

The Relationship between Emotional Intelligence and Learning Outcomes, and the Mediating Role of Emotional Conflict

Key words: Emotional intelligence, emotional person conflict, emotional task conflict, learning outcomes, work groups.

Kjell B. Hjertø
Assistant professor
Faculty of Social Sciences
Hedmark University College
Telthusveien 12, 2450 Rena, Norway
Tel: (+47) 6243-0428
Fax: (+47) 6243-0500
E-mail: kjell.b.hjerto@bi.no

Abstract

A field sample of 1100 employees in the army was investigated to study the relationship between the individuals' self reported emotional intelligence and learning outcomes in work groups, with two dimensions of emotional conflict as mediators, emotional person conflict and emotional task conflict. Most importantly, emotional intelligence predicted positively learning outcomes and emotional task conflict, and predicted negatively emotional person conflict. Further, emotional task conflict predicted learning outcomes positively, whereas emotional person conflict predicted learning outcome negatively. Particularly, the ability of regulation own emotions accounted for the negative relationship between emotional intelligence and emotional person conflict, and the ability of self emotion appraisal accounted for the positive relationship between emotional intelligence and emotional task conflict. However, the mediating effect of emotional conflict was weak, as the relationship between emotional intelligence and learning outcomes remained strongly significant also after the two emotional conflict dimensions were added to the model. Implications for theory and research, and directions for future research are discussed.

Introduction

The concept of emotional intelligence (EI) has developed to be one of the most popular psychological concepts of the last decade (Zeidner, Roberts & Matthews, 2004). Building upon seminal works by Thorndike (1920) and Gardner (1983), Salovey and Mayer (1990) introduced the concept of emotional intelligence to the research agenda, and Goleman (1995), made the concept popular in wider circles by presenting several bold suggestions about the positive influence emotional intelligence may have on individuals and society.

From several research areas it has been pointed out that emotion and learning are closely associated with each other (Damasio, 1994; Goleman, 1995), and that successful learning flow from both rational and

emotional capability development (Hopfl & Linstead, 1997). Indeed, Fineman (1997) argues that how managers learn is inextricably emotional and that the traditional cognitive approach to management learning has obscured the presence and role of emotion. Particularly, theories about classical conditioning and extinction of emotional cues explain how emotions are naturally regulated by learning, and this regulation may be closely associated with emotional intelligence (Nelson and Bouton, 2002). However, empirical studies to confirm assumptions about the relationship between emotional intelligence and other phenomena have according to Dulewicz and Higgs (2000: 346) been “extremely limited”, and mostly based upon “anecdotal case histories, derivative models and, in some cases, pure rhetoric”, and most of the empirical evidence is established within educational literature (Efklides, & Volet, 2005). In this paper, an empirical study of the relationship between emotional intelligence and learning outcomes in work groups (Hackman 1983) will be presented. The organization cannot create knowledge on its own without the initiative of the individual and the interaction that takes place within the group (Nonaka and Takeuchi 1995). Between individual and organization the work group and the work group’s learning outcomes is an important building block (Goodman, Ravlin & Schminke, 1987; Hackman, 1987). As such, learning outcomes in work groups may also serve to the benefit of a “learning organization” (Senge, 1990).

Out of six major issues for the 21st century, Peter Drucker (1999) list the change leader, the knowledge-worker productivity, and self managing, all implying the individuals willingness of abandoning yesterday’s wisdom and critically examine to days performance, and the ability of acquiring new wisdom for tomorrow. However, these learning and “de-learning” (Argyris and Schön, 1996) activities may not occur without resistance and conflict, and in work group theory, intragroup conflict is considered one of particularly important group processes (Gladstein, 1984). Unfortunately, conflict seems to have been “conspicuously absent” from discussions of organizational learning, especially directed to practitioners (Rothman & Friedman, 2001). Traditionally, the majority of studies of interpersonal and intragroup conflicts focus on conflict caused by emotional factors between persons (Brehmer, 1976;

Thomas, 1976), and emotional or relationship conflicts is commonly found to be detrimental to performance (Amason & Schweiger, 1997; Jehn, 1995). These findings have also been echoed in learning studies, as high level of disagreements in opinions is found to evoke negative reactions to another person, and thus hurting the learning process (Taylor, 1998). Thus, preventing destructive emotional conflict may be a core ability or competence in this respect (Amason, 1996), and it may be interesting to investigate whether individuals conflict regulation skills are related to the individuals EI, as suggested by Goleman (1998). Therefore, emotional conflict is included in this study as a mediator between emotional intelligence and learning outcomes. The question is whether emotional conflict is related to emotional intelligence in a way that turns out to be beneficial for learning outcomes. Particularly, it is interesting to investigate whether emotional conflict is “real” mediator between emotional intelligence and learning outcomes, in the sense that the relationship between emotional intelligence and learning will fade away when emotional conflict is introduced to the model (Baron & Kenny, 1986). A confirmation of this assumption will add evidence to a general impression that the effects of emotional intelligence are more indirect than direct in nature, as suggested by Rode, et al., (2007). The research model is illustrated in Figure 1.

Insert Figure 1 about here

Theory and Hypotheses

Emotional Intelligence and Learning

The underlying theoretical foundation of research on emotional intelligence has been a fast growing and highly needed “rediscovery” of the emotions as an important research area in general (Buck, 1988;

Zajonc, 1980), and supported by breakthrough findings in neuroscience research (e.g. Damasio, 1994; LeDoux, 1996).

Most credit to recent development of the emotional intelligence concept is commonly attributed to Salovey and Mayer (1990). They defined emotional intelligence as “the subset of social intelligence that involves the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions” (Salovey & Mayer, 1990: 190-191). As indicated, emotional intelligence is defined through three “first orders“ conceptually related mental processes involving emotional information, including appraising and expressing emotions in the self and others, regulating emotion in the self and others, and using emotions in adaptive ways. Davies, Stankov, & Roberts (1998) suggested that emotional intelligence is composed of four lower order or primary factors: appraisal and expression of emotion in the self, appraisal and recognition of emotion in others, regulation of emotion in others, and regulation of emotion in the self and others. The concept of emotional intelligence has been and is still heavily debated, and a lot of conceptual and empirical work remains to be done: “in actuality, emotional intelligence has no clear definition, nor has consensus been reached as to the breadth of the concept and what it should include” (Ashkanasy, Härtel, and Daus 2002: 325, see also Conte, 2005). Indeed, some find reasons for question the usefulness of the emotional intelligence concept at all (Davies, Stankov, and Roberts, 1998; Decker 2003; Landy, 2005; Locke, 2005). Jordan, Ashkanasy, and Härtel (2003) argue that the construct is under development somewhere between the “selection” and the “retention” phase, and where “variation” as the first phase already is covered (Weick 1989). In other words, the emotional intelligence “bandwagon” is probably “too fast to live, too young to die” (Zeidner, Roberts & Matthews, 2004), and further research is highly needed (Jordan, Ashkanasy, Härtel, and Hooper (2002). In the conceptual discussions of emotional intelligence and its dimensions, several lines of controversies or differences of research practices have emerged, in which we will mention two. First, the debates of whether emotional intelligence is, and accordingly should be defined as a cognitive ability

