Chapter 20

Gender, Group Composition and Task Type in Virtual Groups

Victor Savicki, David A. Foster and Merle Kelley

Introduction

Two recent trends in the way organizations accomplish work, the use of teams[1] and the use of CMC, allow organizations to leverage the expertise of their employees to accomplish necessary goals, regardless of employees' physical or temporal proximity. These 'virtual teams' allow rapid assembly of teams of experts to solve urgent problems. Utilizing such teams effectively could provide an organization with tremendous advantage in today's hypercompetitive business climate. For example, the use of virtual teams allows work to be accomplished at any time (asynchronous communication) and avoids expensive and complicated travel arrangements for team members. The emergence of these two trends and the concomitant increase of women in the workforce have led researchers to examine exactly how the use of CMC to accomplish organizational goals is impacted by the gender of team members under various work task conditions. The purpose of this chapter is to review current theory and research on CMC communication in accomplishing tasks as it relates to the variable of gender. Specifically, this chapter will examine the relationship among gender, team composition, task type and both group processes and effectiveness for teams using CMC communication.

Overview of Current Research

Communication, Group Processes and Group Outcome Linkages

Conventional wisdom states that effective communication is the key to any successful team. But what is 'effective' communication and how is it linked to successful team performance? According to Bales (1950), effective team communication focuses on what he termed both 'task' and 'maintenance' behaviours. Task behaviours are focused on accomplishing the goal at hand. These include such behaviours as asking for or sharing information, summarizing the statements of others and checking for comprehension. Maintenance behaviours focus on developing and preserving cooperative relationships among group members. Such behaviours include supporting

and praising others, encouraging participation and relieving tension. To put the task versus maintenance functions in perspective, only 40 per cent of group meeting time is devoted to task-focused discussions, even in task-oriented, computer-mediated meetings (Olson et al., 1992). Unfortunately, the result of Bales's labelling of these functions as 'task' and 'maintenance' is that, although maintenance functions require work and effort on the part of the group, the maintenance function is sometimes not seen as a part of the 'task' that the group must accomplish. Consequently, teams often do not attend to underlying socio-emotional dynamics of the group that impact the group's performance on the task.

Clearly, attention to the socio-emotional dynamics of a group has consequences for the productivity of the group (Kormanski, 1990). For example, Potter and Balthazard (2002) found that group communication styles were related to group performance on collaborative group decision-making tasks. Specifically, they found that a constructive interaction style, characterized by a balanced concern for both task and maintenance behaviours, cooperation, creativity, free exchange of information, and respect for others' opinions, was related to teams making fewer errors and having increased synergy (teams performing better than their best individual member). Additionally, they found that groups characterized by aggressive (placing personal achievement above group goals) or passive (emphasizing harmony) styles, were likely to make more errors and have lower levels of decision acceptance and member satisfaction. Consequently, it appears that maintaining intergroup relationships enhances the cooperative nature of the group and, in some cases, group performance.

Gender Differences in Communication

A large body of research has examined differences in normative male and female communication patterns. Research indicates that men and women in the mainstream US culture tend to form separate speech communities (Labov, 1972). Labov defined 'speech community' as a sub-culture whose members share a set of norms regarding communication practices. These speech communities differ in their linguistic styles because it is common for a language to have many alternative ways of saying the same thing. Men's and women's speech communities also differ on assumptions about what the goals of communication are and what strategies are best employed for reaching those goals.

According to Wood (1994), there are six primary features of women's community of talk. Women seem to strive for equality by sharing experiences, verbally showing support for others, using speech that fosters connections and relationships, making efforts to sustain conversation by inviting others to speak, usually responding in some way to what others say and, lastly, using details, personal disclosures, anecdotes and concrete reasoning. Masculine speech communities also demonstrate distinctive characteristics. Men often speak to exhibit knowledge, skill or ability, use speech to accomplish instrumental objectives, make use of conversational dominance, tend to express themselves in fairly absolute, assertive ways, communicate abstractly and tend not to be highly responsive on the relationship level of communication

because they give minimal response cues. Accordingly, it appears that women's normative communication patterns naturally facilitate relationship maintenance, thereby increasing the likelihood of cooperation and effective group performance. Consequently, one would expect that women would perform better on group tasks that require a great deal of cooperative effort.

