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Misattribution in Virtual Groups: The Effects of Member Distribution on Self-Serving Bias and Partner Blame

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Interest in virtual groups has focused on attribution biases due to the collocation or distribution of partners. No previous research examines self-attributions in virtual groups, yet self-attributions—the acknowledgment of personal responsibility or its deflection—potentially determines learning and improvement. This study reviews research on attributions in virtual groups and the effects of distance on members' proclivity to blame others or themselves. An experiment involved groups whose members were geographically collocated, distributed, or mixed, working over 2 weeks exclusively using asynchronous computer-mediated communication. Attributions for participants' own poor performance reflected a self-serving bias in completely distributed groups, whose members eschewed personal responsibility and blamed their partners more than in collocated groups. Mixed groups' results help distinguish among competing theoretical perspectives. Moreover, an externally imposed observational goal mitigated attributional bias among distributed members by raising awareness of the sociotechnical effects of communication medium among those for whom the goal was successfully induced.

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In virtual groups, members communicate using computer-mediated communication (CMC), often between different locations. They may be completely collocated yet entirely online, completely geographically distributed, or geographically mixed (Jarvenpaa & Leidner, 1999). Such forms are becoming increasingly common in dispersed organizations, educational settings, and other ventures (see for review Hinds & Kiesler, 2002). In addition to the challenges facing traditional groups, virtual groups must adjust to temporal delays in information exchange, maintain shared context and workflow, and confront other difficulties in order to work and relate effectively. Research suggests that over time, virtual groups often adapt to these

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challenges, resulting in relatively successful operations. However, short-term virtual groups make these adjustments less often (see for review Walther, 2002). As a result, they are notorious for suboptimal performance, lower satisfaction, and internal hostility. The failure to adapt may result in negative interpersonal judgments among group members rather than an appreciation of the sociotechnical challenges of distributed work (Cramton, 2002; Walther, Boos, & Jonas, 2002). Research exploring the bases of virtual group behavior is beginning to consider the independent and interactive effects of computer mediation and members' relative geographic locations. Whereas mixed and distributed virtual groups entail both mediation and some geographic dispersion, understanding the effects of geographic distribution requires comparison to collocated, yet completely mediated, virtual groups.

Recent research has focused on how attributions—judgments about the causes of members' behavior—may be systematically biased in virtual groups based on the effects of collocation or distribution of group members (Cramton, 2001). Such research has focused on the attributions members make about their partners' behavior. In contrast, the present research focuses primarily on the attributions virtual group members make about themselves and their tendency to indict their partners as the situational causes of their own actions. Self-attributions may be no less influenced by collocation or dispersion of partners: Relative location differences may affect the rationalizations individuals offer for their own negative behavior in virtual groups, in ways that theoretically illuminate intransigent practical problems in virtual groups due to member distribution effects.

Few empirical studies have explored this issue, and those that have drew inconsistent conclusions. One perspective suggests that the lack of "mutual knowledge" across geographically distributed sites affects judgments about remote partners: Not knowing others' respectively local contexts and their situational influences on others' behavior has been alleged to lead to biased attributions during intersite conflict in distributed groups. A social identification approach, in contrast, focuses on intergroup identifications between disparate sites, with implications for mixed-distributed groups in particular. Whether or not these perspectives account for purely collocated or distributed virtual groups' attributional dynamics remains to be seen. Therefore, a self-attribution focus on virtual groups offers a unique test for derivations of previously unconnected theoretical principles. Whereas much attribution research has focused on noninteractive settings, less has examined self-attributions or explored this phenomenon in group behavior. This approach also provides a potential intervention with which to overcome the biased attributions to which distributed groups are prone.

Attributions in virtual groups

Research indicates that a variety of sociotechnical accommodations are required for effective virtual teamwork. CMC affects the rate of discussion, and failure to adapt expectations and participation hinders sufficient information exchange, deters from trust and liking, and negatively affects group performance (Walther & Bunz, 2005; Wilson, Straus, & McEvily, 2005). When this occurs and when some partners are geographically distributed from others, frustration tends to be directed at remote members (Burke, Aytes, Chidambaram, & Johnson, 1999).

