ABSTRACT

This chapter examines how emotional intelligence may influence the performance of groups. I first address relevant issues concerning emotional intelligence at the individual level of analysis. I then describe the range of composition models by which group emotional intelligence constructs can be created, from the emotional intelligence of the members of the group, articulate mechanisms by which each construct may be related to performance, and use Steiner’s (1972) typology of group tasks to identify when each construct may best predict performance. I also use the mechanisms of multiplication and compensation to consider how group emotional intelligence may combine with other group constructs to predict performance. I end this chapter with a discussion of research implications.
There are few ability tests of emotional intelligence. The most extensively researched ability test is the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT; Mayer, Salovey, & Caruso, 2002). The MSCEIT contains tasks that ask respondents to identify emotions in photographs of faces and in images and landscapes, compare different emotions to different sensations such as colors, indicate how emotions influence thinking and reasoning, assemble emotions into complex feelings, identify how emotions transition from one to another, and rate the effectiveness of different emotion regulation strategies in both intrapersonal and interpersonal contexts. Respondents receive credit when their answers match those provided by expert emotion researchers or a large normative sample of lay people from around the world.

The MSCEIT has several desirable psychometric properties. It exhibits high test–retest (0.86; Brackett & Mayer, 2003) and internal consistency reliability (above 0.90; Brackett & Mayer, 2003; Mayer, Salovey, Caruso, & Sitarenios, 2003). There is also evidence for its validity. The factor structure of the responses corresponds to the conceptual model (Mayer et al., 2003), and the test shows appropriate discriminant validity with personality traits and cognitive intelligence (Brackett & Mayer, 2003; Côté & Miners, 2006) and criterion validity with the quality of social interaction (Lopes et al., 2005) and job performance (Côté & Miners, 2006).

There are some logistical difficulties, however, in using the MSCEIT for research purposes. First, the test is relatively long – the manual indicates that respondents should block off 45 min to complete it (Mayer et al., 2002). Opportunities for data collection are sometimes lost because respondents cannot answer questions for 45 min. Abilities are inherently more difficult to measure than other psychological characteristics such as personality traits. It took several decades to develop short measures of cognitive intelligence such as the Wonderlic Personnel Test and, therefore, it is reasonable to expect that it will take some time before similarly efficient tests of emotional intelligence can be developed. A second logistical difficulty with using the MSCEIT is its cost. It is not free, and even a reduced cost is prohibitive for researchers – including students – who lack research funding. Finally, the answer key for the MSCEIT is copyrighted, and researchers do not have access to a document that links each answer to a specific score. Even so, the test publisher provides researchers with a spreadsheet that includes the answer that each respondent selected on each question and the credit received for each answer. This information allows researchers to examine psychometric properties such as internal consistency reliability and share their data.
Why do some groups perform better than others? One approach to explaining differences in performance across groups involves aggregating individual-level phenomena to form group-level constructs and examining the associations between these group-level constructs and group performance. Researchers have used this approach to aggregate the affect, personality traits, and cognitive intelligence of individuals to form group-level constructs and then link them to performance (e.g., Barry & Stewart, 1997; George, 1990; Neuman & Wright, 1999; Terborg, Castore, & DeNinno, 1976).

This research was recently extended to consider aggregating the emotional intelligence of individuals to form group-level constructs and linking them to group performance. Researchers have provided some theoretical arguments for conceptualizing emotional intelligence at the group level of analysis (Druskat & Wolff, 2001; Elfenbein, 2005; Kelly & Barsade, 2001) and for linking group emotional intelligence to performance. So far, however, researchers have mostly focused on a single way of composing group emotional intelligence and a single way of linking it to performance. The goal of this chapter is to create opportunities for additional research by describing the range of approaches to compose group emotional intelligence and examining the conditions in which each of these approaches may best predict performance.

To maintain adequate scope, the theoretical developments described in this chapter have particular boundaries. First, they focus on the performance of self-managing groups that lack a formally appointed leader (Taggar, Hackett, & Saha, 1999). The leadership process is fraught with emotions (Rubin, Munz, & Bommer, 2005; Sy, Côté, & Saavedra, 2005) and thus, the hierarchical nature of groups with a formally appointed leader provides complexity that is beyond the scope of this chapter. I leave the examination of how group emotional intelligence is associated with performance in groups that have a formally appointed leader for future research. Second, the theoretical developments in this chapter focus on how group emotional intelligence may influence performance via mechanisms concerned with internal team dynamics – how group members’ emotional intelligence influences the nature of the exchanges that they have with each other, as opposed to external team dynamics that involve individuals outside the team.

Emotional intelligence is typically conceptualized as a characteristic of individuals. I first address issues pertaining to emotional intelligence at the individual level of analysis. I then cover the range of group emotional intelligence constructs available for research by describing the various
models by which they can be composed from the emotional intelligence of the individuals in the group. I use Steiner’s (1972) taxonomy of group tasks to propose when each group emotional intelligence construct may best predict performance. I then describe multiplication and compensation models by which group emotional intelligence may combine with other constructs to predict group performance. I conclude this chapter by discussing the research implications of these models.