construct (Mayer & Salovey, 1997; Van Rooy, Alonson, & Viswevaran, 2004); personalities construct (Bar-On, 1997; Petrides & Furnham, 2000), or a competence construct (Boyatzis & Goleman, 1998). Second, whether emotional intelligence as an ability should be measured by performance tests (MacCann, Matthews, Zeidner, Roberts, 2003; Mayer, Salovey, & Caruso, 2008), or whether it is justifiable to measure emotional intelligence ability by using self-report questionnaires (e.g. Law, Wong, & Song, 2004). Further research on these issues is needed, especially as different conclusions to the questions seem to be heavily related to the particular selection of performance- and self report tests for comparison (Law, Wong, & Song, 2004). Indeed, Ashkanasy and Daus (2005) argue that the protagonists against the emotional intelligence concept have not distinguished adequately between several streams of research, and that the criticism has inappropriately characterized emotional intelligence as a variant of social intelligence. For example, it is quite possible that performance tests and self report tests are measuring different aspects of emotional intelligence, as pointed to by Goldenberg, Matheson, and Mantler (2006). These researchers found that only self reported emotional intelligence scores showed a consistent pattern of relations with self-reported coping styles and depressive affect, whereas the performance-based measure demonstrated stronger relations with age, education, and receiving psychotherapy. Ashkanasy and Daus (2005) identified three streams of emotional intelligence research and associated measures that should be considered separately: a) research based on the four-branch abilities model, proposed by Mayer and Salovey (1997), b) research that encompasses various self- and peer-report measures on the Mayer–Salovey representation (e.g., Jordan et al., 2002; Schutte et al., 1998; Wong & Law, 2002), and c) research on expanded models of emotional intelligence that encompass components not included in Salovey and Mayer’s definition (e.g. the EQ-i). This paper is following the approach described in stream b), by using a modification of the conceptualization of Mayer and Salovey (1997) developed by Wong and Law (2002; Law, Wong, & Song, 2004). They suggested that the four emotional intelligence dimensions are: a) Appraisal and expression of emotion in oneself, b) Appraisal and recognition of

emotion in others, c) Regulation of emotion in oneself, and d) Use of emotion to facilitate performance, and developed a scale (WLEIS) to measure these dimensions of emotional intelligence.

Researchers have reviewed that the role of emotion concerning learning has been severely underestimated (Hopfl, & Linstead, 1997), and, accordingly, empirical studies of the relationship between emotional intelligence and learning are “extremely limited” (Dulewicz and Higgs, 2000). In general, emotional intelligence is assumed to facilitate individual adaptation and change (Huy, 1999). From the scarce number of studies of this field, reviewers conclude that the relationship between emotional intelligence and learning seems to be positive at individual level, at group level, and at organizational level, respectively (Dulewicz and Higgs, 2000; Druskat & Wolff, 2001, Scott-Ladd & Chan. 2004). For example, Suliman and Al-Shaikh (2007) found that employees with high level of emotional intelligence were inclined to show higher level of readiness to create and innovate than those who report low level of emotional intelligence. Self-efficacy (Bandura, 1997) and emotional intelligence are closely related concepts, and used synonymously in trait emotional intelligence theory (Petrides and Furnham, 2003). Evidence of a positive relationship between self-efficacy and learning is found by Edmondson (1999). From educational researcher, Offermann et al, (2004) found some support for a positive correlation between group exams grades and emotional intelligence, and Singh (2007) found in an empirical study support for a positive and significant role of emotional intelligence in organizational learning. All in all, available evidence points unanimously in a direction of a positive relationship between emotional intelligence and learning.

Hypothesis 1: The level of individuals’ emotional intelligence will positively predict the learning outcome in their work groups

Emotional Conflict as a Mediator between Emotional Intelligence and Learning Outcomes

Traditionally, researchers have included negatively valenced emotions like annoyance and frustration between individuals in their conflict definitions (Brehmer, 1976; Thomas, 1976), whereas others do not include negative emotions as a necessary component of a general conflict concept (Boulding, 1963; Putnam and Poole, 1987; Rhoades and Arnold, 1999). A tradition, that can be traced back to Guetzkow and Gyr (1954) and Brunswik (1952), and accentuated by the pivotal work of Janis (1972) and subsequent research (Pinkley, 1990; Rahim, 1983), view conflict as two-dimensional, consisting of an emotional or relationship conflict dimension and a cognitive or task conflict dimension. The cognitive/task conflict dimensions have traditionally been described in terms like “rooted in the substance of the task”, whereas the emotional/relationship conflict dimension is described as “deriving from emotional, affective aspects of the group’s interpersonal relations” (Guetzkow & Gyr, 1954: 369). Jehn (1994, 1995) developed a scale (the ICS) to measure these two conflict dimensions (or types), and with few exceptions, researchers have found that emotional/relationship conflict are detrimental to group performance (De Dreu & Weingart, 2003). Direct evidences of the relationship between emotional intelligence and emotional conflict are scarce. Suliman and Al-Shaikh (2007) found however that employee with high level of emotional intelligence tend to show low level of conflict, compared with employees with low level of emotional intelligence. In general, theorists have suggested that the emotionally intelligent individual may adopt a range of conflict resolution styles depending on the situation, in that team with a high average emotional intelligence tend to develop a collaborative resolution style, whereas teams with low average emotional intelligence more often used conflict avoiding (Jordan and Troth, 2003). Indeed, high emotional intelligence, as the factual ability to appraise emotions in self and others and regulate and use own emotions appropriately, intuitively seems what is needed when the group is struggling with emotional conflicts of any type. Côté and Miners (2006) argue that emotional intelligent individuals even with low cognitive intelligence may be able to manage emotional conflict successfully, in their ability to

enable close relationships and thereby reduce the amount of detrimental emotional types of conflicts. Further, a higher level of collective emotional intelligence is also found to decrease the association between the assumed productive task conflict and the assumed detrimental relationship conflict type in workgroups (Yang & Mossholder, 2004). Thus, high emotional intelligence may be beneficial in its ability of diminishing a person orientation in the emotional conflict, to the benefit of a task orientation of the conflict, and we expect that emotional intelligence will be negatively related to emotional relationship or person conflict types.

