leaders to communicate feelings of excitement, enthusiasm and optimism. By expressing positive feelings, task leaders enhance their group's motivation, efficiency and productivity (Kickul and Neuman, 2000; Wolff et al., 2002). Furthermore, Mayer and Geher (1996) demonstrated that individuals who were able to interpret emotions performed better in problem-solving situations. Because they are capable of

positively influencing outcomes, people with a greater ability to perceive emotions are more likely to emerge as task leaders.

Finally, *managing emotions* facilitates the emergence of task leaders in several ways, which can be divided into two main groups. First, an individual with a greater ability to manage emotions is more likely to successfully resolve conflicts (Fitness, 2000; Jordan and Troth, 2004), by reducing group members' feelings of anger, which could potentially distract them from completing tasks (Jordan et al., 2002). Second, by enhancing positive feelings, these individuals can be better at overcoming frustration when encountering problems, maintaining confidence in the face of unexpected problems, and generating enthusiasm for completing work tasks (Wolff, 2002). Such individuals are thus more likely to emerge as task leaders (Daus and Ashkanasy, 2005).

RESEARCH DESIGN

Participants

While prior studies used relatively small groups (of around three participants) to investigate the role of emotional intelligence in leadership emergence, this study relies on empirical data collected from a larger, cohesive group of 41 undergraduate students involved in a study abroad program. No research manipulation or interventions were set up to influence leadership emergence and no restrictions were imposed on the number of leaders that could emerge.

The group was homogeneous in terms of age (mean = 20.6 years, SD = 0.5) and ethnicity. The majority of the participants were women (76%) and some of the participants knew each

other before joining the program. While living outside their own country for a period of three months, the participants had to attend classes at a local university. Each month, they were required to work on class projects, all of which were evaluated by instructors or clients and formed the basis for the participants completing the program and receiving 18 university credits. Students thus had a strong incentive to accomplish each project's goals and requirements. In this class-related context, leaders, capable of influencing group activities and efforts towards goal setting and goal achievement, are likely to emerge.

It should be noted that the social context of the current study offers another opportunity to refine our understanding of the role of emotional intelligence in leadership emergence: it provides new evidence that emotional intelligence facilitates leadership emergence in *larger groups*, since it uses a group of 41 students in comparison to prior studies' use of relatively small groups. Furthermore, this study relies on longitudinal data collected over the course of a study abroad program. This particular social context overcomes several shortcomings of previous emergent leadership research, such as limited time in laboratory experiments (a few minutes only), restrictions and manipulations of group composition, and the forced emergence of a single and unique leader (Moss and Kent, 1996).

Measures

Leadership Emergence

To identify emergent relationship and task leaders, participants were asked who they perceived as a leader in their group *at three points in time* (at one-month time intervals). They were also asked to distinguish between two types of leaders, that is, task and relationship leaders, when it comes to achieving class projects, by answering the following question: "Leadership is

the act of influencing the activities of an organized group in its efforts towards goal setting and goal achievement. We are interested in who you perceived as two types of leaders during class this past month: 1) *task leaders*, who provide leadership when it comes to organization and planning and 2) *relationship leaders*, who provide leadership when it comes to making sure the group worked together as a team. Who did you see as a task leader for class this past month (check all that apply)? Who did you see as a relationship leader for class this past month (check all that apply)?" To record their answers, respondents had to place a cross next to the names of each person they saw as a leader, on a list containing all participants' names. Respondents were free to nominate as many leaders as they deemed appropriate.

