

## Virtual Negotiations between Collocated Diverse Teams: The Effect of Intragroup Faultlines on Intergroup Communication

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### Abstract

This work examines the effect of faultlines in virtual computer mediated communications of two collocated negotiation teams. We expand upon prior diversity literature by considering the effect of both surface and deep-level faultlines on the intergroup computer mediated communications in virtual negotiations. Faultlines are hypothetical lines that divide teams into multiple subgroups based on diversity attributes. We confirm that the effect of team diversity on intergroup computer mediated communications can be better captured through faultlines. Our results suggest that faultlines mediate the effect of diversity on teams' computer mediated intergroup communication and that deep-level faultlines significantly lower the frequency and quality of intergroup communication of virtual negotiations.

### 1. Introduction

Today's organizations are highly dependent on *Computer Mediated Communication* (CMC) systems to foster cost and time effective interactions between members from different geographic regions [1]. CMC systems foster person-to-person communications, often in text or graphic form, over computer networks such as electronic mail, voice mail, and computer or video conferencing [2], [3]. CMCs are particularly useful in organizations with high member diversity in terms of *surface-level* characteristics (i.e. visible features such as age, gender, and ethnicity) and *deep-level* elements (i.e. invisible features such as cultural norms, values, and personality dimensions) [4], [5]. Interactions over CMC are frequent among geographically dispersed *virtual teams*, where each member is in a different location [3]. Such teams are

quite diverse and CMC can solve some aspects of the communication and process problems in diverse teams, particularly miscommunication and conflict.

Yet, in many organizations, CMC connects two or more collocated teams based in different locations [6], [7]. *Collocated teams* are more traditional organizational teams, where members interact face-to-face [6]. These collocated teams can also be highly diverse. One critical process that requires the connection of collocated teams via CMC is negotiation. Negotiation is a social process where two or more parties try to resolve conflict or distribute resources [8]. Negotiations occurring over CMC are known as *virtual negotiations* [8]. These types of negotiations occur frequently between collocated teams where the bargaining and exercise of negotiation strategies take place virtually.

Prior diversity and communication research has heavily studied interactions and in some cases, negotiations in geographically dispersed, virtual teams [7]–[10]. There are also many studies comparing communication or negotiation processes between virtual and collocated teams [6], [8]. While these studies shed light on how diversity and CMC interact to influence team communication and performance, there is limited research on virtual negotiations between collocated teams [11]–[13]. Given that many organizations adopt *diverse or non-homogenous teams* composed of members varying in cultural or demographic characteristics, there is a need to understand how within team, i.e. *intragroup*, interactions in collocated diverse teams impact communication process and interactions between teams, i.e. *intergroup*.

Accordingly, in our study we examine interaction processes in an intragroup context and its impact on virtual negotiations in an intergroup context. Extending on prior literature that show intragroup problems developing because of diversity, we speculate that collocated diverse teams face similar

issues. Yet, extending on prior literature we predict that intragroup issues in collocated diverse teams spill over in the intergroup context, negatively influencing virtual negotiations and intergroup communications.

## 2. Collocated Diverse Teams and Faultlines

Diverse teams can be quite beneficial to organizations [14]. Well-managed diverse teams outperform culturally homogeneous teams because of enhanced information processing and multiple perspectives, which improve group decision-making and creativity [15]–[17]. Yet, diverse teams face many challenges such as lower social integration and ineffective communication [18], [19]. This is because members differ on surface-level characteristics. According to categorization and social identity theories, in-group bias emerges in this context. This is when people categorize themselves and others based on shared demographic attributes as in-group members, and other members that do not share these features as out-group members [20], [21]. The higher the in-group/out-group distinction the more conflict diverse teams experience, which hinder team unity and performance [20]–[22]. In addition, differences in deep-level diversity can lead to discrepancies in information processing within the team. This often results in misunderstanding and communication distortion in diverse teams [19], [23]–[26].