Hypothesis 2: The level of individual's emotional intelligence will negatively predict the amount of emotional person conflicts in their work groups.

Some insight is provided from research on the relationship between emotional conflict and learning in particular, and, in a wider perspective, between emotional conflict and group outcomes associated with learning. Concerning the latter, the ultimate reason of learning in work groups is to perform better. From this perspective, we may note that the traditional assumption has been that there is a negative relationship between emotional laden conflicts and group outcomes (Guetzkow & Gyr, 1954; Ross, 1989), and that intense expression of emotion will harm efficient group performance (Brehmer 1976; Amason 1996; Jehn 1997). People seem to have a desire for affective consonance that is similar to their desire for cognitive consonance (Barsade, Ward, Turner, and Sonnenfeld, 2000). From creativity research, we learn that coming up with new and better ways of doing things is the essence of creativity. However, winning through with creative ideas that presuppose rejection of old ideas and practices will often meet affective resistance. New ideas may often require de-learning of old knowledge (Argyris and Schön 1996), and may contain several risks as the new ideas may or may not deliver their intended positive results (Zhou and George, 2001). Particularly, in similarity – attraction theory (Byrne, 1971; Tziner 1985), high level of disagreements in opinions is found to evoke negative reactions to another person, and thus hurting the

learning process (Taylor, 1998). Thus, emotional relationship oriented conflict types seem to be negatively related to learning outcomes (the correct order of the Hypotheses is listed at the end of the chapter).

Hypothesis 4: The amount of emotional person conflicts in work groups will negatively predict the learning outcome in these groups.

Recently, Hjertø and Kuvaas (2009) argued that the interchangeable use of “emotional conflict” and “relationship conflict” (Simons & Peterson, 2000) was artificial and theoretically weakly founded, defined and validated two types of emotional conflict, emotional person conflict, and emotional task conflict. Research from a group development perspective seems to indicate that a task oriented emotional conflict episode may be beneficial for learning (Gersick (1988; Tuckman & Jensen 1977; Wheelan, 1994). Assuming that the group is able to overcome the conflict, the group may benefit from the conflicting stage (Wheelan. 2003). Gersick (1989: 32) explained that an emotional conflicting midpoint phase may enable “the group to capitalize on the gradual learning they have done and make significant advances”. Conflicting incidences that seem to be similar to the emotional task conflict concept is also described in a qualitatively study by Eisenhardt, Kahwajy, and Bourgeois (1997). They found this conflict type to be associated with the most successful groups in their study, and these groups were proactively able to see the need of facilitating or even generating productive emotional conflict situation in order to stimulate debate and motivation in groups’ were nothing was happening. Sometimes the emotional part of the work group can be taken to the extreme, and yet the group may be extremely effective. Leavitt and Lipman-Blumen (1995; Leavitt, 1996; Lipman-Blumen & Leavitt, 1999) describe what they call “Hot Groups”, a particular type of work groups with apparently extremely high levels of achievement potential. Two major Hot Groups were described as a “total preoccupation with task” and “a sense of ennoblement” (Lipman-Blumen & Leavitt, 1999: 27-29). Based upon these somewhat scattered evidences we

nonetheless assume that emotional task conflict is positively related to learning (the correct order of the Hypotheses is listed at the end of the chapter).

Hypothesis 3: The level of individuals' emotional intelligence will positively predict the amount of emotional task conflicts in their work groups.

Without presenting any solid evidence, we also may theoretically assume that emotional intelligence is positively related to the ability of being proactively able to see the need of facilitating or even generating productive intragroup conflict, as described by Eisenhardt, Kahwajy, and Bourgeois (1997). This ability seems to fit nicely with the abilities described in the four dimensions in the definition of emotional intelligence we are using in this paper (Wong & Law, 2002): to appraise and express emotion in the self, to appraise and recognize emotions in others, to regulate emotion in others, and to regulate emotions in the self and others. Hence, we assume that emotional intelligence may be beneficial when generating productive conflict, especially emotional productive conflicts, such as emotional task oriented conflicts.

Hypothesis 5: The amount of emotional task conflicts in work groups will positively predict learning outcome in these groups.

All Hypotheses

Of convenience reasons due to the theoretical discussion, the hypotheses were not presented in correct order. Listed below are all hypotheses in correct order.

***Hypothesis 1:* The level of individuals' emotional intelligence will positively predict the learning outcome in their work groups**

***Hypothesis 2:* The level of individual's emotional intelligence will negatively predict the amount of emotional person conflicts in their work groups.**

Hypothesis 3: The level of individuals' emotional intelligence will positively predict the amount of emotional task conflicts in their work groups.

Hypothesis 4: The amount of emotional person conflicts in work groups will negatively predict the learning outcome in these groups.

Hypothesis 5: The amount of emotional task conflicts in work groups will positively predict learning outcome in these groups.

Method

Data were collected from three military departments with 1100 individual responses. The average age of the respondents was 32 years, with 90% men and 10% women. A nonexperimental theory-based evaluative correlation design was conducted for the data analysis (Shadish, Cook, & Campbell, 2002). All data were analyzed at individual level, and data was collected by one questionnaire. Participants were asked to assess the occurrences of several conflict descriptions during the last 6 months in their most important ongoing work group, on a scale from 1 (*not at all*) to 5 (*very often*). Their appraisal of learning outcomes in their group at current and their assessment of their own emotional intelligence (EI) were measured on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Rousseau (1985) suggested three areas where a level should be specified for the variables. First, the *level of measurement*, which is the level to which generalizations are made. Second, the *focal unit*, which is the unit to which the data are directly attached. Third, the *level of analysis*, which is the level to which data are assigned for hypothesis testing and statistical analyzes. In this study, the level of measurement and the level of analysis is the individual. For EI, the focal unit is the individual, whereas the focal unit for emotional conflict and competence is the group, as the respondents were asked to recall conflicts processes and learning outcomes in their most seminal ongoing work group.