EMOTIONAL INTELLIGENCE AT THE INDIVIDUAL LEVEL OF ANALYSIS

Emotional intelligence is a set of abilities pertaining to emotions (Salovey & Mayer, 1990). It is conceptualized as a true intelligence that is separate from cognitive intelligence (Mayer, Caruso, & Salovey, 2000). In addition, it is treated as a multidimensional construct (Wong & Law, 2002). For instance, Mayer and Salovey (1997) identified four branches of emotional intelligence pertaining to perceiving emotions: using emotions to facilitate performance, understanding emotions and emotional knowledge, and regulating emotions. Researchers must decide whether to focus on emotional intelligence as a whole, or on the branches of emotional intelligence, or on both. They can use the typology of multidimensional constructs proposed by Law, Wong, and Mobley (1998) to guide that decision. Some researchers have argued that emotional intelligence should be treated as a latent multidimensional construct because it represents the commonality among specific emotional abilities, and its true variance corresponds to the common variance among those abilities (Côte & Miners, 2006; Wong & Law, 2002). In this chapter, I adopt this approach and focus on emotional intelligence as a whole rather than on each of its branches.

Two controversies that currently surround the concept of emotional intelligence and that are relevant to this chapter are its status as a true intelligence and its distinctiveness from extant concepts. Several researchers have argued that emotional intelligence is a true intelligence (Côte & Miners, 2006; George, 2000; Law, Wong, & Song, 2004). Their arguments are based, in part, on the definition of intelligence as the “ability to grasp and reason correctly with abstractions (concepts) and solve problems” (Schmidt & Hunter, 2000, p. 3). Accordingly, emotional intelligence can be conceptualized as the ability to grasp and reason correctly with emotional abstractions (emotional concepts) and solve emotional problems (Côte & Miners, 2006). Researchers have also argued that emotional intelligence is a true
intelligence because it meets the criteria for a type of intelligence as described by Mayer et al. (2000) following their literature review. More specifically, (a) emotional intelligence reflects abilities rather than tendencies to act in certain ways, (b) emotional intelligence correlates with yet is different from other intelligences, and (c) emotional intelligence has the potential to improve over time. Unlike ability models of emotional intelligence like the one proposed by Mayer and Salovey (1997), mixed models of emotional intelligence that combine ability and personality trait constructs (Bar-On, 2001; Tett, Fox, & Wang, 2005) do not meet the criteria of intelligence because they include concepts that do not fit the definition of abilities. Therefore, mixed models are not useful for research on group emotional intelligence and performance.

A second controversy concerns the distinctiveness of emotional intelligence from extant concepts such as cognitive intelligence and personality traits (Locke, 2005; Schulte, Ree, & Carretta, 2004). Emotional intelligence can be distinguished from cognitive intelligence within the three-stratum theory of intelligence (Carroll, 1993; McGrew, 2005). This theory structures abilities hierarchically. General intelligence (g) is at the apex and includes several sets of abilities that represent its specializations into broad content or process areas. Emotional intelligence represents the specialization of general intelligence in the area of emotions in ways that predominantly reflect experience and learning about emotions, whereas cognitive intelligence represents the specialization of general intelligence in the domain of cognition in ways that predominantly reflect experience and learning about cognitive processes such as memory (Côté & Miners, 2006). In addition, emotional intelligence can be distinguished from personality traits because there is a fundamental distinction between ability and trait constructs. Abilities reflect “the possible variations over individuals in the liminal [threshold] levels of task difficulty… at which, on any given occasion in which all conditions appear to be favorable, individuals perform successfully on a defined class of tasks” (Carroll, 1993, p. 8). As such, abilities represent what a person can do in specific situations. By contrast, personality traits represent what a person typically does across situations and over time (McCrae & John, 1992). There is compelling empirical support for the distinctiveness of emotional intelligence from extant constructs (Côté & Miners, 2006; Mayer, Salovey, & Caruso, 2004).

Emotional intelligence is related to criteria such as high job performance (Côté & Miners, 2006), close social relationships (Lopes, Salovey, Côté, & Beers, 2005), and infrequent social deviance (Brackett & Mayer, 2003). These findings have contributed to a growing acceptance of the role of
emotional intelligence at the individual level of analysis that, in turn, has led researchers to ponder its existence at the group level of analysis (e.g., Druskat & Kayes, 1999; Kelly & Barsade, 2001). In the following section, I examine the various approaches to aggregate the emotional intelligence of individuals to form a property of the group.

EMOTIONAL INTELLIGENCE AT THE GROUP LEVEL OF ANALYSIS

In this chapter, I focus on the elemental composition of group emotional intelligence. In elemental composition, data from a lower level of analysis are used to compose a higher-level construct, so that the lower- and higher-level constructs reference essentially the same content (Chan, 1998). I describe how the emotional intelligence scores of individuals can be used to compose group-level constructs that reference essentially the same emotional abilities.