One of the main issues associated with diverse teams is the formation of *faultlines* or hypothetical dividing lines in a team, based on the alignment of diversity attributes that lead to subgroups [27]. Depending on the diversity composition of the team, there may be multiple faultlines and subgroups. For instance, a four-member team of diverse gender composition may split by a gender faultline into two subgroups of men and women. These potential and un-perceived faultlines are *dormant faultlines*, which may or may not lead to subgroup formation. Such faultlines can enhance categorization in the team, reduce cross sub-group communication and lower team performance [27]. *Activated faultlines*, or faultlines perceived by team members that generate subgroups, contribute more to team processes such as conflict, satisfaction and performance than dormant faultlines [28].

Prior research shows a significant relationship between activated faultlines and conflict, which subsequently leads to attenuated team performance [22], [29]–[31]. For instance, Lau et al. investigated the influence of faultline from surface-level attributes on team learning and satisfaction via FTF and CMC

modes of communication. The authors found that faultlines reduce intra-team communication, measured by the frequency of task related intra-team communications [22]. If collocated diverse teams need to interact and plan for an intergroup virtual negotiation, there may be a possibility of faultline activation and subgroup formation on an intra-team level. Thus, we investigate the extent to which diversity attributes contribute to faultline activation in collocated diverse teams, before any intergroup interaction.

**Hypothesis 1a.** Surface diversity attributes (e.g. gender, age, and ethnicity) contribute to faultline activation in collocated diverse teams.

### 2.1 Deep-level Diversity in Collocated Teams

While both surface and deep-level diversity features can contribute to faultline formation, the majority of faultline research heavily focused on the alignment of surface-level diversity [27], [31], [32]. Diversity literature illustrates the importance of deep-level attributes and their impact on collocated diverse teams. For instance, deep-level diversity attributes have significant effects on team learning, creativity, decision making and outcome, above and beyond surface-level diversity features [15], [33]. Accordingly, we examine faultline activation based on both surface and deep-level diversity elements in an intragroup context.

While there is a dearth of work on the contribution of deep-level diversity to faultline activation, there are several studies examining the role deep-level diversity on various team processes [33]. Prior work on deep-level diversity heavily focused on characteristics such as values, attitudes and culture, with a lot of emphasis on cultural values and norms. Culture reflect a set of unique profiles of society, incorporating characteristics from observable behaviors to psychological values and norms [34]. For instance, cultural attributes have a more prominent impact on team processes [33]. Cultural attributes fuel diversity categorization and sub-group formation through shared values and norms among members of the in-group, and negative stereotypes toward the out-group. In a diverse team context, culture can negatively impact communication, even via CMC, due to unrealistic cultural expectations or communication distortion due to cultural misunderstanding and biases [19], [35].

Accordingly, we examine the impact of surface-level diversity such as gender, age and ethnicity on faultline formation. We also examine the influence of deep-level diversity, specifically culture, on faultline

activation. We primarily focus on cultural norms, or the the appropriate behavior in interactions prescribed by a culture [36]. We examine the influence of *tight versus loose cultural norms*, reflecting the extent to which societies have tight rules and structures, and the level of patience and acceptance of deviant or non-normative actions [37].

We speculate that in collocated diverse teams, tight cultural norms heighten the categorization effect of faultlines compared to that of loose cultural norms. Team members that endorse tight cultural norms are more likely to pay attention to the transgression of other members in their team. This will result in the categorization of those transgressors as out-group members. This categorization potentially results in subgroup formation based on transgressors (out-group) and members who follow the rules and regulations (in-group) and activate faultlines based on the alignment of tight/loose cultural norms in the team. As a result, we predict that:

**Hypothesis 1b.** Deep-level diversity attributes (e.g. tight cultural norms) contribute to faultline activation in collocated diverse teams.

### 3. Faultlines and Communication

As we expect surface and deep-level diversity attributes to give rise to faultlines in collocated diverse teams, we further predict that active intragroup faultlines will negatively influence intergroup interactions between collocated teams when negotiating virtually over CMC. We speculate this because if a team's faultline and subgroups contribute to lower unity, cohesions, communication, and performance, it will be difficult for this team to effectively communicate and negotiate with another team. This will be even more challenging when the negotiation is occurring virtually.