In addition to notable differences between men and women in their verbal communication pattern, a large body of research indicates that women, compared to men, are more sensitive to non-verbal cues, especially when making judgments regarding facial cues (Hall, 1998). Arguably, these facial cues (for example, smiling, gazing and expressions) facilitate relationship maintenance by indicating liking and acceptance or dislike and rejection. Because non-verbal cues primarily facilitate socio-emotional regulation within the group, it is unlikely that these cues would exercise any strong, direct effects on the task aspects of group functioning. It is predicted, however, that impairing a group's ability to accomplish maintenance activities by removing non-verbal communication channels may have a negative impact on group effectiveness; especially when faced with tasks requiring a great deal of cooperative effort. Further support for this argument comes from media richness theory (Daft and Lengel, 1984, 1986), which contends that group performance improves when individuals use 'richer' media (for example, face-to-face interaction that provides the message recipient with access to tone of voice and non-verbal cues in addition to the message content).

This is not to argue, however, that women's performance will not be comparable to men's on various tasks using CMC. Although women tend to utilize non-verbal information more than men to maintain socio-emotional balance in the group, women's normative verbal communication style also more strongly emphasizes maintaining this balance compared to men's communication patterns. Consequently, although women may be more affected by the loss of non-verbal communication channels, they may be able to compensate for this loss through their normative verbal communication. In sum, there are well-documented gender differences in both verbal and non-verbal communication styles. The next section will examine how these differences are manifested in, and affected by, CMC.

Gender Differences in CMC

Previous research on gender differences in non-verbal communication suggests that women may be affected by the loss of non-verbal cues (involved in relying on text-based CMC) more than men. Consequently, researchers hypothesized that women would be affected more than men by the relative poverty of cues in CMC and loss of non-verbal information. We are suggesting, however, that women, more than men, will also be able to rely on other communication avenues to accomplish the maintenance tasks of the group.

Dennis et al. (1999) examined the hypothesis that women, more than men, would be affected to a greater extent by the loss of media richness (such as non-verbal information) when using CMC. They manipulated 'media richness' by

contrasting problem solving in male, female and mixed gender dyads using face-to-face communication and the 'less rich' CMC. Women dyads' performance was enhanced in the face-to-face condition; none of the other dyads showed any effect of differences in performance based on 'media richness'. They concluded that women are more sensitive than men to non-verbal communication and therefore more affected by its absence in CMC.

In another recent study, Guadagno and Cialdini (2002) found that when women had a prior face-to-face interaction with a female partner, their subsequent CMC experience with that partner was enhanced and they were more likely to agree with their partner. This was true even when the face-to-face experience was manipulated to be competitive in nature. Men, on the other hand seemed only to be affected by a highly competitive face-to-face discussion prior to the CMC experience with that same individual. Under that circumstance, they were less willing to align their attitudes with their partner. These results support the hypothesis that women are more sensitive than men to non-verbal communication and therefore more affected by its presence in face-to-face communication.

Despite the removal of important non-verbal communication channels when using CMC, research has shown that gender differences in communication style using CMC mimic those of face-to-face communication. Early in the investigation of CMC, two interesting predictions were made concerning the effects of using a more anonymous communication medium on group communication. At first, some writers (Graddol and Swann, 1989; Landow, 1992) hypothesized that anonymity, in the form of the absence of clues about the gender and status of the communicator, would lead to more parallel communication by men and women.

Herring (1993, 1994), however, noted anecdotally that there were enough obvious gender differences in email messages that it was often possible to tell whether a given message was written by a man or woman solely from the rhetorical and linguistic strategies. She noted that women's language often contained attenuated assertions, apologies, questions, a personal orientation and supportive statements. Men's language, on the other hand, was more likely to contain strong assertions, self-promotions, rhetorical questions, an authoritative orientation and the use of humour and/or sarcasm. Consequently, it seems that CMC between the genders mimics face-to-face communication regardless of the lack of the more obvious cues about gender.

Most of these early studies, however, focused on the behaviour of the individuals and looked for differences between the genders in individual performance in CMC. What was not known was how gender affected group performance when using CMC. Some scientists hypothesized that anonymity, in the form of lack of personal identification, would contribute to more extreme stereotypical communication styles by men and women. Previous research (Hiltz et al., 1986) indicated that increasing anonymity can lower inhibitions resulting in persons engaging in more extreme normative behaviour. Consequently, in situations where participants cannot be identified, the groups themselves may become 'gendered'; that is, they may rely

heavily on masculine or feminine communication norms, depending on the gender composition of the group.