In a recent descriptive study, Cramton (2001) suggested that the dynamic underlying such perceptions is the "fundamental attribution error" (Ross, 1977): the tendency to blame another's disposition, or personality, for what is actually a situationally stimulated behavior. This bias is alleged to pertain to judgments about remote members because of an individual's unfamiliarity with others' local contexts and the situational influences on their behavior. Shared place, in contrast, proffers assumed similarity, leading collocated members to regard one another with less uncertainty than they regard remote partners (Cramton, 2002). Cramton's inductive analysis of conflicts in virtual groups reflected biased attributions toward remote group members.

A more direct experimental test, however, failed to support the fundamental attribution error hypothesis (Bazarova & Walther, 2005). Lack of common location did not inflate dispositional attributions in virtual groups. On the contrary, collocated members made greater dispositional judgments about partners, compared to those of distributed groups. These inconsistencies are not altogether surprising because the virtual group setting stretches attribution theory beyond its typical boundaries in several ways: The iterative and cumulative effects of communication with targets, the mediated nature of observations, and, particularly, the active participation rather than passive observation of the observer with the target are uncommon in traditional attribution research.

Self-attributions, social interaction, and group distribution

Some attribution research has focused on conditions in which individuals do interact with others and the effects of interactivity on the attributions individuals make for their own behavior. This approach offers particular promise for understanding attributional problems in virtual groups: What if interactions with relatively unknown, distant partners systematically bias perceptions of our own behavior, rather than the judgments we make about our partners? It has long been recognized that, in order to maintain and enhance self-esteem, individuals cite situational explanations for their own actions, just as they tend to overlook situational factors that shape others' behavior (see Watson, 1982). In social interaction, however, there are at least two potential situational influences on one's behavior: the effect of social partner(s) as well as the general situational environment (Robins, Mendelsohn, & Spranca, 1996). Robins et al. (1996) found that "Participants believed their own behavior was shaped by their partner (My partner made me act that way)" (p. 385), drawing attention away from both situation and self. The external environment was not perceived as a potent cause in Robins et al.'s study because, presumably, in social interaction, partners and their actions are more salient and provide more pertinent cues than the environment (Jones & Nisbett, 1971). Although valence (positive or negative behavior) was not manipulated in Robins et al.'s study, this trend may be particularly prominent in self-explanations for negative actions, enacting the self-serving bias through reference to external, partner-based attributions. Partner blame may become the favored antidote to negative dispositional self-construals.

This attributional approach resembles the process of scapegoating, a familiar concept but rarely studied in group settings aside from therapy or family groups. Among the few exceptions, in "the sociology of collective and small group behaviour, … the scapegoat is the product of emotional and logical oversimplifications which are the result of situations perceived as negative," according to Bonazzi (1983, p. 1). This approach is consistent with making partner-based self-attributions for one's own behavior: "scapegoats are created by others who are anxious to attach blame and absolve their personal responsibilities" (p. 3). The scapegoating process helps explain how the biased partner-oriented attributions for individuals' own dysfunctional behavior in virtual groups may lead to chronic failure instead of learning to adapt to virtual group interaction requirements. According to Gemmill (1989, p. 410),

> By attributing dysfunctions or difficulties within the system to the personal failings and inadequacies of an individual member … the dysfunctions and destructive aspects of the social system itself go unexamined …. Because the role is covert it is undiscussable within the group, so *self-sealing nonlearning* about the scapegoating dynamics constantly reoccurs. As long as the scapegoat can be blamed, the social system goes unexamined and unchanged.

Extending in this way the attribution framework to include attributions about one's own behavior, we propose that the virtual presence of unknown and unseen partners in a distributed group provides a salient and less esteem-threatening target on which to blame one's own poor performance rather than acknowledge personal responsibility for problems in communication, coordination, and action.

H1: Individuals in completely distributed groups blame partners for their own negative behaviors more than do individuals in collocated virtual groups.

In contrast, when virtual group members are collocated, even if they have not met or communicated face-to-face (FtF), the tendency to deflect blame toward partners may be ameliorated. If collocated members sense that their colleagues' situations are similar to their own, an individual may perceive that others' circumstances and constraints more closely "covary" with his or her own experience (see Kelley, 1967). As such, when individual behavior varies, there will be no amorphous target with which to discount one's own dereliction or on whom to pin blame, which must then be attributed to oneself.

Two mechanisms appear in the literature that pertain to perceived similarity among collocated virtual partners, although the fit of either perspective to various forms of virtual groups deserves examination.