The predominant approach to composing group emotional intelligence consists of averaging the emotional intelligence of the individuals in the group. This approach has considerable merit, but researchers' almost exclusive focus on this approach may be limiting progress. Considering other ways to compose group emotional intelligence could develop richer theories. Researchers can use several composition models to develop group-level constructs (e.g., Chan, 1998; LePine, Hollenbeck, Ilgen, & Hedlund, 1997; Rousseau, 1985). These models allow researchers to construe group emotional intelligence as some combination of the emotional intelligence of the individuals in the group. Elfenbein (2005) applied several of these models to the domain of emotional intelligence. I extend her contribution by articulating additional mechanisms by which different group emotional intelligence constructs may be associated with performance, and by using Steiner’s (1972) typology of tasks to identify when each of these constructs may best predict performance.

Steiner (1972) proposed that unitary group tasks – tasks that cannot be clearly separated into sub-tasks performed by different individuals – can be divided into three categories. In additive tasks, group performance is disproportionately based on the sum or the average of the performance of the individuals in the group. For example, the performance of a group on a brainstorming session is often predominantly determined by the sum of the ideas contributed by each member of the group. In conjunctive tasks, group performance is disproportionately based on the performance of the weakest member of the group. For instance, the performance of a group on an
assembly line is predominantly determined by the slowest worker, because the performance of all workers who follow the slowest member on the assembly line are affected by that slowest member. In disjunctive tasks, group performance is disproportionately based on the performance of the strongest member of the group. For instance, the performance of a group of computer programmers that are looking for an error in programming code is predominantly determined by the performance of the best programmer, because all of the programmers can stop searching once the best programmer has found the error. The different group emotional intelligence constructs composed via different models may best predict performance on certain types of tasks.

Additive and Direct Consensus Composition Models of Group Emotional Intelligence

In additive composition models, the higher-level unit construct is an average or a summation of the lower-level unit constructs (Chan, 1998). The variance in the lower-level units – that is, whether the members of the group are similar or different – is not theoretically important. This composition model considers group emotional intelligence as the average level of emotional intelligence or the sum of emotional intelligence levels in the group. This model has been used in past research (e.g., Feyerherm & Rice, 2002), but arguments justifying its choice are typically absent. This represents a serious omission because any choice of composition model must be theoretically justified (Chan, 1998). To address this omission, Elfenbein (2005) proposed that emotional intelligence is a resource that group members combine to share and draw upon when needed. Different groups accumulate different amounts of this resource, and groups with large amounts of emotional intelligence may outperform their competitors.

A variant of the additive composition model is the direct consensus model. This model uses similarity among the units at the lower level of analysis to compose the higher-level construct (Chan, 1998). The group construct is formed by averaging or summing the lower-level scores, but only if these scores are sufficiently similar. Accordingly, group emotional intelligence can be treated as the average level of emotional intelligence or the sum of the emotional intelligence levels of the individuals in the group, but only if these scores are sufficiently similar. Research on group emotion suggests that the direct consensus composition model may be useful to create group emotional intelligence. George (1990, 2002) argued that group
affective tone and group emotion regulation develop, in part, from attraction, selection, and attrition mechanisms that produce similarity among group members (Schneider, 1987). Group emotional intelligence may also develop through attraction, selection, and attrition mechanisms. Individuals may be attracted to groups whose members have emotional intelligence levels similar to their own. Groups of emotionally intelligent individuals may select other similar individuals to join them. In addition, emotionally intelligent individuals may be more motivated to remain in groups with many rather than few other emotionally intelligent individuals.

The mechanisms that link group emotional intelligence to performance may be similar for additive and direct consensus composition models, because both models represent the sum or the average of the emotional intelligence levels in the group. The first mechanism concerns the understanding and management of stress. Increases in stress from low to moderate levels often enhance group performance, but group performance declines once stress exceeds a threshold level (Kerr & Tindale, 2004). Groups with large amounts of emotional intelligence may know that overly high and overly low levels of stress reduce performance. The group can utilize large amounts of emotional intelligence to optimize the level of stress for maximal performance.

Groups with large amounts of emotional intelligence may also achieve high performance by adjusting their emotions to match the cognitive and interpersonal demands of the work. Moods influence how individuals think and act by providing them with information that guides their judgments (Brief & Weiss, 2002; Clore, Schwarz, & Conway, 1994). Moods can also be conceptualized at the group level of analysis. Group affective tone is an aggregate of the moods of the members of the group when the moods are highly similar (George, 1990). Research has identified links between group affective tone and several aspects of performance (George, 1996). Importantly, either a positive or a negative affective tone may enhance performance depending on the demands of the work. Positive affective tone is related to coordination – synergistic interactions that avoid slippage and wasted effort – presumably because positive affective states improve social interaction (Sy et al., 2005). Conversely, a negative affective tone is related to effort, presumably because negative affective states act as signals that the environment is threatening and steps must be taken to counter the threat (Sy et al., 2005). Groups with large amounts of emotional intelligence may know the links between affective tone and performance and aptly generate the affective tone that is most conducive to meeting the demands of the work (George, 2002).