The answers were combined in two 41-by-41 binary adjacency matrices, one for each leadership style, where a 1 in cell (i,j) indicates that actor i perceives actor j as a leader, and 0 indicates that they do not. To capture how leadership emerges over time, three matrices (one for each point in time) were constructed for both the task-oriented and relationship-oriented leaders. All participants were present for each round of data collection. Complete leadership networks were therefore constructed. A network representation of leadership offers three main advantages over traditional research approaches. First, it illustrates how leadership can be distributed across a number of individuals rather than being focused on a single leader (Gronn, 2002; Pearce et al., 2007; Mehra et al., 2006). Since it does not impose any restrictions on the exact number of leaders, a network representation captures the "natural" dynamics of the group, allowing the possibility for there to be multiple leaders. Emergent leaders are identified by those nodes with a higher number of receiving ties. Second, a network representation envisions leadership as an inter-individual, multilevel phenomenon (Mehra et al., 2006), in which all members have a role to play (whether that of leader or follower). In other words, a network representation of

leadership treats leadership as a social process involving an interactive group of leaders and followers (Kickul and Neuman, 2000; Pescosolido, 2002). Finally, this complex representation better preserves information about the actual pattern of leadership within the group (Mehra et al., 2006) and captures higher order hierarchical structures within the group (Livi et al., 2008). Especially in the case of a relatively large group, a leadership network provides a more realistic representation of leadership by capturing its actors, its complexity, and, if assessed over time, its emergence.

Emotional Intelligence

Participants' emotional intelligence was assessed using the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT, Mayer et al., 2008). The MSCEIT is an ability-based test designed to measure the four branches of emotional intelligence. As highlighted by many scholars, only ability-based models of emotional intelligence "capture the core meaning of emotional intelligence as a set of emotion-related abilities" (Walter et al., 2011: 52; Daus and Ashkanasy, 2005; Jordan, Dasborough, Daus, and Ashkanasy, 2010). It has been shown to be a reliable (Mayer, Salovey, Caruso, and Sitarenios, 2003; Keele and Bell, 2009) and valid (Brackett and Mayer, 2003; Côté and Miners, 2006; Lopes et al., 2004) measure of emotional intelligence (Papadogiannis, Logan, and Sitarenios, 2009). Although it has received some criticism, the MSCEIT is the most frequently studied, developed, and used measure of emotional intelligence (Ashkanasy and Daus, 2005; Côté et al., 2010).

Throughout the test, respondents are asked to identify the emotions expressed by a face or in designs, to generate a mood and solve problems when in that mood, to define the causes of different emotions, to understand the progression of emotions, and to determine how to best

include emotions when thinking about situations. The MSCEIT provides final scores on the four emotional abilities making up emotional intelligence, that is, the ability to perceive emotions (mean for the group (M) = 94.1, SD = 14.2, Spearman Brown test of reliability = 0.92), to use emotions to facilitate decision making (M = 86.5, SD = 11.4, Spearman Brown = 0.71), to understand emotions (M = 97.4, SD = 12.5, Spearman Brown = 0.88), and to manage emotions (M = 91.5, SD = 12.0, Spearman Brown = 0.84). The majority of the participants completed the MSCEIT (n=37, 90%). Missing data was clearly specified in the SAOM.

Individual Covariates (Controls)

Leadership emergence cannot solely be attributed to emotional intelligence. Seven individual covariates, all of which are extensively described in the leadership literature as being likely to have an impact on leadership emergence, were therefore included as controls.

Extensive research has revealed that gender affects leadership emergence. Previous research has repeatedly confirmed that men tend to emerge as leaders when an activity is task-oriented whereas women emerge as leaders when it is socially-oriented (Eagly and Carly, 2003). To control for gender effects, participant gender was coded as a binary variable (0 for female and 1 for male).

Cognitive intelligence and leadership emergence have been found to be positively correlated (Taggar et al., 1999). As individuals with greater cognitive ability tend to be more task-competent, they are more likely to emerge as leaders (Bass, 1990). As in Valacich, Jung, and Looney (2006), participants' cognitive abilities were assessed using their grade point average (GPA) as a proxy (M = 3.3 out of 4, SD = 0.6).