Herring (1994) described CMC in groups on the Internet as 'gendered', depending on the gender composition of the groups. She indicated that individuals are influenced by the overall pattern of communication within the group so that norms evolve to support a style of communication that seems to represent the proportions of men and women. Empirical support for the notion of 'gendered' groups was provided by Savicki et al. (1996c). They found that Internet discussion groups with higher proportions of men were marked by higher calls for action, and groups with higher proportions of women were marked by higher use of self-disclosure and stronger efforts at tension and conflict reduction. Consequently, group composition, along with the use of CMC, is likely to have a strong impact on the extent to which groups engage in both task and maintenance behaviours.

Gender, Group Composition and Communication Competency in Virtual Teams

A series of studies by Savicki and Kelley and colleagues (Savicki et al., 1996a, 1996b, 1996c; Savicki et al., 1998; Savicki et al., 2002) supported the assertion that it is not gender alone, but rather the group culture developed by differing proportions of men or women in virtual groups that has an indirect effect through communication styles employed in those groups. These studies examined the influence of this group culture on both group processes and outcomes. The results are summarized below.

Female-only groups tended to behave online differently compared to male only groups. Specifically, women in such groups wrote more words, they showed themselves through self-disclosure and 'I' statements, they interacted directly with other group members and they avoided argumentativeness and flaming (Savicki and Kelley, 2000). They avoided the 'collective monolog' (Hewes, 1986) that seemed to describe much of the interaction in male-only groups.

Interestingly, even when male-only groups, prior to group interaction, were instructed (Savicki et al., 1998), and even specifically trained (Savicki et al., 2002) to use the more effective communication style, the male-only group norms for communication overcame instruction and training to create a more sterile communication pattern. Group norms developed in the 'gendered' pattern suggested by Herring (1994) seemed to exert a powerful influence on communication competencies.

Task Type, Group Composition and Performance in Virtual Teams

The treatment of the topic 'task type' in the CMC literature has revolved around the notion of fit between the type of task undertaken by a virtual group and the qualities of the media through which the group interacts. McGrath and his associates (McGrath, 1984; McGrath et al., 1993; McGrath and Hollingshead, 1993; Straus and McGrath, 1994) predicted a relationship between task type, the medium used to perform the task and indicators of group performance and satisfaction. McGrath

hypothesized that the higher the task demand for complete idea discussion and decision making, the poorer it will be supported by the relatively cueless, text-based CMC medium. Such theorizing reflects the confluence of the group process research described above and the theory of media richness (Daft and Lengel, 1984, 1986), which argues that there is an optimal fit between situational equivocality and media. That is, CMC, with its absence of non-verbal cues would be more supportive of low-interdependence tasks (idea generation and intellective tasks) than of high-interdependence tasks (preference and cognitive conflict).

In considering task type as it applies to the CMC context, we adopted Huang's (2003, p. 18) definition: 'A task is a set of problems and issues confronting a group that aims to seek a solution acceptable to its members'. Much of the research concerning task type in CMC is based on McGrath's (1984) circumplex theory of task processes in small groups. In this model, categories of task were based on four basic processes: (1) generating ideas; (2) choosing alternatives; (3) negotiating; and (4) executing tasks. In the circumplex model, these processes are related to each other within a two-dimensional space with the horizontal dimension indicating the degree to which the specific task contains cognitive versus behavioural components. The vertical dimension indicated the degree of interdependence required for task completion ranging from collaboration to coordination to conflict resolution. Only the cognitive side of the circumplex was studied in CMC, since behavioural interaction was excluded by virtue of the disconnect in space and often time presumed in most CMC formats.

Thus, four specific task types were specified. First, creativity tasks or idea generation required the least interdependence, since group members could generate ideas independently and, in many cases, too much interdependence could actually reduce the quantity and divergence of ideas developed. Second, intellective tasks required some discussion concerning alternatives, but, since the solving of problems in this task type was evaluated by an external standard of correctness, less negotiating was required. For the third type, decision-making or preference task, which had no verifiably correct answer, negotiation and expressions of judgment, opinion and value were more prominent. Finally, cognitive conflict tasks required the most coordination because they rely most on expressions of emotion and valuing, and presume that a consensus will be arrived at to defuse the conflict. These categories of task have received much attention in CMC research because of their hypothesized relation to qualities of the CMC medium.