Past research provides some support for using group emotional intelligence constructs composed via an additive or a direct consensus
model. Jordan, Ashkanasy, Härtel, and Hooper (2002) examined the association between the emotional intelligence and the performance of 44 groups of undergraduate students. They composed group emotional intelligence with an additive model by averaging the scores of the individual members of each group. They measured two aspects of group performance – process effectiveness and goal focus – during nine consecutive weeks. The analyses revealed that group emotional intelligence predicted the change in performance from the first to the last week. Emotionally intelligent groups maintained a high level of performance over time, but groups with low emotional intelligence increased their performance from the first to the last week. The authors argued that emotionally intelligent groups can function effectively as a group at the initial stages of a project, but groups with low emotional intelligence need time to develop effective ways to perform. Likewise, Feyerherm and Rice (2002) tested the association between the emotional intelligence and the performance of 26 groups of employees in a financial services center. They also used an additive composition model. Managers ranked the groups in terms of their performance and also rated each group on five dimensions of performance: customer service, accuracy of work, productivity, team leader performance, and commitment to continuous improvement. Group emotional intelligence positively predicted the rankings but not the ratings of performance.

These studies provide some evidence that group emotional intelligence composed via an additive model is associated with group performance, but they do not explicitly consider the nature of the task that the group performs. The nature of the task may be important. For instance, group emotional intelligence composed via an additive model may not necessarily have influenced performance on the types of tasks that the groups performed in Feyerherm and Rice’s (2002) study. Because group emotional intelligence composed via additive or direct consensus models reflects the emotional intelligence of the different members equally, they may garner the most explanatory power when all of the members of the group are equally important and no single individual is disproportionately influential. They may therefore be more useful to predict performance on additive tasks that represent the sum or the average of the performance of each member of the group.

For example, an additive composition model of group emotional intelligence may be particularly useful to predict performance during a brainstorming session, which is an additive task. The number of ideas generated by each member of the group should be high if each member is generally emotionally intelligent. This is because, in theory, emotional intelligence may be used to guide emotions toward creative thinking
Each group member should provide a generally high number of ideas. When these ideas are summed, the group should be considered to have performed strongly because the total number of ideas is high. Additive or direct consensus models may therefore predict performance on brainstorming tasks that represent the sum of the ideas contributed by each member of the group.

The preceding discussion suggests that group emotional intelligence composed via an additive or a direct consensus model may predict performance on additive tasks to a greater extent than on other types of tasks on which the average amount of emotional intelligence in the group may be less important:

**Proposition 1.** Group emotional intelligence composed via an additive or a direct consensus model is positively related to the performance of groups working on additive tasks.

**Maximum-Score Composition Model of Group Emotional Intelligence**

Researchers have argued for the importance of group-level constructs formed by identifying the person with the highest level of a given characteristic in a group (Barsade & Gibson, 1998; Elfenbein, 2005). The average and the variance of that characteristic in the group are irrelevant. Different groups receive the same score if their highest scoring member is the same, even if the other members of these groups vary considerably. With a maximum-score model, group emotional intelligence is conceptualized as the highest emotional intelligence score in the group, regardless of the scores of all of the other group members.

There is no research on a maximum-score composition model of group emotional intelligence and performance, but it is possible to theorize that this model may best predict performance on disjunctive tasks that disproportionately depend on the strongest member of the group. It may be important for a group confronted with a disjunctive task to have a person with a considerably high level of emotional intelligence to ensure high performance. When the performance of the group on a disjunctive task is evaluated, the performance of the strongest member of the group is disproportionately considered. The level of emotional intelligence of all of the other members of the group should be relatively unimportant.

For instance, many groups and organizations face demands to express certain emotions and hide others to build and maintain relationships. It is often difficult to meet at least some of these demands (Hochschild, 1983;
van Vegchel, de Jonge, Söderfeldt, Dormann, & Schaufeli, 2004) and individuals regulate their emotions to meet these demands (Côté & Morgan, 2002; Grandey, 2003). When a group works on an emotionally demanding task, having a highly emotionally intelligent person to address the emotional demands might be particularly important. This person may possess the needed emotional knowledge and ability to meet the demands of the task, such as handling difficult interpersonal encounters. Groups that do not include anyone with spectacular abilities may be outperformed. An analogy concerns the association between mathematical ability and performance on a disjunctive mathematical task. A group composed of one person with considerable ability in advanced calculus and several who have none at all can solve more difficult mathematical problems than a group composed of individuals who are very knowledgeable, but not advanced, at mathematics. Similarly, a group composed of one person with considerable emotional ability and several who have none at all can solve more difficult emotional problems than a group composed solely of individuals who are very knowledgeable, but not advanced, at emotions. This reasoning suggests the following proposition:

**Proposition 2.** Group emotional intelligence composed via a maximum-score model is positively related to the performance of groups working on disjunctive tasks.