Personality may also facilitate leadership emergence. Judge et al.'s (2002) meta-analysis confirmed that specific personality traits, such as extraversion, conscientiousness, and openness to experience, are strongly correlated with leadership emergence. The current study therefore controls for the participants' *Big Five* personality traits (Côté et al., 2010; Goldberg, 1990): Agreeableness is the tendency to be compassionate and cooperative (M = 37.9, SD = 4.4, Cronbach's alpha = 0.76); conscientiousness is the tendency to show self-discipline and aim for achievement (M = 32.5, SD = 4.4, Cronbach's alpha = 0.78); extraversion concerns individuals' level of assertiveness, sociability, and activity (M = 29.1, SD = 7; Cronbach's alpha = 0.93); neuroticism represents the tendency to exhibit poor emotional adjustment and experience negative effects (M = 19.1, SD = 5.5, Cronbach's alpha = 0.83); openness to experience is the disposition to be imaginative, nonconforming, and autonomous (M = 38.6, SD = 5.1, Cronbach's alpha = 0.76).

Initial Friendship Network (Control)

A relational view on leadership argues that leadership is an outcome of relational interactions between agents (Lichtenstein et al., 2006). It is therefore essential to take into account how other social relationships potentially affect leadership networks (Uhl-Bien, 2006). As a few of the participants knew each other before joining the program, the impact of initial friendships on leadership emergence was controlled for. That is, do people nominate friends as leaders? To construct this constant dyadic covariate, participants were asked who they considered to be their personal friends at the beginning of the study abroad program. Initial friendships were coded as a complete network, represented by a 41-by-41 adjacency matrix, where a 1 in cell (i,j) indicated that actor *i* was friends with actor *j*, and 0 otherwise.

Empirical model specification

SAOMs were specified in SIENA, a software that examines how networks evolve over time (Snijders, 2006; Snijders et al., 2010). For each leadership network (task and relationship leaders), a set of models was built using a stepwise approach, to test the effects of emotional intelligence on the dynamics of leadership networks.

Model 1 includes *network effects* only. Networks effects illustrate how individuals use the social network structure to develop new relationships (Sefhout et al., 2010). In this study, network effects represent how an individual's leadership perceptions are influenced by the broader pattern of leadership perceptions emerging at the dyadic, triadic, and group levels (Foti, Knee, and Backert, 2008). Four network effects, deemed likely to influence leadership network dynamics, were taken into account: *outdegree* represents the basic tendency to selectively nominate leaders (i.e., not to randomly nominate someone as a leader); *reciprocity* represents the tendency of ties to be mutual; *transitive triplets* is a classical representation of network closure, implying that if actor i perceives actor j as a leader, and actor j perceives actor h as a leader, then actor i will also perceive actor h as a leader; finally, *indegree popularity* signifies that actors who receive a large number of ties become more and more attractive to other actors in the network, leading to a relatively high dispersion of the indegrees (Snijders, 2009). Indegree popularity is an important parameter as it captures the emergence of leaders: emergent leaders are individuals who receive more and more leadership nominations over time.

Dyadic (initial friendship network) and individual control variables (gender, GPA, Big 5) were added into Models 2 and 3 respectively. Finally, the four emotional abilities (main independent variables) were included in Model 4. Note that, in light of the aim of this paper (i.e.,

to investigate the role of emotional abilities in the emergence of *leaders*), only receiver effects were included in the models. Receiver effects capture the tendency for actors who score highly on a covariate to receive an increasing number of ties over time.

RESULTS

Descriptive Network and Covariate Statistics

Table 1 reports basic network characteristics on the two leadership networks. Namely, table 1 contains Krackhardt's (1994) graph theory dimensions (GTD), information about the distribution of indegrees, and Pearson correlations between emotional intelligence and several network measures. Each network reveals interesting evolution patterns. Both show a high level of connectedness (the degree to which a graph is maximally connected), efficiency (the extent to which nodes have an indegree of one) and least upper boundedness (the degree to which unity of command is unified compared to a tree hierarchy), all of which imply the emergence of a hierarchy. Finally, emergent task leaders receive more nominations (up to 25 nominations) than relationship leaders (up to 10 nominations), implying that there is greater consensus when it comes to nominating a task leader.