In the computer-based, group support system (GSS) literature, support for the task type-media richness relationship has been mixed. While there seems to be relatively consistent support for the benefits to group performance of intellective tasks under the structure that GSS provides, this benefit does not extend to preference tasks, nor to satisfaction with either the decision arrived at or the process of the group generally (Huang, 2003; Huang and Wei, 2000; Tan et al., 1994). As a summary statement, Huang comments that '[g]roup decision outcomes in a GSS environment could be adversely affected when the communication medium was too lean for the preference task but not when the communication medium was too rich for the intellective task'

(p. 18). The GSS structure, by design, eliminates many of the types of interactions necessary for the valuing and affect-laden discussion necessary in preference and cognitive conflict tasks, since these activities were seen as potential distracters from, or even barriers to, optimal group performance (Huang, 2003). Thus, current GSS software does not well support those tasks. In addition, most virtual teams do not have access to GSS facilities, so it may be more useful to extend the context of the media richness-task type beyond the GSS environment.

In non-GSS CMC contexts, several studies have found that other variables are powerful enough to overcome the communication challenges inherent in the CMC medium with its absence of cues to non-verbal communication (George et al., 1990). For example, Savicki et al. (1996b) found gender group composition and the communication patterns generated by all-woman virtual groups overcame the bareness of text-based communication so that these groups were able to discuss and share ideas in ways that produced accurate decisions. The gender composition and communication variables gave those groups an advantage in both an intellective task and a preference task. A communication style that emphasized self-disclosure, self-referent opinion statements and direct conversation with, and reaction to, other group members while virtually eliminating argumentativeness and flaming allowed groups to both perform well, and to experience high levels of satisfaction in comparison to those groups not using this communication style. Social presence (Rice, 1993) could be demonstrated in spite of the medium, which did not support the usual, non-verbal modes of expressing such presence.

Additionally, some models of group decision making specifically identify the necessity for groups to switch back and forth between intellective and preference type activities as they progfess toward a high-quality decision that will be effectively implemented (Vroom and Yetton, 1973). Decision making reflects only one of many activities that groups undertake during their lifespans. Others include 'socializing, joking, teaching members skills, and norms, fighting/conflicting, establishing power and status relations, and meeting individual needs for sympathy, acceptance and self-development' (Huang, 2003, p. 17).

The closest approximation to the group norms and communication patterns found in the Savicki and Kelley studies appears in Tan et al.'s (2000) study employing the dialogue technique to enhance communication in electronic teams. The goal of this technique was to facilitate a shared mental model for group members. The dialogue methodology required virtual teams to move through three stages. In the first stage, small talk, members shared personal information. In the second stage, members discussed what they believed to be good communication practices and shared examples of such practices and the values that underlie them. In the third stage, a team mental model was constructed to establish group norms concerning communication. Activities to support these stages of development were required during a same time, different place, warm-up session at the beginning of the virtual team process. Outcomes indicated that groups that developed a shared mental model via this technique not only had higher cohesion, team collaboration, and perceived decision quality in early stages of virtual teaming, but also that this advantage over

control groups continued at later stages of virtual team interaction (Tan et al., 2000). Structured interaction to support a group mental model seemed to be effective with the Singaporean sample in this study, where instruction and brief cognitive training was not effective with a US sample. It is unclear how much of this difference was accounted for by the modes of training or the differing cultures, but the dialogue technique provides a reasonable explanation for the effectiveness of female-only groups in the Savicki and Kelley studies.

Implications for Developing Virtual Teams

In a review of virtual team literature, Horvath and Tobin (2001) developed a list of competencies for virtual teams that included a set of teamwork skills that they found increased virtual team performance: communication, relationship building and management, leadership, and decision making and implementation (pp. 249–52). One communication competency specifically describes the need to use 'verbal, non-verbal and written' modes (2001, p. 249) in order to overcome the absence of usual non-verbal cues, and to avoid miscommunications. While the CMC medium itself overcomes some of the limitations of face-to-face communication (for example, it acts to some degree like a nominal group, facilitating more equal participation), users must compensate for other limitations that CMC creates. There is no reason, however, to believe that CMC has to detract from a virtual team's interaction if appropriate competencies are learned (Horvath and Tobin, 2001; Potter and Balthazard, 2002).

The effective communication style identified in these studies seems to illustrate the communication competency that balances task and maintenance functions called for to produce high functioning virtual teams. In addition, through communication competency, it seems that factors of social presence (Rice, 1993) help to support virtual team attitudinal competencies of collective understanding and swift trust (Horvath and Tobin, 2001), the foundation for cooperative group behaviour.