Overall, there is a dearth of work on the effect of faultlines on interterm CMC of collocated teams. However, there are few studies on the effect of faultlines on communication process of virtual teams [12], [30]. For example, Polzer et al. examined the contribution of faultline in geographically dispersed virtual teams communicating via a text-based CMC. In this case, geographical differences of the team members lead to faultline and subgroup formation. The authors found that faultlines fuel intragroup conflict, lower trust, and reduce the frequency of communication in these virtual teams [12].

Other studies also illustrate that faultlines reduce the frequency and quality of subgroup communication in an intragroup context [21], [38]. According to Larkey and colleagues [38], when

subgroups are formed, an inclusion/exclusion process gets activated, in which in-groups will communicate more within their subgroups and communicate less with the out-groups. This pattern of exclusion/inclusion leads to lower frequency and quality of communication between subgroups, on an intragroup level [22]. Specifically, as team members in subgroups increase their communications among each other, and decrease it with the out-group, they can generate shared communication patterns [39]. Team members in same subgroups are more likely to adjust and match each other's communication style, i.e. *convergence*, and have a distant communication pattern from the out-group, i.e. *divergence*, thereby lowering communication quality across subgroups [38].

We speculate that the relationship between lower frequency and quality of intragroup communication in collocated diverse teams can negatively influence communication process in virtual negotiations between teams, because of the lack of *mutual knowledge* [40], [41]. Mutual knowledge is a knowledge that team members share in common and are aware that they share [40]. Prior research shows that in teams, mutual knowledge or "common ground" is integral for coordination of any action, decision making and performance [40]. Communication quality and frequency in a team heavily contribute to the team's mutual knowledge. If the mutual knowledge of a collocated diverse team is low because of faultline, this lack of cohesive understanding and coordination can spillover to intergroup interactions, lowering quality and frequency of communication in intergroup virtual negotiations [40]. As a result, we predict that:

**Hypothesis 2.** Faultlines lower quality (H2a) and frequency (H2b) of intergroup communication in virtual negotiations.

**Hypothesis 3.** Faultlines mediate the effect of diversity on the quality and frequency of communication in virtual negotiations.

### 4. Theoretical Model

Figure 1 illustrates our conceptual model and hypotheses for this study.

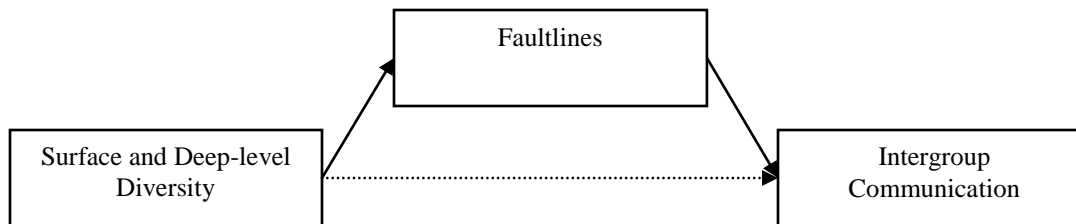


Figure 1. The relationship between diversity attributes, faultline and communication.

## 5. Methodology

### 5.1 Participants

Participants were 97 undergraduate management students (52.6 % female, Mean age= 21.48, S.D. =1.54) organized into 24 four-person teams from two North American universities where negotiations takes place between teams from different universities. Participants received course credit for participation. Most participants were Caucasians (68.1%). We also had East Asian (16.5%), Middle Eastern (7.2%), African American (4.1%), Latin American (2.1%) and South Asian (2.1%) participants.