[Insert Table 1 about here]

Descriptive statistics on individual covariates and a correlation matrix are reported in Table 2. As expected, we notice some degree of correlation between the variables of interest, emotional abilities. Perceiving emotions is positively correlated with the abilities to use and understand emotions. The last of these is also positively linked to the ability to manage emotions. These correlations are consistent with the findings of Mayer and colleagues (2003). It is

important to note that collinearity is not necessary a problem in itself in SAOMs (Snijders et al., 2011); it becomes a problem if and only if it creates high standard errors in the parameter estimates.

[Insert Table 2 about here]

Stochastic Actor Oriented Models

Tables 3 and 4 report the SAOMs created to study the emergence of relationship and task leaders, respectively. Each model was assessed based on 3,000 iterations and run twice, in order to guarantee convergence. Parameters were estimated using the conditional method of moments. Convergence was achieved in all models (all t-ratios for convergence were less than 0.1 in absolute value), therefore allowing the interpretation of estimates and standard errors. The standard errors reported in the models do not show potential problems linked to multi-collinearity. The final models (Model 4) reveal new information about how different emotional abilities have different impacts on the emergence of relationship and task leadership.

[Insert Table 3 about here]

[Insert Table 4 about here]

It will be recalled that three emotional abilities, namely the abilities to perceive, to understand, and to manage emotions, were expected to facilitate the emergence of relationship leaders. In particular, individuals scoring higher on those emotional abilities would be more likely to receive greater number of nominations as relationship leader over time. SAOMs in Table 3 reveal that only two emotional abilities played a positive role in the emergence of relationship leaders: *perceiving emotions* and *managing emotions*. Coefficients on both

emotional abilities were positive and significant ($\beta_{Perceiving}$=.003, $p < .05$; $\beta_{Managing}$=.004, $p < .05$), suggesting that, over time, individuals endorsing both abilities were more likely to emerge as relationship leaders for the group. Understanding emotions, on the other hand, had no impact on the emergence of relationship leaders as indicated by its insignificance coefficient ($\beta_{Understanding}$, n.s.). Models reported in Table 4 suggest that the two emotional abilities, namely *using* and *understanding* emotions, were positively related to task leadership emergence. The longitudinal analysis of leadership networks showed that people with a greater ability to use emotions to facilitate decision making (β_{Using}=.008, $p < .05$) and to understand emotions ($\beta_{Understanding}$=.005, $p < .05$) were more likely to be nominated as task leaders over time. On the other hand, perceiving and managing emotions had no significant impact on the emergence of task leaders ($\beta_{Perceiving}$ and $\beta_{Managing}$, n.s.).

Thus, pairs of emotional abilities played complementary roles in the emergence of different types of leader. Emotional abilities that facilitate the emergence of relationship leaders (perceiving and managing emotions) played no significant role in the emergence of task leaders, while the two remaining emotional abilities (using and understanding emotions), which did not affect relationship leadership, were positively linked to the task leadership emergence.

DISCUSSION

People differ in their emotional abilities and this heterogeneity may be a factor favoring the emergence of emotionally intelligent individuals as leaders. Relatively few studies have examined the relation between EI and leadership emergence, and only one published study used an ability-based measure of EI (Côté et al., 2010). This study answers a call from Walter and colleagues (2011) who advocate (i) further research with greater methodological rigor (including

relevant controls and a greater emphasis on ability-based tests) and (ii) more complete theoretical models (focusing on underrepresented leadership criteria and examining the relative importance of separate emotional abilities).