One approach that has been suggested to account for assumed similarity among collocated members and denigration of remote members is social identification as the basis of intergroup perceptions (Fiol & O'Connor, 2005; see Tajfel & Turner, 1986). Social identification is said to be especially potent in CMC according to the social identification/deindividuation (SIDE) model (Lea, Spears, & de Groot, 2001; Postmes, Spears, & Lea, 2002). The SIDE model posits that group members experience exaggerated intergroup dynamics in CMC, relative to FtF groups (Postmes et al., 2002). When members are deindividuated due to the visual anonymity of text-based CMC, and when social identities are salient, group members experience more similarity among themselves and greater differentiation from out-group members. From this perspective, one might predict that in-group, collocated colleagues would not blame other in-group members for their own individual behavior. To do so would undermine the beneficence of an undifferentiated in-group. Blaming outsiders—remote colleagues whose location is different—would be cognitively preferable and esteem enhancing.

Pratt (2001), and Thatcher, Jehn, and Zanutto (2003) suggest that in groups with mixed distribution of members, identification arises along locational fault lines. Members identify with subgroups rather than the group as a whole, mirroring the effects of demographically or categorically based fault lines in traditional groups (Jehn, Northcraft, & Neale, 1999; Lau & Murnighan, 2005; Shaw, 2004). It is most likely to occur when groups are moderately diverse and diversity is especially visible (Fiol & O'Connor, 2005). In the present case, mixed distribution conditions are likely to be susceptible to subgroup identity dynamics. In mixed groups, the collocated partners may identify as an in-group and see distributed members as out-group members. Research by Lea et al. (2001) using two distributed subsets supports this approach.

In other virtual group configurations, however, SIDE may be less clearly applicable. Only when definitive in-groups and out-groups are salient would the attributional patterns be best accounted for by social identification/intergroup dynamics. Whereas SIDE has previously been applied to identification with a single small group embedded in a single, larger social category (e.g., psychology majors at one university; Spears & Lea, 1992), it is most frequently and recently depicted as an intergroup theory requiring both in-group and out-group identifications (see for review Postmes & Baym, 2005; Reicher, Spears, & Postmes, 1995). On this basis, its application to a collocated group may meet the criterion for in-group identification but with no out-group. Likewise, in a completely distributed virtual group, with each individual at a different location, in-group/out-group requirements are not met. Although it may be argued that each member of a completely distributed group represents a different intergroup entity, it is difficult to accept this premise, and in research using both CMC dyads (Tanis, 2003) and groups (Lea et al., 2001) in which actors and partners were identified with rival or distant academic institutions, intergroup dynamics failed to accrue. If geographically isolated group members blame other isolated individuals, as we propose, SIDE's intergroup basis becomes a tenuous explanation for biased attributions. Moreover, the predicted redirection of causal attributions to the individual self within collocated groups, rather than to one's partners, seems contrary to the reduced self-awareness theoretically demanded by deindividuation effects in SIDE (see Reicher et al., 1995).

Other attribution-based explanations may also pertain. Cramton (2002) argued that individuals from the same location have tacit awareness of local schedules, locally competing events, and other local phenomena that enhance perceived similarity, yet that are inaccessible (without uncommon effort) to distant members. As a result, according to Cramton (2002), collocated partners excuse each other for negative behaviors, readily attributing them to situational causes that are tacitly known to all. At the same time, Cramton's propositions fall short of examining the consequences of partners' assumed similarity on self-construals, which may ultimately provide a more useful focus. In this regard, Gemmill (1989) argues that group members generally "reject (individual) responsibility or blame for group failures … regardless of actual causes, especially when situational factors border on the obscure" (p. 413). "Obscure situational factors" precisely describes perceptions of one's distant rather than collocated partners, according to Cramton's (2001) common knowledge approach. Extending the common knowledge perspective, we argue, the covariation principle (Kelley, 1967) applies: An anomalous behavior by oneself cannot be attributed to the common partners or to common circumstances but must be attributed to the self.