### 5.2 Task

The participants engaged in a supply-chain management dispute negotiation task by [42]. The task involved a pet food producer and its major supplier in a dispute about product quality, delay on payments and potential of lawsuit. Both parties were asked to negotiate about issues associated with the delivery of product, percentage of fat content of the meat flour, percentage of water content of the meat, flour, outstanding bill payment, lawsuit, and future relationships. The exercise required teams to first coordinate and manage their negotiation approach, decide on strategies, and plan implementation among themselves, i.e. within team interaction. Then teams negotiated with the opposing team about the different issues, i.e. between team interactions. The task provided opportunities for integrative solutions by incorporating the interests of all parties.

### 5.3 Procedure

A week before the negotiation exercise, participants read about their roles and prepared for

their first, intra-group interaction about planning and implementation of strategies. The team interaction was face to face and lasted around two hours. During this meeting team members needed to discuss their goals, approach for the upcoming negotiation, and assign roles among themselves. For instance, teams could have assigned a leadership role to a member. Teams had the flexibility to plan their own approach and role coordination. A few days after the planning phase, teams were given information about their counterparts. Teams were asked to contact their counterparts and schedule a two hours session for the virtual negotiation with another team from the opposing university. This negotiation was conducted using a CMC employing video conferencing. Upon the completion of the negotiation, teams were asked to record their negotiation deals and provide information on their final outcomes. Throughout the entire study, participants completed three sets of self-report surveys individually. The first survey was given a week before the distribution of the negotiation case. This survey included demographic measures and items about the endorsement of tight cultural norms. The second survey was given right after the first team meeting and included measures about their intragroup experience and faultline activation. The third survey was given right after the negotiation and included self-report faultline activations measure as well as measures about their intergroup experience, quality of communication, negotiation outcome.

### 5.4 Measures

Most of our self-report measures asked participants to rate their agreement with each statement on a 6-point Likert scale (1, Strongly Disagree and 6, Strongly Agree).

**5.4.1 Surface-level Diversity.** We examined gender, age, and ethnicity as surface-level diversity

attributes and calculated faultline strength that combines these attributes in a team to determine the potential strength of a dormant faultline [31], [43]–[45]. We adopted the Average Silhouette Width (ASW) model due to the algorithm’s ability to consider up to six simultaneous subgroups and mitigating the negative effect of correlation between the input data [44]. We used the ASW Cluster package and calculated the surface-faultline strength of each team based on age, gender and ethnicity attributes with equal weights.

**5.4.2 Deep-level Faultline: Tight versus Loose Cultural Norms.** We used the endorsement of tight cultural norms as a characterization of deep-level faultline. We employed the six-item tightness-looseness scale by Gelfand et al. [37], measuring the strength of social norms and tolerance of deviance across individuals. The cultures with tight cultural norms has strong norms and low tolerance for deviant behaviors. These cultures score higher in the measure than the loose cultures with weaker norms and higher tolerance for norm violations. As a result, higher scores indicates higher endorsement of tight cultural norms.

**5.4.3 Faultline Activation.** We measured activated faultlines in two instances: 1) after the within group planning, and 2) after the between group negotiations. We used the four-item activated group faultline measures implemented in [28]. The measure captured the extent to which individuals noticed subgroup formation in the teams based on diversity elements.

**5.4.4 Frequency of Communication: Information Exchange.** We examined perceived frequency of communication after the negotiation exercise. We used information exchange as a proxy of communication frequency. This was an eight-item scale adopted from prior negotiation research [46]–[48]. These items asked about the extent to which teams shared information about priorities, interests, and needs during the negotiation.

**6.4.5 Quality of Communication.** We measured quality of communication after the negotiation simulation. We adopted the quality of communication experience measure by Liu and et al. [49]. This fifteen-item measure included items associated with three dimensions of quality of communication: clarity, responsiveness, and comfort.

According to [49] quality and effectiveness of communication is captured through three dimensions of *clarity, responsiveness and comfort*. Clarity

reflects the cognitive aspect of communication or the level of understanding of the meaning in messages [50]. Responsiveness is the behavioral aspect of communication, specifically, synchronization in speech patterns and responsiveness to information inquiries or emotion expression [51]. Comfort is associated with the affect, ease and pleasantness in interactions [49].