The current study adopts a complex design to investigate if different emotional abilities affect the dynamic process of leadership emergence. It performs a longitudinal analysis of two leadership networks (relationship and task leadership) collected in a group of 41 students over three time periods. Controlling for personality, cognitive abilities, and friendship, results from SAOMs reiterate previous finding and show that emergent leaders need EI. Results also bring forward a novel finding to the literature: not all emotional abilities are necessary in order for a person to emerge as a leader and pairs of emotional abilities play complementary roles in the emergence of different types of leader. More precisely, the abilities to perceive and manage emotions facilitate one's emergence as a relationship leader, while the abilities to use and understand emotions are positively linked to a person emerging as a task leader.

Relationship and task leaders fulfill different missions (Kellet et al., 2006; Taggar et al., 1999; Yukl, 2009). The role of relationship leaders is to create satisfying social interactions and to enhance collaboration, conflict management, and solidarity among group members (Kellet et al., 2006). Their emotional abilities should therefore be directed toward helping others and building positive interactions and feelings within a group. Two emotional abilities can help emergent leaders achieving the previous: the abilities to perceive and manage emotions. Both abilities increase an individual's accurate social perceptions and management of group emotions, (Côté et al., 2010). Perceiving emotions allows emergent leaders to provide adequate social support and enhance positive relationships among members (George, 2000) while managing

emotions allows emergent leaders to be more passionate, have good emotional self-control (Mayer and Caruso, 2004), fit appropriate emotional responses to different circumstances (George, 2000) and have a pronounced influence on others' emotions (Côté et al., 2010). The positive link between both emotional abilities and the emergence of relationship leaders is consistent with previous research (Kellet et al., 2006; Pescosolido, 2002).

The remaining two emotional abilities, i.e., understanding and using emotions, did not affect participants' likelihood of emerging as relationship leaders. The uniqueness of the social context studied here may explain why people with a greater ability to understand emotions did not emerge as relationship leaders: although challenging, the study abroad program was not characterized by unexpected crisis, extreme pressure to perform, or interpersonal conflict therefore reducing the relevance of understanding the causes, consequences, and evolution of emotions. The very purpose of a relationship leader may explain why the ability to use emotions did not facilitate people's emergence as relationship leaders. Indeed, a relationship leader's role consists of reinforcing the group, creating satisfactory social interactions, and enhancing collaboration and solidarity among members (Yukl, 2009; Kellet et al., 2006) and does not involve facilitating decision making. In that sense, relationship leaders may simply not require the ability to use emotions.

Task leaders, on the other hand, endorse a different role. These instrumental individuals help their group to achieve its goals by excelling at organizing, planning, and improving activities (Taggar et al., 1999). Task leaders' emotional abilities should therefore be directed towards cognitive activities and decision making, which makes the abilities to use and understand emotions highly relevant for them. Using emotions enables individuals to enhance

reasoning and problem solving through appropriate use of their emotions. A deep understanding of how emotions evolve and of their consequences has also been proven to affect decision making, for example, in terms of negotiation and judgment bias. Taken together, these two emotional abilities allow individuals to organize and improve group work, which facilitates their emergence as task leaders. These findings tie in with previous research which has shown that, while the ability to use emotions enables individuals to improve their group's reasoning, problem solving, and decision making, the ability to understand emotions helps them to adjust their behavior or take action to counterbalance the undesired consequences of emotions during the decision-making process (Côté et al., 2010; George, 2000).

It should be noted that, contrary to previous studies reporting a positive link between empathy and the emergence of task leaders (Kellet et al., 2006; Wolff et al., 2002), the current analysis finds no evidence directly linking the ability to perceive emotions with people's emergence as task leaders. A potential explanation for this result resides in the measurement of emotional abilities. While this study used an ability-based test of EI, previous research has used other self- or other reports of emotionally intelligent behavior (Kellet et al., 2006) or of emotional intelligence-related dispositions, competencies, behaviors, and perceptions (Wolff et al., 2002).