**Minimum-score Composition Model of Group Emotional Intelligence**

In minimum-score composition, the group level construct is formed by identifying the lowest individual score on the characteristic of interest (Barsade & Gibson, 1998; Elfenbein, 2005). The average and variance of that characteristic are irrelevant. The lowest score may be accompanied by several high scores, several average scores, or other low scores. The group emotional intelligence construct is formed by identifying the lowest emotional intelligence score in the group, regardless of the scores of all of the other group members.

There is no research on a minimum-score model of group emotional intelligence and performance, but it is possible to theorize that this model may best predict performance on conjunctive tasks that are disproportionately based on the weakest member of the group. It may be important for groups that perform a conjunctive task to avoid having a person with low emotional intelligence. The performance of the group should strongly depend on the level of emotional intelligence of the weakest member of the
group. The level of emotional intelligence of all of the other members should be of little consequence for group performance.

For instance, the performance of a musical trio in front of a large audience may be disproportionately influenced by the musician with the lowest level of emotional intelligence. Only one member of the trio needs to play poorly for the entire performance to be poor. In front of a large audience, a musician with low emotional intelligence may feel overly stressed and fail to cope with the situation. This musician may thus play poorly and worsen the performance of the trio. This musician may also cause emotional disruption and cause the other two members of the trio to play poorly. The musician with low emotional intelligence may consume the attention of the other members that they could otherwise devote to performance.

Taken together, these arguments suggest that group emotional intelligence composed via a minimum-score model may have considerable utility in predicting performance on conjunctive tasks, so that the lower the minimum level of emotional intelligence in the group, the lower the performance of the group on this type of task.

**Proposition 3.** Group emotional intelligence composed via a minimum-score model is positively related to the performance of groups working on conjunctive tasks.

*Dispersion Composition Model of Group Emotional Intelligence*

In dispersion composition models, the group construct is created from the variance of the scores of the individuals in the group (Chan, 1998). The higher-level construct represents the variance in the scores on the lower-level units. This model may be used to form group emotional intelligence constructs that represent the variance in the emotional intelligence scores of the members of the group.

The literature on group diversity provides conceptual meaning to group emotional intelligence constructs composed via a dispersion model. Researchers are increasingly interested in the importance of diversity in deep characteristics that cannot readily be observed to complement research on diversity in surface characteristics such as gender and race. Emotional intelligence may represent a deep characteristic that affects group diversity dynamics. In particular, diversity in emotional intelligence may contribute to group performance via the enhanced elaboration of task-relevant information and material (Van Knippenberg, De Dreu, & Homan, 2004). Diversity within a group often produces different assumptions and opinions
about group tasks. It may therefore enhance performance via the reconciliation of different assumptions and opinions by triggering the exchange, discussion, and integration of ideas, knowledge, and insights relevant to the task. In the absence of diversity, the group’s information elaboration is less, and as a result performance suffers.

These arguments can be focused more directly on emotional intelligence. Groups composed of individuals with varying levels of emotional intelligence may be forced to reconcile different approaches to group tasks. The members of these groups may experience different emotional states that are associated with different cognitive approaches to process task-relevant information. By discussing and reconciling these different approaches, group members may enhance their performance by adopting the most appropriate approach or developing a new approach that combines the best features of the different approaches. In contrast, groups composed of individuals with similar levels of emotional intelligence may develop a shared understanding of the emotional aspects of tasks. They should be emotionally “in tune” in several ways. They may experience similar emotional states that are associated with similar cognitive approaches to processing information. These groups may not avail themselves of the opportunity to choose the best of several approaches or create novel approaches.

The performance benefits of emotional intelligence diversity should be important for additive group tasks that disproportionately depend on the sum or the average of the performance of the individual group members. When the performance of the different group members is summed, each component of that sum will have benefited from emotional intelligence diversity, resulting in considerable influence of emotional intelligence diversity on the final outcome.

For example, a group performing a brainstorming task may benefit from emotional intelligence diversity by reconciling the different emotional states experienced by the members as they initiate the task. The group may consider the different cognitive approaches to creating novel ideas that are associated with these different emotional states. It may converge on an optimal emotional state and, in turn, an optimal cognitive approach to produce creative ideas. Each member of the group may produce a relatively high number of creative ideas. When these ideas are summed, the group should perform relatively well. This reasoning suggests the following proposition:

**Proposition 4.** Group emotional intelligence composed via a dispersion model is positively related to the performance of groups working on additive tasks.
There may also be performance benefits of emotional intelligence diversity for conjunctive and disjunctive tasks. These benefits, however, should be smaller than those for additive tasks. When the group performs a conjunctive or a disjunctive task, emotional intelligence diversity mostly assists the performance of a single person because performance disproportionately depends on the performance of a single person. The effects of emotional intelligence diversity should therefore be more limited than on additive tasks.

Do the Proposed Associations Depend on the Emotional Nature of Tasks?