Other work on attribution biases for success or failure in collective endeavors also applies. Leary and Forsyth (1987) compared factors that led either to a self-serving bias (when group members admit less personal responsibility for negative collective outcomes than they assign to their partners) or to a group-serving bias (when group members take more personal responsibility for the group's negative performance than they give to other members). First, blaming other group members is less likely when members know and like each other. Second, blaming others is more likely when there is less risk associated with self-enhancement and lower accountability for inaccurate explanations. Collocation affects both of these factors. "Proximity may increase the perceived likelihood of future interaction (with) people to whom we are more likely to be answerable in the future. Anticipated interaction has also been shown to increase interpersonal liking," according to Latane, Liu, Nowak, Benevento, and Zheng (1995, p. 803). Anticipated future interaction effects on liking are even stronger in CMC groups than traditional ones (Walther, 1994). Likewise, Bradner and Mark (2002) found that individuals communicating in online dyads used less self-deceptive enhancements and made greater expertise attributions for a partner allegedly located in the same city than for an allegedly distant partner. Despite the participants' restriction to mediated communication, same city residence connoted greater possibility for future interaction and greater accountability, according to Bradner and Mark. These findings seem to reflect Leary and Forsyth's prognosis and to support the arguments that collocation raises accountability as it curtails egocentric motives and self-serving attributions. Thus, on the basis of both social identification and common knowledge perspectives, a single prediction is tendered:

H2: Collocated group members explain their poor performance in virtual communication more dispositionally than do members of distributed groups.

Collocated, distributed, or mixed

The above hypotheses involve a straightforward comparison of completely collocated versus completely distributed groups. Virtual groups may be mixed, or "hybrids," of collocated and distributed, with a subgroup of some members at one location and other members elsewhere. Mixed distributed groups not only provide a focus of contemporary practical interest but also provide a test bed for the evaluation of the competing explanatory perspectives for biased self-attributions described above. In predicting how collocation and distribution affect self-attributions in mixed-distributed groups, three possibilities arise.

First, drawing again on an intergroup perspective, mixed groups may exacerbate and enlarge the individual's attribution of blame for his or her own poor behavior toward distributed partners. The "ultimate attribution error" (Pettigrew, 1979; see Hewstone, 1990) is the tendency to exaggerate dispositional explanations to members of out-groups, when in-group and out-group representations are available, and has been suggested to occur in hybrid virtual groups (Fiol & O'Connor, 2005). Consistent with the SIDE model (Lea et al., 2001), having a local subgroup may appear to make even more different a distributed partner. Mixed geography group members, especially the collocated subset, should generate fewer self-dispositional attributions and more remote partner blame than would collocated or completely distributed group members, from this perspective.

Second, antithetically, it is possible that the presence of a collocated partner diminishes the distribution of blame. If even one collocated partner makes salient that poor adaptation performance is not due to distance, but individual misbehavior, then it becomes cognitively imbalanced to scapegoat a dissimilar partner for the same kinds of behaviors that the self and similar partners enact. In this way, the social comparison provided by any collocated partner redirects attention for misbehavior back to individual culpability. If this explanation holds, the collocated members within mixed groups should resemble members of completely collocated groups (rather than distributed ones). They should generate more self/dispositional attributions and fewer partner/blame attributions. Distributed isolates within mixed groups, however, should blame others as do the distributed/isolated members in completely distributed groups.

A third perspective is more consistent with attributional frameworks and scapegoating principles and requires fewer assumptions of in-group comparisons or out-group differentiation. The presence of some collocated partners does not matter (unless they are all collocated). The presence of any single unaccountable, distant partner provides a scapegoat who is different than oneself whether the self is situated in a collocated subgroup or not. The distinctiveness may be egocentric rather than sociocentric: Just as in completely distributed groups, a lack of common knowledge makes someone different from "me," not different from "us." "Scapegoating is usually conceived as a one-way transaction," according to Eagle and Newton (1981, p. 384); "Scapegoats are described as having traits that make them more appropriate than others for the role." Insufficient distinctiveness may be a sufficient trait in a virtual group. From this perspective, deflection of blame should be no different in mixed groups than it is in distributed groups (less dispositional self-attributions and more partner blame) but be unlike completely collocated groups. Given these conflicting positions, a research question is posited, the answer to which may help identify which position provides the best account.

RQ: What are the patterns for dispositional self-attributions and other blame for one's negative behavior in mixed distributed groups?

Cognitive problems and cognitive solutions

If biased attributions indeed disrupt the conduct of virtual groups, then interventions that redirect attributions may help virtual groups to alter their judgments and behavior appropriately. Attribution patterns are malleable: According to Kelley (1971, p. 170), "inferences can apparently be externally manipulated by cues and reminders as to the possible relation to the effect of certain plausible causes … they lead the attributor to consider as he interprets the observed cause-effect evidence." This research reviews two methods intended to provide attributional redirection: an indirect approach undertaken in a previous study and a direct approach derived from more recent attribution literature.