## 6. Results

We conducted individual level analyses to examine the effects of surface-level (age, gender, and ethnicity) and deep-level (tight cultural norms) demographic characteristics on activation of faultlines. We also examined how activated and perceived faultlines influence the frequency and quality of intergroup CMC. We conducted analyses on direct effects using hierarchical linear regressions and mediation analyses using the PROCESS macro for SPSS (Hayes, 2013) specifying Model 4. Unstandardized indirect effects were computed for each of 1000 bootstrapped samples, and the 95% confidence interval was computed by determining the indirect effects at the 2.5th and 97.5th percentiles.

In H1a and H1b, we posited that surface and deep-level diversity attributes lead to activation of faultlines in collocated diverse teams. Contrary to our prediction, surface-level diversity were negatively related ( $\beta = -.22$ ,  $SE = .46$ ,  $t = -2.09$ ,  $p = .04$ ) to faultline activation in time 1. However, in time 2, ( $\beta = .28$ ,  $SE = .17$ ,  $t = 2.32$ ,  $p = .02$ ), deep-level diversity, i.e. tightness cultural norm, was significantly and positively related to perceived faultlines. We also found a significant and strong relationship between activated faultlines in time 1 and faultlines in time 2, ( $\beta = .438$ ,  $SE = .08$ ,  $t = 4.18$ ,  $p < .01$ ). Thus, H1a is not supported while, H1b is supported.

For H2, we expected that faultlines lead to lower quality (H2a) and frequency (H2b) of intergroup CMC in virtual negotiation. In support of the first part of our hypothesis (H2a), we found a significant negative relationship between faultlines based on the alignment of deep-level attributes and clarity, ( $\beta = -.29$ ,  $SE = .11$ ,  $t = -2.74$ ,  $p < .01$ ), responsiveness, ( $\beta = -.24$ ,  $SE = .11$ ,  $t = -2.19$ ,  $p = .03$ ), and comfort, ( $\beta = -.27$ ,  $SE = .15$ ,  $t = -2.53$ ,  $p = .01$ ) dimensions of the intergroup CMC. For the second part of the hypothesis, in order to investigate the frequency of communication, we examined information exchange during the virtual negotiations. Supporting the second part of our hypothesis we found that that faultlines in time 2 were negatively related to frequency of

communication, ( $\beta = -.25$ ,  $SE = .08$ ,  $t = -2.26$ ,  $p = .03$ ). As a result, both H2a and H2b are supported.

We conducted additional analyses to examine whether faultlines mediates the relationship between deep-level characteristics associated with cultural norms and the quality and frequency of communication. Our analyses illustrated that faultlines in time 2 mediated the relationship between tight cultural norms and quality of intergroup CMC in terms of clarity, ( $\beta = -.12$ ,  $SE = .07$ ,  $LLCI: -.31$ ,  $ULCI: -.01$ ), responsiveness, ( $\beta = -.11$ ,  $SE = .07$ ,  $LLCI: -.31$ ,  $ULCI: -.02$ ) and comfort ( $\beta = -.17$ ,  $SE = .09$ ,  $LLCI: -.38$ ,  $ULCI: -.02$ ). Moreover, faultlines mediated the relationship between tight cultural norms and frequency of communication, ( $\beta = -.07$ ,  $SE = .04$ ,  $LLCI: -.17$ ,  $ULCI: -.01$ ). In addition, we conduct the sobel test using the PROCESS macro for SPSS for the mediations between the cultural norms, deep-level faultlines and clarity ( $z = -1.66$ ,  $p = .096$ ), responsiveness ( $z = -1.56$ ,  $p = .118$ ), comfort ( $z = -1.65$ ,  $p = .097$ ) and frequency of communication ( $z = 1.40$ ,  $p = .158$ ). Even though the result of our sobel test doesn't indicate a significant mediation, we believe this might be due to our limited sample size and the confidence interval obtained through the bootstrapping process to be more trustworthy [52]. As a result, H3 is partially supported.