Measures

To measure emotional intelligence we used a 16-item multidimensional scale (WLEIS), developed by Wong & Law (2002) and further validated by Law, Wong, and Song (2004) and Shia and Wang (2007). The scale has four dimensions, with four items measuring *self-emotions appraisal* (SEA), *other-emotions appraisal* (OEA), *use of emotion* (UOE), and *regulation of emotion* (ROE), respectively (see Appendix

for items). The assessment of emotional conflict was done by a modified version of two emotional conflict dimensions in a four-dimensional intragroup scale (4IC) developed by Hjertø and Kuvaas (2009). The *emotional conflict scale (ECS)* included *emotional person conflict (EPC)* and *emotional task conflict (ETC)* (see Appendix for items). The dependent variable, *learning outcome appraisal (LOA)*, hereafter called “learning outcomes”, was measured by a scale developed for this paper. The theoretical basis of the scale is that learning in work groups may be perceived as “situated” in a “community of practice” (Lave & Wenger, 1991), a process of social learning that emerges when people who have common goals interact in a shared practice, and often involve so-called “messy problems” (Rouwette, & Vennix, 2008). In this environment, the individuals’ appraisals of learning outcomes in groups may be a valid proxy to what is objectively learned during a work period. The scale is adapted from the competence enhancement “normative” definition by Hackman and Oldham (1980; Hackman, 1987), and asks about learning outcomes that may be appropriate for future work group effectiveness. The scale consists of four items, asking group members about their experience of increased capability of working together on subsequent team tasks, concerning knowledge, skills, and attitude, respectively (items are listed in the Appendix). As control variables in the study we included age and sex.

Analysis

Prior to the analysis, age and sex were examined for systematic mean differences. An ANOVA analysis was conducted on sex and a dichotomized split between high and low age. Men and the older half of the sample reported higher EI than women and the younger half of the sample, consistent with other findings when using WLEIS (Law, Wong, & Song, 2004; Wong, Wong, Law, 2002), however, the relationships were far from being significant ($t = .53$, n.s., and $t = .55$, n.s., respectively).

All data were examined in confirmatory factor analyses (CFA), using maximum likelihood estimates on the data in a LISREL 8 program. The analyses were based upon a partial correlation matrix controlled for age and sex. To inspect indications of whether all constructs were confounded with common method

variance, which is particularly important as the constructs are extracted from the same self report questionnaire, a test of whether all constructs jointly converged into a distinct factor structure was conducted. A model of all seven constructs converged with a chi-square of 890, with 303 degrees of freedom ($p < .001$). The RMSE was .042, with a 90% confidence interval between .039 and .045, indicating “close fit” (Jöreskog & Sörbom, 1993). The absolute fit measure GFI was 0.94, Recently, the comparative fit index CFI has been recommended as a replacement for the NFI (Williams & O’Boyle, 2008), as the CFI is a sample independent index and does not assume that each measurement indicator is completely independent of the others. The CFI was .98. Thus, even if we are not allowed to completely rule out the possibility that common method variance artificially may inflate bivariate correlations between the items measuring the constructs; we found no indications of such in this analysis. We may also note that complex data relationships, as in this study, is not easily explained by common method, since respondents cannot easily guess researcher hypotheses or respond in a socially desirable manner that would lead to spurious findings (Brockner et al., 1997).

To test the hypotheses, the statistical properties of the antecedent independent variable EI, the mediating variable emotional conflict, and the dependent variable learning outcomes were inspected. In the EI stream of research we are following in this paper, the research is based on the four-branch abilities model in the Mayer-Salovey representation (Ashkanasy and Daus, 2005), and EI may be classified as a “latent model”, where the joint EI concept is assumed to be a higher order abstraction underlying its dimension (Law, Wong, & Mobley, 1998). Thus, a second order analysis of EI as a joint construct was conducted to see whether the level of homogeneity among all 16 items in the construct was appropriate. In the CFA analysis the data matrix converged with a Chi-square of 2053, with 104 degrees of freedom. The proposed measurement model and the observed matrix was significantly different ($p < 0.01$), in contrast to what is desirable, but as expected considering the sample of 1100 respondents (see Van Prooijen & Van der Kloot, 2001). However, the RMSEA was .13, the GFI was .81, and the matrix fits the

measurement model of a second order latent EI construct poorly. This is consistent with what is found by other users of the WLEIS (e.g. Wong & Law, 2002). Wong and Law (2002) used the EI mean score to assess the relationships between EI and other constructs. However, this approach will move the EI construct down to the same level as its dimensions, and the EI model has to be perceived as an “aggregated model” (Law, Wong, and Mobley, 1997), in contrast to what is suggested by the authors. Thus, the model generating procedure as recommended by Jöreskog and Sörbom (1993) was followed in order to find a possible single factor solution for the joint EI construct. The items that mostly reduced the chi-square value were stepwise removed until the fit between the data matrix and the model was appropriate. However, the items were removed under the restriction that the number of items from each dimension in the joint construct should be equal, to retain a balanced diversity from the dimensions when at the same time attaining sufficient homogeneity (Nunnally & Bernstein, 1994). The final solution was an 8-item measure of EI, consisting of two items from each of the four dimensions. The statistics for this measurement model was a Chi-square of 101, with 20 degrees of freedom ($p < .01$). The RMSEA was .061, with a 90% confidence interval between .047 and .073. The GFI was .98, and the CFI was .97.

As for the emotional conflict scale, there has been no research tradition for investigating multidimensional intragroup or interpersonal conflict as one joint underlying construct. However, to empirically investigate whether the assumption that emotional conflict may be classified as a “latent model” (Law, Wong, & Mobley, 1998), where emotional conflict is a higher order abstraction underlying its dimension, a preliminary CFA analysis of a joint 8-item emotional conflict scale was conducted. As expected, the latent model failed to meet the standard of appropriate fit with the data, under the restriction that at least two items from each of the two sub-dimensions were to be retained in the joint construct. Thus, the two dimensions of emotional conflict should be analyzed separately in the following analyses, assuming that the multidimensional emotional conflict model most appropriately may be characterized as

a “profile model”, where the dimensions can not be combined to form an overall representation of the construct (Law, Wong, and Mobley, 1998).

Finally, the one-dimensional latent construct learning outcomes is measured by four items. The measurement model converged, and the Ch-square was 3.7, with 2 degrees of freedom ($p > .05$). RMSEA was .027, and GFI and CFI was 1.00.