Previous studies and interventions

Walther et al. (2002) conducted a multipanel study investigating whether attributions of responsibility are less biased when virtual group members are familiar with one another due to collocation. The study further explored whether the cognizance of personal failure triggered adaptations resulting in more effective subsequent virtual groups. In the first, baseline panel, virtual groups of three or four members comprising university students from New York and Kansas worked via asynchronous CMC on two successive short-term collaborative projects, with different partners each time. Despite instruction to communicate early and often (see Walther & Bunz, 2005), communication was infrequent, and ratings of interpersonal attraction (McCroskey & McCain, 1974) and attributional confidence (Clatterbuck, 1979) were relatively low across both tasks and did not improve. Some participants at each site made comments faulting "those people" at the other institution.

A second panel employed a sequence of collocated and mixed-geographical online groups. For the first part of the sequence, participants worked in three- or four-member groups with collocated partners only, within university courses in New York or in Germany. All group project work was conducted via the Internet despite local FtF class meetings at each location thrice weekly or more. As with the first panel, initial projects were poorly done, and anecdotal reports indicated frustration. However, group members also admitted to procrastination, sporadic communication, and an inclination to approach things differently next time. With no "invisible" partners to blame, participants appeared to recognize the self- and situational influences on their behavior and the potential to improve. Subsequent group projects involved participants from both Germany and New York together in groups of three or four, none of whom had worked together previously. Subjective observations indicated that these groups communicated frequently and performed well; they were sociable and enjoyable. The same measures were administered after the international rounds of group projects and compared to the results of the first panel. Analyses demonstrated significantly superior attraction and attributional confidence for the international groups who had had initial, collocated sessions, compared to those in the previous panel who had not.

These preliminary studies suggest support for the effects of distributed versus collocated partners' deflection or acceptance of responsibility for dysfunctional behaviors in virtual groups. They also show the potential to intervene in the self-serving attribution bias that blinds distributed groups' members to their own adaptation failures. These results, however, must be considered tentative. For one thing, the two panels beg comparability. Whereas different students from New York participated in each panel, their counterparts (Kansas students or German students) varied culturally; in the second panel, unlike the first, almost all participants were not native English communicators. In neither panel were the conditions experimentally crossed (i.e., no local practice in Panel 1 and no initially distributed group in Panel 2). Although the attraction and attributional confidence assessments were consistent with the predicted patterns, they did not directly measure attributions. At the same time, none of the groups in Walther et al. (2002), nor for that matter in Cramton's (2001) research, were completely distributed across disparate locations; they were, at best, of mixed composition. As noted above, the literature often addresses distributed versus collocated groups, and how theorized effects manifest in mixed groups is as yet unknown. Finally, although an intervention strategy employing initial collocation may provide attributional redirection about the self, the lack of a direct manipulation ambiguates whether collocation clearly redirected attributions or affected behavior and perceptions through some other means.

Other psychological research suggests different kinds of interventions in attributional processing. To refocus distributed group members' attention to situational factors affecting their behavior, the present study employed inferential goals, which were devised and instilled in a controlled fashion, modeled on previous psychological research but adapted to virtual groups. The introduction of inferential goals can lead observers to environmental rather than partner attributions, where without such a goal, other attributions would be expected. This method draws on the inferential correction model (Gilbert, Pelham, & Krull, 1988; Krull, 1993). The original model posited that it is more effortful and requires more cognitive resources to use situational information in our judgments because we are initially predisposed to characterize events in dispositional terms. The model was later refined by Krull who argued that the use of situational or dispositional information could vary in sequence, depending on the perceiver's motivations and goals. Intrinsically or extrinsically induced orientations can redirect perceivers' attentional and cognitive resources to situational causes initially. The inculcation of such orientations has been successfully used to reduce dispositional biases in different FtF settings (Herzog, 1999; Krull, 1993; Krull & Dill, 1996; Lee & Hallahan, 2001; Lupfer, Clark, & Hutcherson, 1990; Webster, 1993).

Situational inferential prompts should facilitate redirection of distributed partners' attention, the most salient of which may be the sociotechnological aspects of distributed communication, raising their awareness of influences of CMC on their behavior.

H3: Individuals in distributed groups instilled with a situational goal make more CMC attributions for their behavior than those without.