The propositions described above distinguished tasks using Steiner’s (1972) typology, but the emotional nature of tasks was not considered. The emotional demands of the task may moderate the associations between group emotional intelligence and performance so that they become stronger as the emotional demands increase. Emotional intelligence, however, may play a role in a larger proportion of tasks than it may initially appear. For instance, emotional abilities may help avoid anxiety that may impede performance on job interviews by increasing cognitive load (McCarthy & Goffin, 2004). They may also help avoid happiness that may impede performance on complex mathematical problems by increasing reliance on heuristic processing (Schwarz & Clore, 1996). Consistent with these arguments, Côté and Miners (2006) found that the individual-level association between emotional intelligence and job performance did not depend on the emotional demands of the job. The role of the emotional demands of the task in the associations proposed here should be explored in future research.

GROUP EMOTIONAL INTELLIGENCE AND GROUP PERFORMANCE: BEYOND MAIN EFFECT MODELS

The preceding discussion reveals that group emotional intelligence constructs formed through additive, direct consensus, maximum-score, minimum-score, and dispersion models may be useful to predict performance, and that each model may be most useful to predict performance on a certain type of group tasks. An important question is whether all groups need emotional intelligence to enhance their performance in the ways described in the previous section, or whether emotional intelligence is only
useful to certain groups. Past research has predominantly tested main effect models that propose associations between group emotional intelligence and performance that are independent of other factors. It is possible, however, that some groups need emotional intelligence more than others.

I use process composition models to develop more complex and potentially more accurate models of group emotional intelligence and performance. With process composition, mechanisms at the individual level of analysis are composed to the group level of analysis by identifying group-level constructs that are analogues of the individual-level constructs, and describing associations among the group-level constructs that are homologous to the individual-level associations (Chan, 1998). In the models I describe below, group emotional intelligence interacts with other predictors via multiplication or compensation mechanisms.

**Multiplicative Processes Linking Group Emotional Intelligence and Group Performance**

In multiplication, a construct predicts performance more strongly if it is accompanied by another factor than if the other factor is missing. The effect of the construct is not fully activated when it operates in isolation. The effect becomes fully activated when it operates in conjunction with the other factor. A classic multiplicative model is the cognitive intelligence by motivation model of job performance (Campbell, 1976; O’Reilly & Chatman, 1994; Vroom, 1964). The effect of cognitive intelligence on job performance is limited in the absence of motivation. Cognitive intelligence only has an important impact when it is accompanied by motivation because motivation allows people to use their cognitive intelligence. Because the interaction is symmetric, the converse is also true. Motivation only has an important impact on job performance when it is accompanied by cognitive intelligence.

There is evidence for a multiplicative process of emotional intelligence and performance at the individual level of analysis. In one study, the personality trait of extraversion moderated the association between one of the main components of emotional intelligence, the ability to identify emotional expressions, and transformational leadership (Rubin et al., 2005). The positive association between the ability to identify emotional expressions and transformational leadership became stronger as extraversion increased, presumably because extraverted leaders have more frequent social interactions that provide opportunities to use the ability to identify
emotions and, in turn, lead more effectively. Introverted leaders have less frequent social interactions and, therefore, lack opportunities to use their emotional abilities. Their degree of ability to identify emotional expressions is therefore less useful to predict their effectiveness as leaders.

A process composition model can be employed to build group-level multiplicative models of emotional intelligence and performance. Group emotional intelligence may have a stronger influence on performance when it is accompanied by key factors that allow groups to utilize their emotional abilities frequently and effectively. The effect of group emotional intelligence may be limited in the absence of these other key factors. The form of the interaction appears in Fig. 1. In this figure, the other key factor is motivation, building on the ability by motivation model described earlier. The association between group emotional intelligence and group performance becomes stronger as the collective level of motivation increases. Groups with high levels of both emotional intelligence and collective

![Graph showing the relationship between group emotional intelligence and group performance with varying levels of collective motivation.](image)

*Fig. 1. Example of Multiplicative Model of Group Emotional Intelligence and Collective Motivation.*
motivation achieve the best performance. High emotional intelligence, by itself, produces only moderate performance. Groups that have low levels of both emotional intelligence and collective motivation achieve the worst performance.

Compensation Processes Linking Group Emotional Intelligence and Group Performance

Compensation occurs when “the same, or a superior, level of proficiency on some criterion activity is achieved, despite deficiencies in one or more behavioural constituents of that activity” (Salthouse, 1995, p. 21). A limitation or impairment is an important contributor to performance that does not necessarily preclude high performance. A group that lacks a key contributor to effective performance can turn to a second factor to compensate for that lack (Bäckman & Dixon, 1992; Salthouse, 1995). Studies of transcription typing performance that found that older people perform as well as younger people illustrate compensation (Salthouse, 1984; Bosman, 1993). Compared to younger people, older people read the text to be typed farther ahead of the current keystroke to compensate for lower processing speed.