To sum up, a statistically refined 8-item version of the EI construct (the WLEIS), consisting of two items from each of the four dimensions of EI; the two dimensions of emotional conflict; and the learning outcomes construct were all appropriately suited to be analyzed in one structural equation model, in order to test the hypotheses (Model I). Data of the measurement models are listed in Table 1.

 Insert Table 1 about here

Research has shown that the dimensions of the EI concept have different external validities, depending of the constructs developed to analyze these dimensions. For example, in the WLEIS, regulation of emotion (ROE) and other emotions appraisal (OEA) is found to correlate positively with performance, whereas use of emotion (UOE) and self emotion appraisal (SEA) is not (Wong & Law, 2002). In order to set up a structure model including the four dimensions of EI and the two dimensions of emotional conflict, two confirmative factor analyses (CFA) were conducted to check the measurement models of these two scales (see Table 1). The four dimensions of the EI scale (WLEIS) converged in one scale with a Chi-square at 431 and 98 degrees of freedom ($p < .001$). The RMSEA was .056, the GFI was .95, and CFI was 98. Next, the two dimensions of the emotional conflict scale, covering emotional person conflict and emotional task conflict with four items each was investigated. The Chi-square of the measurement

model was 227, with 19 degrees of freedom. The GFI was .95; however, the RMSEA was .10, which is not appropriate. By following the model generating procedure described above (Jöreskog and Sörbom, 1993), one item was removed from the emotional task conflict sub scale (*It came to some outbursts that “cleaned the air” in a way that made us feel more comfortable*). The Chi-square dropped to 61, with 13 degrees of freedom ($p < .001$). The RMSEA was .058, the GFI was .98, and the CFI was .98. Thus, the measurement models of the four EI dimensions and the two emotional conflict dimensions were found to be acceptable for further analyses in a structural equation model.

The partial correlations between all constructs to be used in further structural equation model analyses, controlled for age and sex, are listed in Table 2. The intra-correlations among the latent constructs in the EI scale varied from moderately high (.46) to high (.73), and the correlation between emotional person conflict and emotional task conflict was as expected low (-.16) (Hjertø & Kuvaas, 2009). The composite reliability of all latent constructs was calculated (Hair, Anderson, Tatham, & Black, 1998), and is listed diagonally in Table 2. The reliabilities of the four EI constructs ranged between .73 and .80. The reliabilities for the emotional conflict constructs were .83 for emotional person conflict (four items), and .54 for emotional task conflict (three items). As for this construct, we may consider the few numbers of items and the explorative nature of this modified construct (Pedhazur & Schmelkin, 1991; Nunnally & Bernstein, 1994). The reliability of learning outcomes was .83.

 Insert Table 2 about here

Results

Emotional Intelligence, Emotional Conflict, and Learning Outcomes

A causal structural equation model (Model I) was analyzed to inspect the relationship between EI and perceive learning outcomes, with emotional person conflict and emotional task conflict as mediators (see Figure 2). The model converged with a Chi square of 380, with 146 degrees of freedom ($p < .01$). The RMSEA was .038, with a 90% confidence interval from .034 to .043, indicating a confident close fit. The GFI was .96, and the CFI was .97, all fit indices indicating close fit with high level of confidence (Jöreskog & Sörbom, 1993).

 Insert Figure 2 about here

In the model, EI predicted learning outcomes positively ($t = 13.61, p < .001$), and Hypothesis 1 could not be rejected. EI also predicted emotional person conflict negatively ($t = -3.56, p < .001$) and emotional task conflict positively ($t = 4.93, p < .001$), and Hypothesis 2 and Hypothesis 3 could not be rejected. Finally, learning outcomes was predicted negatively by emotional person conflict ($t = -2.54, p < .01$) and positively by emotional task conflict ($t = 2.02, p < .05$). Thus, Hypothesis 4 and Hypothesis 5 could not be rejected. The model explained 33% ($R^2 = .33$) of the variance in the dependent variable, learning outcomes. In the reduced form equations, R^2 of EI was .31, the R^2 of emotional person conflict was .018, and the R^2 of emotional task conflict was .059. Clearly, the predictions of learning by the two emotional conflict variables were relatively marginal, compared to the prediction of EI. That is, the impact of EI on learning is only weakly mediated by emotional conflict. Nevertheless, increased EI reduces the experience of emotional person conflicts and increases the experience of emotional task conflict, and both relationships to the benefit of learning outcomes.

Dimensions of Emotional Intelligence, Emotional Conflict, and Learning Outcomes

A causal structural equation model (Model II) of the four dimensions of EI as antecedent variables was analyzed, specifically self-emotions appraisal (SEA), other-emotions appraisal (OEA), use of emotion (UOE), and regulation of emotion (ROE) (Wong & Law, 2002). The three other variables were identical to the structural equation model analyzed in Model I (above), with emotional person conflict (EPC) and emotional task conflict (ETC) as mediators, and learning as outcomes (ELO) as the dependent variable, see Figure 3. The structural equation model converged with a Chi square of 380, with 146 degrees of freedom ($p < .01$). The RMSEA was .038, with a 90% confidence interval from .034 to .043. The GFI was .96, and the CFI was .97, all fit indices indicating close fit with high level of confidence (Jöreskog & Sörbom, 1993).

Insert Figure 3 about here

Model II adds extra information about the relationship between EI, emotional conflict, and learning outcomes, presented in Model I. The four dimensions of EI contribute to the relationship between EI and learning in a strongly different ways. The positive prediction of learning outcomes by EI found in Model I, is due to the contributions from the regulation of emotion (ROE) ability ($t = 3.15, p < .001$) and the self emotional appraisal (SEA) ability ($t = 2.43, p < .01$), supported by a somewhat weaker contribution from the other emotion appraisal (OEA) ability ($t = 1.69, p < .05$). ROE did not seem to be related to learning ($t = 1.00, n.s.$). However, emotional person conflict is predicted negatively by ROE ($t = -4.30, p < .001$). Hence, as learning outcomes is negatively predicted by emotional person conflict (see Model I, Figure 2),

and emotional person conflict is negatively predicted by ROE; ROE is indirectly positively related to learning outcomes in groups. SEA is positively related to emotional task conflict ($t = 1.86, p < .05$), and as learning outcomes is positively predicted by emotional task conflict (see Model I, Figure 2), the SEA construct is the only EI dimension that contributes positively to learning, both directly and indirectly.