## 7. Discussion

In this work, we aim to shed light on the impact of diversity and faultlines on the intergroup computer mediated communications during virtual negotiations. This work expands upon previous virtual team and CMC literature by shedding light on the relationship between faultlines and intergroup CMC. Contrary to prior faultline literature that mainly focused on surface-level characteristics such as age, gender, and ethnicity, in this work, while we examined the surface-level demographic attributes through ASW model [44], we also extend the prior works by introducing and examining faultlines derived from deep-level cultural norms.

Our results confirms that the relationship between diversity and teams' CMC might not be as straightforward as proposed in previous literature [5], [13]. In case of surface-level demographic diversity, we observed a pattern similar to that of [5], [13]. Contrary to our prediction, surface-level diversity characteristics were positively related to the frequency of intergroup communications. Carte et al. [13] proposed that this relationship is due to the reductive capabilities of the CMC. However, we could not observe the similar pattern for more prominent deep-level diversity attributes.

Another novel aspect of this study is the confirmation of faultline activation based on both surface and deep-level diversity attributes, specifically tight and loose cultural norms. According to [20], over time due to the interaction between team members the effect of surface-level attributes will gradually fade-away while the effect of deep-level attributes become more prominent. Our result confirms the same pattern in activation and persistence of faultlines in negotiation teams. As in time 1, the surface-level attributes lead to faultline activation and later in time 2, faultlines were based on the alignment of cultural norms.

We speculated that in diverse negotiation teams, people who endorse tight cultural norms might tend to exclude team members who are deemed as transgressors. This can result in subgroup formation within the team: transgressors who are excluded (i.e. out-group) verses rule-abiding members who are included (i.e. in-group). This subgroup formation can further reduce the intra subgroup communications and hinder the formation of mutual knowledge. Our findings support this notion by illustrating the importance of individual-level endorsement of tight cultural norms in heightening the effect of faultlines and how faultlines stemmed from these cultural norms can hinder effective intragroup communication in virtual negotiations.

Our result also confirms that faultlines based on the alignment of deep-level attributes mediate the relationship between cultural norms and teams' CMCs. This is a novel contribution to the faultline and culture literature as we show that tight cultural norms, i.e. low tolerance for deviances from social norms, can diminish intergroup communication effectiveness by increasing the divide among subgroups.

It is worth mentioning that even though we found a significant relationship between surface-level diversity (i.e. ASW measure) and activated faultline, this relationship was inverse, i.e. higher surface-level diversity was negatively related to faultline activation in time 1. This surprising effect might be due to the calculation of faultline strength with ASW model based on equal weights for all the surface-level characteristics of age, gender, and ethnicity [44]. We speculate that the weightage of these elements may differ depending on the team composition, type of task, interactions and cultures. These additional factors can bolster the conscious perception of subgroups and faultlines in teams. Indeed, after conducting additional analyses by manipulating the relative ratio of these weights, we were able to see different effects on the relationship between ASW strength and faultline activation.

## 8. Conclusion and Future Work

In this study, we investigated the effect of diversity on intergroup CMC of negotiation teams. Our study indicates that the relationship between diversity and intergroup communication in virtual negotiations can be better captured through faultlines and we confirm that faultlines mediate the effect of team diversity on intergroup communications. This work also identifies the negative effects associated with endorsement of tight cultural norms on intergroup communications in virtual negotiations.

For future research, we plan to increase the sample size of our study to investigate the inconsistencies of surface-level faultlines. This would allow us to investigate the effect of demographic faultline on intergroup CMC of teams. We also aim to examine the relationship between various degrees of virtually in the CMC, faultlines and intergroup CMC.

While we introduced faultlines based on the alignment of deep-level attributes, we only focused on tight cultural norms. For future research, we plan to develop a comprehensive model of deep-level faultlines that includes other facets of cultural norms. For example, recent negotiation research show the importance of honor, face, dignity cultural norms in predicting social interactions and conflict resolution [46].

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## 10. References

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