Limitations & Future Research

Although it brings new evidence that emotional abilities facilitate leadership emergence, this study has several acknowledged limitations. First, a student sample limits the generalizability of the results obtained. The study-abroad context only partly represents the challenges of real work in organizations, in which emotional abilities may play a different role.

Second, an unintended consequence of studying leadership emergence in a natural group (with no research manipulations or controls) was that the sample contained a high proportion of women. Although gender was statistically controlled for in the models, it is possible that the results may have been influenced by the composition of the group. To strengthen the findings reported above, it will be necessary to replicate the analysis on other groups confronting the same social context.

In this paper, only receiver-effects on individual differences were included in SAOMs. Using other specifications on similar models, research could make two broad advances to the study of leadership emergence. By focusing on sender-effects, scholars could reverse the lenses and move from a leader-centered to a follower-centered approach to leadership emergence. Sender-effects capture if individual differences, such as emotional intelligence, affect people's propensity to recognize leadership in other group members, in other words, to send greater number of leadership nominations. As noted by George (2000), "the study of emotional intelligence and leadership would benefit from the consideration of emotional intelligence in followers and its effects on the leadership process". Her call echoes ongoing research on the active role of followers' personalities in shaping their leadership perceptions (Felfe and Schyns, 2010). Therefore, future research investigating if followers' EI have a direct impact on the construction of leadership would therefore make an important contribution to our overall understanding of the relation between EI and leadership emergence.

The second area for future research revolves around the study of network effects (such as reciprocity, transitivity, centrality, etc). In dynamic leadership networks, network effects represent how an individual's leadership perceptions are influenced by other group members' perceptions and by the structure of perceptions emerging at the dyadic, triadic, and group levels

(Morgeson, DeRue and Karam, 2010). By focusing on pattern of ties in leadership network, scholar can represent and study the social construction of leadership (Lord and Emrich, 2001). As emphasised by Balkundi and Kilduff (2006: 423), "that implicit leadership theories may be triggered by the structural position of certain individuals in the eyes of others is a possibility hinted at in recent leadership theory (Lord & Emrich, 2001), but yet to be systematically examined".

Conclusion

This paper contributes to the debate on the usefulness of emotional intelligence in leadership (Antonakis et al., 2009) by advancing new evidence that emotional abilities have a positive role to play in the emergence of two leadership styles. It does so by imposing a strong methodological rigor and by emphasizing ability-based tests of emotional intelligence (EI), in order to overcome existing criticisms of the EI-leadership literature (Walter et al., 2011; Fiori and Antonakis, 2011). It also illustrates how a longitudinal analysis of leadership networks can provide a more realistic and complex perspective on leadership emergence and can be used to investigate the current debates in the literature. Indeed, synergies between leadership research and social network approaches open new and fascinating possibilities for investigation. As Balkundi and Kilduff (2005: 943) highlight, "a social network perspective (on leadership issues) does not eclipse the valuable results of conventional leadership research; rather, a network perspective can complement existing work without repeating it".

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TABLES

Table 1 – Leadership Networks Characteristics

	Relationship Leaders			Task Leaders		
	Time 1	Time 2	Time 3	Time 1	Time 2	Time 3
Krackhardt's GTD						
Connectedness	0.95	1.00	1.00	1.00	1.00	0.90
Hierarchy	0.47	0.41	0.72	0.65	0.43	0.57
Efficiency	0.88	0.89	0.91	0.86	0.83	0.83
Least Upper Bound	0.92	0.96	0.95	0.87	0.93	0.94
Indegree distribution						
Mean	3.39	3.32	2.93	4.12	4.32	4.22
Standard Deviation	2.89	2.76	2.05	4.98	5.55	5.25
Min, Max	0/10	0/10	0/8	0/23	0/25	0/20
Network Concepts & EI						
Corr (Outdegree, EI)	0.20	-.06	-0.02	0.29	0.10	0.10
Corr (Reciprocity, EI)	0.34*	0.16	0.06	0.24	0.17	0.25
Corr (Indegree, EI)	0.21	0.21	0.23	0.08	0.12	0.20