Discussion

The purpose of this article has been to study the relationship between emotional intelligence and learning outcomes, and with emotional conflict as a possible mediator. The results strongly indicate that high emotional intelligence is beneficial for learning outcomes in work groups. Emotional intelligence predicts a) learning outcomes positively; b) emotional person conflict negatively, a construct that is negatively related to learning outcome; and c) emotional task conflict positively, a construct which is positively related to learning outcome (Model I). These findings are consistent with the view that how people learn is inextricably emotional (Fineman, 1997). However, the analyses of Model II clearly show that even if the dimensions of emotional intelligence are conceptually linked and highly correlated, they also play distinct roles to the relationships between emotional intelligence and learning outcomes. Particularly, employees with a good ability to use their emotions in an encouraging, goal directed and energetic way (UOE) and also to understand their own emotions (SEA) seem to have higher learning outcomes in their work groups than employees with low abilities on these areas. Notably, the question of learning outcomes is apparently not about how people are able to cognitively *control* and *regulate* their emotions (ROE). Other emotion appraisal (OEA) did not predict emotional conflict or learning in this study, whereas a majority of other studies have demonstrated a positive relationship between skills in emotion recognition and important outcomes across a wide range of real organizational settings, even if the findings are somewhat mixed (Elfenbein & Ambady, 2002).

Results show that emotional intelligence is positively related to emotional task conflict, and negatively related to emotional person conflict (Model I). As emotional person conflict is negatively related to learning, whereas emotional task conflict is positively related to learning, high emotional intelligence tends to reduce the amount of detrimental emotional conflict, and at the same time tends to increase the amount of beneficial emotional task conflicts, both relationships to the benefit of increased learning. However, emotional conflict does not fully mediate the relationship between emotional intelligence and learning (Baron & Kenny, 1986), as this relationship is significant even when emotional conflict is included as a mediator in the model (Model I). Indeed, the drop in explained variance (R^2) from the relationship between emotional intelligence and learning, to the incremental explained variance in emotional intelligence above the contribution of the emotional conflict mediator was modest (from $R^2 = .31$ to $\Delta R^2 = .26$) (Baron & Kenny, 1986). This finding modifies earlier assumptions that the effects of emotional intelligence on outcome variable are dominantly indirect (Rode et al., 2007)

In Model II, a more fine-grained picture of the relationship between emotional intelligence and emotional conflict is emerging. The negative relationship between emotional intelligence and emotional person conflict, shown in Model I, is entirely due to the person's ability of *regulating* their own emotions (ROE). Likewise, the positive relationship between emotional intelligence and emotional task conflict, shown in Model I, is entirely due to the person's ability of *understanding* its own emotions (SEA). Thus, we may assume that people with the combined ability of understanding and regulating their own emotions are the best suited to proactively direct emotional conflicts in a way that is most to learning outcomes in groups. As self emotional appraisal (SEA) and regulation of emotion (ROE) is strongly correlated ($r = .69$), we may also assume that there is quite a few people out there with this valuable combination of these particular emotional intelligence abilities.

Finally, whereas the negative prediction of learning outcomes by emotional person conflict was reasonably grounded in empirical evidence (Hypothesis 3A), the confirmation of the somewhat

explorative hypothesis about a positive relationship between emotional task conflict and learning outcomes (Hypothesis 3B), may be considered as a novelty. The emotional task conflict is recently presented in a conceptual article by Hjertø and Kuvaas (2009). Even if the emotional task conflict construct in this paper is considerable psychometrically weaker than the construct presented by Hjertø and Kuvaas, the evidence in this paper points in a direction of an emotional task oriented conflict dimension that is beneficial for learning. Considering the rather pessimistic conclusions from the meta study by De Dreu and Weingart (2003), where they concluded that both emotional/relationship conflicts and cognitive/task conflicts are equally negatively related to performance, this papers finding of a *beneficial* intragroup conflict dimension, namely emotional task conflict, may be noticeable. As discussed earlier in this paper, the ability of proactively being able to see the need of facilitating or even *generating* productive emotional conflict situations in order to stimulate debate and motivation in groups where nothing is happening (Eisenhardt, Kahwajy, & Bourgeois, 1997), may be a challenge to attain where the individual's emotional intelligence may be of considerable importance.

Limitations

Building upon seminal works of Gardner (1983) and Salovey and Mayer (1990), researchers have during the last couple of decades tried to establish a concept of emotional mental processes in the brain that adds value to the cognitive intelligence concept. However, even as late as in this decade, Lane, Nadel, Allen, and Kaszniak (2000: 7) have to argue that “the boundary between cognitive and non-cognitive phenomena will be facilitated best by including emotion within the field of cognitive neuroscience”. No need to wonder why the establishment of the emotional intelligence concept still is developing through debate and controversies. This article builds on several assumptions in this respect, assumptions which may accordingly be questioned and debated. These assumptions include that emotional intelligence is a mental ability and may be distinguished from cognitive intelligence, personality traits, and acquired competence. This paper it is also built upon the assumption that emotional intelligence may be properly

measured by a self report questionnaire, and that the practicality of a limited numbers of items to measure emotional intelligence in field studies is a legitimate concern (Law, Wong, & Song, 2004). However, above the reasoning, hypotheses, and testing of the hypotheses conducted in this article, the empirical findings in the article may also speak for itself, no matter whether they are to be judged as shedding light on ability, a competence, a trait, or a self efficacy phenomenon, respectively

The conceptualization of learning outcomes made in this paper may also be questioned, as objective measures would be preferable. However, the challenge of measuring situated learning (Lave & Wenger, 1991), often involving messy problems (Rouwette, & Vennix, 2008) and where the learning outcomes are assumed to be beneficial for effectively future group work, seems considerable. Thus, a subjective measure of learning outcomes by group members may be a practical and acceptable alternative (e.g. Bartel, Saavedra, & Van Dyne, 2001). Concerning the emotional conflict construct, we recall that we had to eliminate one item from the original emotional task conflict construct to attain acceptable fit between the data and the measurement model. This led to a weakened reability of the construct, and thus a further development of the emotional task conflict construct may be needed (however, Hjertø and Kuvaas, 2009).

Finally, even if signs of common method variance are not proved from the analyses of the data matrix, the use of one questionnaire to measure both dependent and independent variables imply that we nonetheless may be extra concerned about the possibility of common method variance in the study.