Conclusions

Groups utilizing constructive communication styles that emphasize balanced concern for working on the task itself and maintaining positive socio-emotional dynamics within the group are more likely to have higher levels of cohesion, cooperation and, in some cases, performance compared to groups using more aggressive or passive interaction styles. This constructive style appears to be particularly efficacious for groups performing tasks requiring discussion of alternatives, negotiation and expressions of emotion and valuing (for example, intellective and preference tasks). Using CMC to accomplish these intellective or preference tasks may make the process more challenging, but not impossible. Because CMC is a more 'impoverished' communication medium, it may be more difficult for groups to maintain positive socio-emotional dynamics when key vocal (such as tone of voice) and non-verbal (such as facial expressions, eye contact) information is not present. Savicki, Kelley

and colleagues in their various studies did find, however, that groups can overcome some of the challenges inherent in using CMC. A series of studies examining the effects of CMC and group composition on task accomplishment showed that, even when using CMC, groups composed of all females tended to adopt a constructive interaction style more quickly than all-male or mixed-gender groups. In these studies, female-only groups compensated for the poorer communication media by engaging in more self-disclosure, interacting directly with other group members, avoiding argumentativeness, and being more open to influence from others compared to all-male or mixed-gender groups, behaviours that mirror normative patterns of female communication. These findings suggest that, when groups develop and maintain positive socio-emotional group dynamics, it is possible for groups to establish norms for using CMC that will facilitate successful accomplishment of both task and maintenance behaviours.

Developing and maintaining positive group relationships is a critical but often overlooked group task. According to Tuckman and Jensen (1977), group development occurs in four stages: forming, storming, norming and performing. In the forming stage, group members focus on getting to know one another, being accepted and learning more about the group (for example, making small talk, telling jokes, sharing stories of past exploits). During the storming stage, group members work to find their 'role' within the group and decide how much a part of the group they wish to be. In the norming phase, group members develop shared expectations regarding acceptable and non-acceptable behaviour (including communication style). The fourth stage, performing, is where the group focuses on completing the task at hand (for example, intellective or preference task). Accordingly, effective groups must accomplish a great deal of work in laying a foundation that facilitates constructive communication prior to the group focusing on its primary task.

Recommendations

It is within the context of Tuckman and Jensen's model that we present recommendations for enhancing the effectiveness of groups using CMC. In order to enhance a group moving through group development stages quickly so that the group will perform effectively, specific behaviours may be linked to specific stages. Addressing these behaviours should have the effect of helping the group reach its potential in an efficient fashion, even in the cue-reduced CMC context.

Forming

More efficient resolution of the forming stage will occur when group members share personal information with each other, identify themselves and their affiliations clearly in CMC communications (for example sign all messages), use 'I' statements to indicate ownership when expressing opinions and feelings, and define the problem so that all group members share a common interpretation of what the problem is.

Storming

Movement through the storming stage will be facilitated when group members discuss group and individual goals so that members have a clear understanding of what the group is trying to accomplish, refrain from insulting or criticizing others, focus on ideas not people, and maintain a supportive tone even when disagreements emerge. Disagreements and divergent opinions are to be expected, and sometimes even encouraged. It is the manner in which disagreements are dealt with that affects the resolution of this stage.

Norming

In the norming stage, group members can make the process more effective by encouraging all group members to emphasize maintaining positive group relationships and devoting time specifically to working on maintenance tasks. There are several specific CMC actions through which group members can express their acceptance of personal responsibility for maintaining positive socio-emotional group climate. These include the following:

- using short, single-subject messages whenever possible;
- responding directly to the person whose idea they are discussing even if the whole group will read the message;
- clearly labelling any emotion expressed in a message;
- avoiding sarcasm, irony and humour, since they often don't work in CMC because the message does not come across as intended;
- communicating in a conversational manner, for example, by not being rigid about grammatical structure or precise spelling or formal modes of address;
- indicating their state of mind when sending a message (such as 'I'm tired today, sigh!') helps convey in CMC what non-verbal cues do in face-to-face meetings;
- avoiding responding to messages while emotional, because misinterpretations are very common in CMC – group members should pause and re-read the message, consider the source, and check their understanding with the author rather than reacting impulsively.

The above specific suggestions should help solidify a functional socio-emotional atmosphere.

Performing

Finally, while in the performing stage, a group can accomplish its task more effectively by focusing on accomplishing the task at hand without losing sight of the necessity of maintaining a facilitative socio-emotional climate. Discussion time spent on non-task communication can pay benefits in group productivity.

Notes

1. The terms 'team' and 'group' are used synonymously in this chapter. A group or team is defined as two or more individuals who interact with one another and who are dependent upon one another to achieve their goals.

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