Note: * $p < 0.05$

Table 2 – Individual Covariates, Descriptive Statistics and Correlation Matrix

Variable	Mean	S.D.	1	2	3	4	5	6	7	8	9
1. GPA	3.3	.6									
2. Agreeableness	37.9	4.4	-.075								
3. Conscientiousness	32.5	4.4	.188	.410*							
4. Extraversion	29.1	7	-.558*	.005	-.089						
5. Neuroticism	19.1	5.5	.433*	-.569*	-.084	-.292					
6. Openness	38.6	5.1	.327*	-.184	-.077	.136	.123				
7. Perceiving Emotions	94.1	14.2	-.016	-.159	-.040	-.182	.318	-.071			
8. Using Emotions	86.5	11.4	.120	-.105	.026	-.056	.318	.361*	.527*		
9. Understanding Emotions	97.4	12.5	-.005	.250	-.230	-.259	.187	-.153	.504*	.342	
10. Managing Emotions	91.5	12.0	.043	.194	-.095	-.087	.035	.209	.256	.317	.527*

Note: * $p < 0.05$

Table 3 –Effect of Emotional Intelligence on the Emergence of Relationship Leaders

Parameter	Model 1 Estimate	SE	Model 2 Estimate	SE	Model 3 Estimate	SE	Model 4 Estimate	SE
Network effects								
Outdegree	-1.74**	.095	-1.71**	.333	-1.69**	.106	-1.68**	.112
Reciprocity	.155	.174	.139	.175	.183	.176	.187	.167
Transitive Triplets	.296**	.061	.297**	.059	.303**	.058	.303**	.056
Indegree-Popularity	.049**	.021	.063**	.021	.076**	.034	.097**	.027
Dyadic Covariate								
Initial Friendship			.111*	.059	.117*	.064	.121*	.061
Individual Covariates								
Gender					.111	.111	.109	.121
GPA					-.032	.116	-.049	.121
Agreeableness					.023	.014	.024	.017
Conscientiousness					.025*	.011	.024*	.012
Extraversion					.021*	.007	.019*	.008
Neuroticism					.021	.013	.023	.015
Openness					-.018*	.009	-.023*	.011
Emotional Intelligence								
Perceiving Emotions							.003*	.001
Using Emotions							.006	.006
Understanding Emotions							-.002	.006
Managing Emotions							.004*	.002

Note: ** p<0.01, * p<0.05

Table 4 –Effect of Emotional Intelligence on the Emergence of Task Leaders

Parameter	Model 1 Estimate	SE	Model 2 Estimate	SE	Model 3 Estimate	SE	Model 4 Estimate	SE
Network effects								
Outdegree	-1.90**	.091	-1.89**	.088	-1.90**	.092	-1.897**	.102
Reciprocity	-.150	.160	-.160	.162	.143	.172	.154	.165
Transitive Triplets	.159**	.042	.152**	.041	.151**	.043	.143**	.046
Indegree-Popularity	.071**	.007	.071**	.007	.061**	.008	.060**	.008

Dyadic Covariate						
Initial Friendship	.135	.088	.153	.089	.150	.090
Individual Covariates						
Gender			.071	.120	.079	.122
GPA			.234*	.103	.229*	.109
Agreeableness			-.003	.014	-.014	.015
Conscientiousness			.041*	.013	.042*	.014
Extraversion			.016*	.007	.016*	.007
Neuroticism			.003	.011	.009	.013
Openness			-.024*	.009	-.023*	.010
Emotional Intelligence						
Perceiving Emotions					.001	.001
Using Emotions					.008*	.003
Understanding Emotions					.005*	.002
Managing Emotions					-.006	.004

Note: ** p<0.01, * p<0.05