Conclusion

In this study, evidences is presented that indicate a positive prediction of learning outcomes from emotional intelligence and emotional task conflict, and a negative prediction of learning outcomes from emotional person conflict. Particularly, the emotional intelligence dimension that most strongly contributes to this relationship is the ability of using one's own emotions, and the self emotional appraisal ability. Emotional intelligence is also found to positively predict emotional task conflict, a conflict

dimension that is positively related to learning outcomes; and to negatively predict emotional person conflict, a conflict dimension that is negatively related to learning outcomes. The most important contributor to the negative relationship between emotional intelligence and emotional person conflict is the ability of regulation own emotion; and the most important contributor to the positive relationship between emotional intelligence and emotional task conflict is the ability of self emotion appraisal. Results show that emotional intelligence may be an important ability in learning activities in work groups, both directly, but also by the ability of regulation own emotions in order to prevent emotional person conflicts, and to stimulate beneficial emotional task conflicts by the ability of understanding own emotions.

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Figures and Tables

Figure 1. The Relationship between Emotional Intelligence, Emotional Conflict, and Learning Outcomes in Work Groups - Research Model

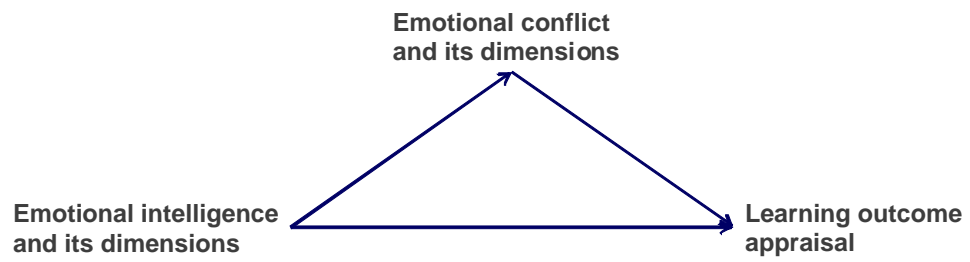


Table 1: Measurement Modes for Emotional Intelligence, Emotional Conflict, and Learning Outcomes, using Confirmative Factor Analysis.

| Scale & Sample no | Items pr. scale or subscale | Df | χ^2 | GFI | CFI | RMSEA (90% confidence intervals) |
|-------------------|-----------------------------|-----|----------|------|------|----------------------------------|
| WLEIS(16) | 16 | 104 | 2053 | .81 | .89 | .130 |
| WLEIS(8) | 8 | 20 | 101 | .98 | .97 | .061 (.047-.073) |
| WLEIS | 4+4+4+4 | 91 | 431 | .95 | .98 | .056 (.050-.061) |
| ECS | 4+3 | 13 | 61 | .98 | .98 | .058 (.044-.073) |
| ECS8 | 4+4 | 19 | 227 | .95 | | .100 |
| LOA | 4 | 2 | 3.7 | 1.00 | 1.00 | .027 (.00 - .72) |

*: WLEIS: Wong and Long Emotional Intelligence Scale (Wong & Law, 2002). ECS: Emotional Conflict Scale (adapted from Hjertø & Kuvaas, 2009). LOA: Learning outcome scale (adapted from Hackman, 1987).

Table 2. Parial Correlations, Controlled for Sex and Age, and Composite Reliability

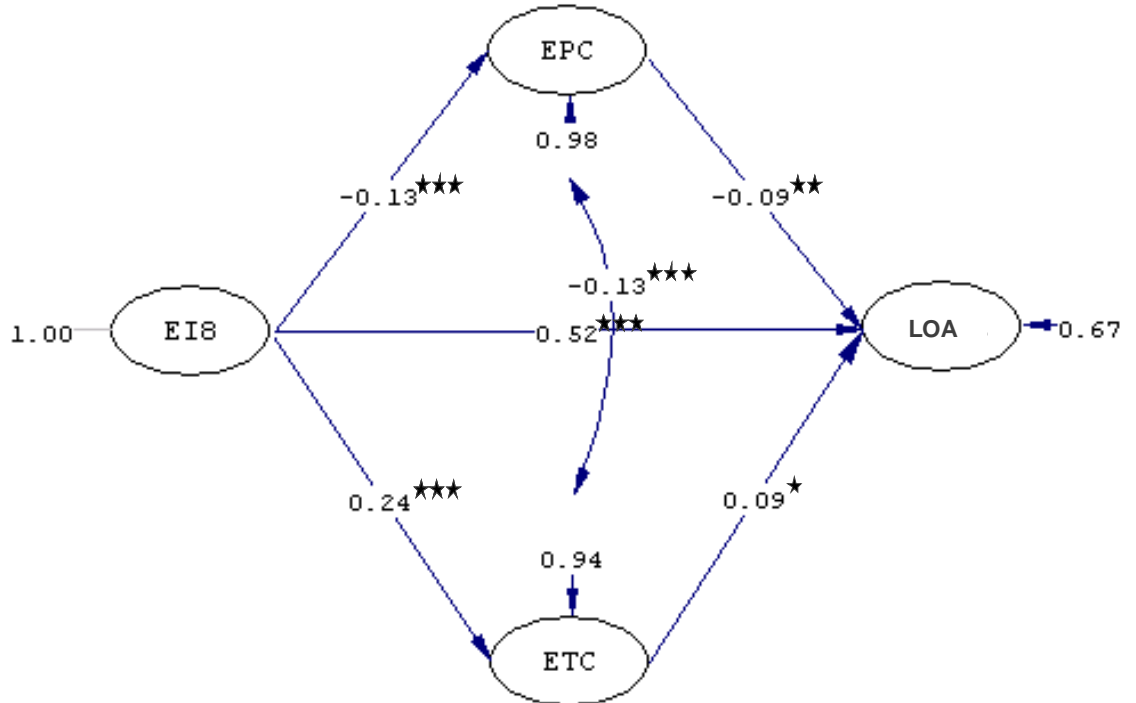
| | SEA | OEA | UOE | ROE | EPC | ETC | LOA |
|------------|-------------|-------------|-------------|-------------|-------------|------------|------------|
| SEA | .77 | | | | | | |
| OEA | .70 | .79 | | | | | |
| UOE | .73 | .46 | .73 | | | | |
| ROE | .69 | .50 | .53 | .80 | | | |
| EPC | -.09 | -.04 | -.10 | -.19 | .83 | | |
| ETC | .24 | .13 | .21 | .17 | -.16 | .54 | |
| LOA | .50 | .39 | .45 | .39 | -.17 | .23 | .83 |

Composite reability is listet in the center diagonal.