There is evidence for a compensatory process involving emotional intelligence at the individual level of analysis. Côté and Miners (2006) found that high emotional intelligence compensates for low cognitive intelligence. Emotional intelligence was positively associated with the job performance of organization members with low cognitive intelligence. This association weakened as cognitive intelligence increased, presumably because people with high cognitive intelligence have little room for improvement in their performance. Thus, any advantage provided by high emotional intelligence contributed little to their job performance.

A process composition model can be employed to build group-level compensation models of emotional intelligence and performance. Compensatory processes are expressed as an interaction between group emotional intelligence and another factor to predict performance, as illustrated in Fig. 2. In Fig. 2, groups with a deficiency on group cognitive intelligence benefit more from emotional intelligence than groups with no deficiency on group cognitive intelligence. The association between group emotional intelligence and group performance becomes stronger as the group cognitive intelligence decreases. Groups that have a high level of group emotional intelligence, group cognitive intelligence, or both achieve the best
The preceding discussion reveals that group emotional intelligence may interact with other contributing factors to predict performance. Multiplicative and compensatory mechanisms may be used to explain how group emotional intelligence formed via the composition models described above predicts performance. Researchers should also aim to identify the conditions when group emotional intelligence combines with other factors to predict performance in compensatory versus multiplicative ways. Examining the characteristics that, in past research, predicted group performance may identify characteristics for which group emotional intelligence compensates.

Fig. 2. Example of a Compensatory Model of Group Emotional Intelligence and Group Cognitive Intelligence.
Group emotional intelligence may compensate for deficiencies in these factors. For instance, research has found links between group conscientiousness and group performance (Neuman & Wright, 1999). Group emotional intelligence may thus compensate for low group conscientiousness.

Group emotional intelligence may multiply with characteristics that permit a group to use emotional intelligence effectively. For instance, emotional intelligence is often used in social interactions. Emotional intelligence may therefore more strongly predict performance in groups whose members interact frequently than in groups whose members interact infrequently. The frequency of social interaction among group members may multiply with group emotional intelligence to predict performance. Other factors that permit groups to use their emotional intelligence may operate in the same way.

Fig. 3 illustrates the opportunities for research about group emotional intelligence and performance. The columns illustrate the composition models that can be used to form group emotional intelligence constructs from the emotional intelligence scores of the individuals in the group. The rows illustrate the ways in which group emotional intelligence may combine (or not combine) with other constructs to predict performance. This figure presents 12 possibilities. The current research activity is located in one of the cells. Many more possibilities exist.

**IMPLICATIONS FOR RESEARCH**

The approach that I adopted suggests that researchers first need to measure emotional intelligence at the individual level and create group-level constructs via some aggregation operation to test models of group emotional intelligence. Accordingly, below, I discuss issues concerning (1) the measurement of individuals’ emotional intelligence and (2) the aggregation of individual-level scores.

**Measurement of Emotional Intelligence**

A major impediment to the accumulation of knowledge of emotional intelligence is its measurement. There are currently two major approaches to measuring emotional intelligence. The ability-test approach presents respondents with emotional problems and asks them to choose the best answer among a set of options. Respondents’ answers are compared to those
| Mechanism: Group emotional intelligence becomes fully activated when other key factors are present | Addition or direct consensus composition model | Main Effect Mechanism: Group emotional intelligence has a direct effect on performance | Compensation Mechanism: Group emotional intelligence predicts performance by compensating for deficiencies |
| Multiplication Mechanism: Group emotional intelligence predicts performance by compensating for deficiencies | Current research activity | Minimum-score composition model |
| Fig. 3. Potential Opportunities to Study Group Emotional Intelligence and Performance. | Maximum-score composition model | Dispersion composition model |
provided by expert researchers on emotion, the target of the emotional stimuli (e.g., the person whose expression is identified), or the general population. The self-report approach presents respondents with descriptive items and asks them to evaluate themselves using Likert-type scales. Emotional intelligence scores reflect respondents’ evaluations of their abilities.

Research on the measurement of cognitive intelligence informs decisions about the viability of the ability-test and self-report approaches. The ability-test approach is considered valid in cognitive intelligence research. Ability tests such as the Wonderlic Personnel Test and the Wechsler Adult Intelligence Scale are believed to adequately capture a person’s cognitive intelligence. The self-report approach, in contrast, is not considered valid in cognitive intelligence research. A recent review of the literature on self-evaluations concluded “the views people hold of themselves are often flawed. The correlation between those views and their objective behavior is often meager to modest, and people often claim to have valuable skills and desirable attributes to a degree that they do not” (Dunning, Heath, & Suls, 2004, p. 98).