$r > .14, p < .001$; $r > .09, p < .01$; $r > .08, p < .05$.

SEA: Self emotion appraisal; OEA: Other emotion appraisal; UOE: Use of emotion; ROE: regulation of emotion; EPC:Emotional person conflict; ETC: Emotional task conflict; LOA: Learning outcome appraisal.

Figure 2. The Relationship between Emotional Intelligence, Emotional Conflict, and Learning Outcome Appraisal, Model I (Path Diagram)

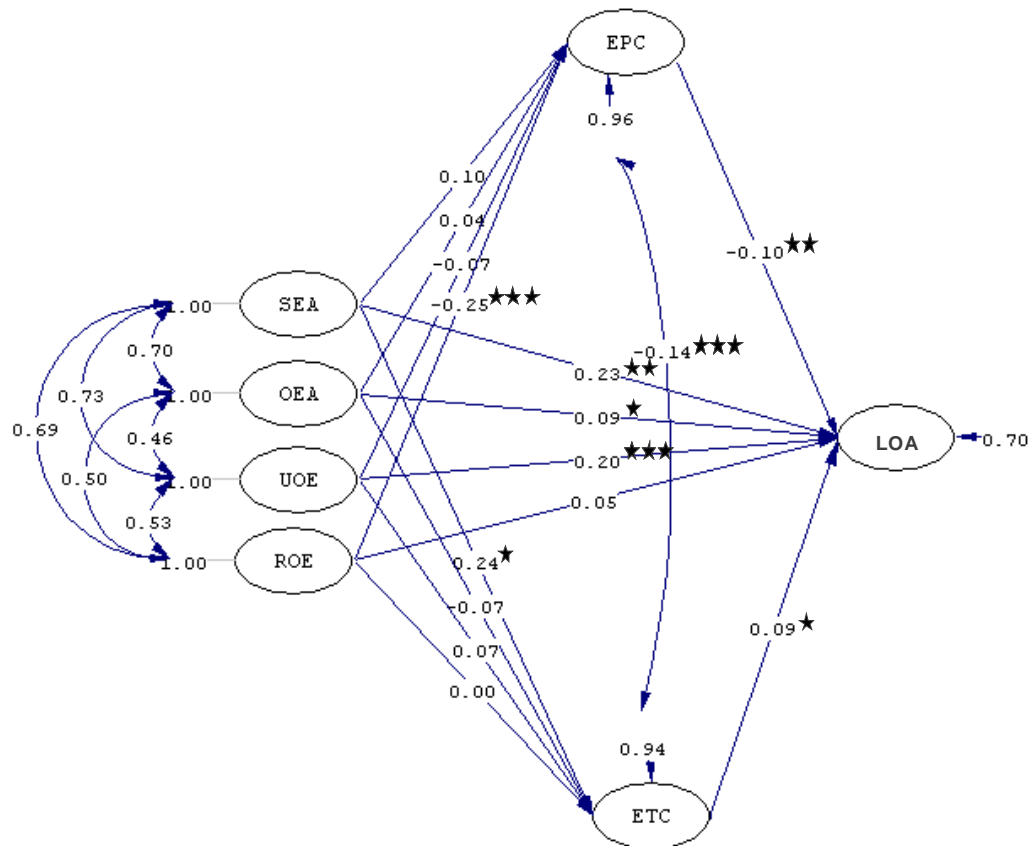


Abbreviations: EI8: emotional intelligence (8 items); EPC: emotional person conflict (4 items); ETC: emotional task conflict (3 items); LOA: Learning outcome appraisal (4 items).

Straight lines: β . Curved line: r .

*** $p < .001$; ** $p < .01$; * $p < .05$ (one tailed).

Figure 3 The Relationship between Emotional Intelligence Dimensions, Emotional Conflict, and Learning Outcome Appraisal, Model II (Path Diagram)



Abbreviations: Self Emotion Appraisal (SEA); Other Emotion Appraisal (OEA); Use of Emotion (UOE); Regulation of Emotion (ROE); Emotional Person Conflict (EPC); Emotional Task Conflict (ETC); Learning Outcome Appraisal (LOA).

Straight lines: β . Curved lines: r .

*** $p < .001$; ** $p < .01$; * $p < .05$ (one tailed).

Appendix

Items used to measure experience of learning outcome appraisal (adapted from Hackman, 1987), emotional intelligence and its dimensions (Wong & Law, 2002), emotional person conflict, and emotional task conflict (adapted from Hjertø & Kuvaas, 2009).

Appraisals of learning outcome in the group

Joint assessment of increased team-competence (not professionally) in the group, to the benefit off future effective group work

Assessment of increased team-knowledge (not professionally) in the group, to the benefit off future effective group work

Assessment of increased team skills (not professionally) in the group, to the benefit off future effective group work

Assessment of increased team attitudes (not professionally) in the group, to the benefit off future effective group work

Emotional Intelligence

Self emotion appraisal (SEA)

I have a good sense of why I have certain feelings most of the time.

I have good understanding of my own emotions.

I really understand what I feel.

I always know whether or not I am happy.

Other emotion appraisal (OEA)

I always know my friends' emotions from their behavior.

I am a good observer of others' emotions.

I am sensitive to the feelings and emotions of others.

I have good understanding of the emotions of people around me.

Use of emotion (UOE)

I always set goals for myself and then try my best to achieve them.

I always tell myself I am a competent person.

I am a self-motivating person.

I would always encourage myself to try my best.

Regulation of emotion (ROE)

I am able to control my temper so that I can handle difficulties rationally

I am quite capable of controlling my own emotions.

I can always calm down quickly when I am very angry

I have good control of my own emotions.

Emotional conflict

Emotional person conflict (EPC)

It seemed as though narrow-mindedness or envy was driving the conflict

Some times the level of conflict increased to an extent that we lost track of the task

When there were disagreements, some tried to compete with each other all the time

There were some down-grading of others when we disagreed

Emotional task conflict (ETC)

The disagreements in the group were dominantly concerning factual matters and particular tasks.

Even when we disagreed strongly there was a "win-win" mood in the group

The group both cooperated well and disagreed intensively when discussing.

It came to some outbursts that "cleaned the air" in a way that made us feel more comfortable (removed)