There are at least two reasons why the self-report approach to measuring intelligence is flawed. First, people tend to fake responses and report having higher abilities than they believe they have (Donovan, Dwight, & Hurtz, 2003). They should have considerable motivation to fake their responses on emotional intelligence tests. Van Rooy, Viswesvaran, and Alonso (2005) demonstrated that individuals instructed to increase or decrease their scores succeeded. A second flaw of the self-report approach is that people tend to have inflated views of their abilities. For example, narcissism explains approximately 20% of the variance in self-reported abilities (Gabriel, Critelli, & Ee, 1994). Therefore, respondents’ reports of their abilities fail to correspond to their actual abilities even when they do not fake their answers. These arguments suggest that variations in self-report measures of emotional intelligence fail to adequately reflect variations in the construct of emotional intelligence. The construct validity of the self-report approach to measuring emotional intelligence is thus highly suspect, and it should be abandoned.

The ability-test approach to measuring emotional intelligence addresses some of these limitations. Respondents cannot pretend to know the answers to test problems that they lack the ability to solve, thereby negating the biasing roles of inflated self-evaluations and the tendency to fake responses. Although the ability-test approach has limitations that I describe below, it may be useful for research on group emotional intelligence and performance.
In addition to these logistical difficulties, the MSCEIT has limitations that should be examined in future research. The MSCEIT assesses emotional abilities in a testing environment that is largely unemotional. A test administered in a more emotional environment may be more valid. A scoring system that is more elaborate than the current reliance on expert and consensus norms might also enhance the validity of the MSCEIT. In particular, the arguments supporting the use of consensus norms need to be more convincingly articulated. In addition, we currently know little about the validity of the MSCEIT across cultures (Wong, Law, & Wong, 2004). The MSCEIT manual shows minor differences between people of different ethnic backgrounds, but the respondents in the validation study reported in the manual were from Western cultures. The correct answer to some of the MSCEIT problems may differ across cultures and, therefore, the scoring system may need to be modified in different cultural contexts.

In part to address potential ability to generalize cross-cultural issues, researchers constructed a new ability test in Asia, the Wong and Law Emotional Intelligence Scale (WLEIS; Wong et al., 2004). The WLEIS contains two types of tasks. Respondents are first asked to choose the best way to deal with 20 emotional situations described in scenarios. They are then presented with 20 pairs of abilities that each includes an emotional and an unemotional ability, and they are asked to indicate which one is highest in them. The test is scored by counting the number of answers that match those chosen by experienced managers. This approach may be limited, however, because experienced managers may not necessarily know the answers to emotional problems, especially if their success is due to other strengths such as high cognitive intelligence (Côté & Miners, 2006).

There is evidence that the test exhibits appropriate internal consistency reliability and discriminant validity with personality traits and cognitive intelligence (Wong et al., 2004). There is also evidence, however, that the WLEIS may not be valid in different cultures. My experience with the WLEIS reveals low internal consistency reliability in North American samples. This may be because North American managers would choose different correct answers to the test items than Asian managers and, hence, the scoring key may need to be adapted for use in North America. The MSCEIT, and perhaps any emotional intelligence ability test, may exhibit the same problem. Expert researchers on emotion and the lay population in different cultures may choose different correct answers to the MSCEIT problems. Another limitation of the WLEIS is the self-evaluation component of the second part of the test. For each pair of ability, respondents must evaluate their levels of the emotional and the non-emotional ability and
compare the two. This component of the test therefore falls prey to the limitations of self-report approaches described above.

Ability tests of some of the dimensions of emotional intelligence exist. For example, the Diagnostic Analysis of Nonverbal Accuracy Test assesses the ability to identify other people’s emotional expressions (Nowicki, 2000). Because these tests are only available for some of the dimensions of emotional intelligence, researchers cannot yet combine them to create a complete emotional intelligence assessment.

**Aggregation of Emotional Intelligence Scores**

The choice of model to compose group emotional intelligence has implications for the aggregation of emotional intelligence scores within the group. In additive composition models, only an average or a sum of emotional intelligence scores is required. In maximum- and minimum-score composition models, the highest and lowest emotional intelligence score in the group must be identified. Dispersion composition models often rely on the standard deviation of the scores of the members of the group. Compelling models must be articulated to provide meaning to the average, the sum, the maximum-score, the minimum-score, or the standard deviation (Chan, 1998).

In direct consensus composition models, members’ scores are averaged or summed. Sufficient similarity among the group members must be demonstrated to justify aggregation. The direct consensus composition model must be abandoned if the group members are too dissimilar. The $r_{wg}$ coefficient assesses the degree of agreement among group members by testing the proportion of systematic variance in group member ratings in comparison to the total variance (George & James, 1993; James, Demaree, & Wolf, 1984). High values of $r_{wg}$ suggest that there is substantial clustering of emotional intelligence within groups to justify aggregation.

**CONCLUSION**

Organizational researchers have accumulated considerable knowledge about what predicts the performance of individuals. Less is known about what predicts the performance of groups. In this chapter, I have described the different ways in which group emotional intelligence constructs can be formed and linked to group performance. I have also proposed that
Steiner’s (1972) typology of group tasks may help determine when different group emotional intelligence constructs best predict performance. The research has so far focused on a fraction of the various ways to study group emotional intelligence and performance. Group emotional intelligence may have myriad effects on performance, and researchers should explore all of them to fully understand why some groups outperform others.

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