Methods

Participants

Two hundred fifty-two individuals were assigned to four-person groups for decision-making discussions via the Internet. They were offered partial course credit for their participation, as well as entry in a drawing to win four iPods among those who derived the best solution. Some of the original groups experienced attrition, affecting group size, so that the final sample contained 15 groups of 3 and 48 groups of 4 (N = 237). This sample included 84 participants from Cornell University, 75 from Ohio State University, 34 from Rensselaer Polytechnic, 26 from Texas Tech, 12 from Merritt Community College, and 6 from McMaster University. One individual's scores indicated she misunderstood instructions (and provided no self-attribution data) and was removed from further analysis. Fifty-seven percent of the participants were female. The distribution of year in school was equivalent across seniors, juniors, and sophomores; 16% were freshmen and 2% were master's students. Participants' mean age was 21 with a mode of 19. Participants were predominantly Caucasian (67%); 10% were Asian, 6% were African American, 4% were Hispanic, 4% were European, 1% was Native American, and the remaining 8% identified themselves as other or did not indicate their ethnicity.[1]

Procedures

Group task

The decision-making task required a consensus ranking of three community development programs competing for a limited funding. Information was provided individually to group members describing positive and negative attributes of each program. Information distribution followed a "hidden profile" with each participant receiving some common and some unique items related to the choices (see Stasser & Titus, 1985) so that group discussion would uncover conflicting information and perspectives, thereby generating a meaningful and involving discussion. Participants were instructed that there was an objectively best decision to be made and that the group as a whole possessed sufficient information to do so.

Computer-mediated communication

Each group communicated asynchronously through the Internet using an online discussion board created for each group in the Blackboard courseware system. Groups were provided 2 weeks to arrive at the decision. They were instructed to confine their electronic communication to the discussion board in order to maintain complete records of the discussion. Face-to-face communication was not explicitly discouraged, but the transcripts indicated that no FtF interactions took place.

Distribution conditions

Groups communicated in one of three geographic distribution conditions to which participants were assigned using a randomized/blocked procedure. In the *collocated* condition, all of the group members were from the same school. In the fully *distributed* condition, each member was from a different school. In the *mixed* condition, two members were from the same school and the remaining two were from two different schools. In order to make salient participants' awareness of the locations of each group member, each member's name and school logo appeared on the opening page of the group's discussion board. Of the 63 groups retained for analysis, 15 were collocated, 20 were distributed, and 28 were mixed.[2]

Inferential goal manipulation

Within each distribution condition, groups were randomly assigned to different inferential goal inductions: situational, dispositional, or no goal (control). A dispositional goal was included in the analysis as a matter of thoroughness, and it was used as another control treatment for a situational goal. The inferential goals were presented three times: through the initial written instructions sent to the participants (along with task information and Blackboard instructions), on the opening web page of their group discussion boards, and embedded in e-mail participation reminders sent to all the participants twice during the study. In the *situational* goal condition, the following text was used:

> Different situational factors can explain how people behave and communicate. As you work on this project, please try to note what role different situational factors (e.g., geographical location, electronic medium, etc.) may play in your group discussion. Afterward, we will be asking you to evaluate the impact of external factors on your partners' behavior.

In the *dispositional* goal condition, the following text was used:

> Communication can be different with different people. As you interact with your partners, please try to note what you are learning about their personalities and traits. Afterward, we will be asking you to tell us about your impressions of each partner and how their personalities affected their behavior in the conversation.

No special text appeared in the materials for groups in the *no-goal* condition.

Outcome data

Upon completion of the task or the end of 2 weeks, participants answered a questionnaire administered via the World Wide Web. Participants were asked to write in separate text box/forms, "What was the worst thing you did during the project?" and "Why do you think you did that?" (among other items). Participants were also asked the one best thing they did and why, and the same questions regarding each of their partners. In those cases in which more than one behavior was mentioned, only one attributional statement was given. Two coders checked the classification of the mentioned behaviors as positive, negative, or other (because some participants provided multiple responses and 27 stated "nothing" or offered no negative behaviors). Only two statements were reclassified, both from negative to positive, based on their apparent pragmatic implications of the behavior for the group.

One of the authors used very simple parsing rules to unitize the explanations participants gave for behaviors. Unlike identifying units from a stream of speech, the responses written into the web form lent themselves to straightforward identification of idea units. In most cases, participants offered only one explanation; punctuation and conjunctions cued unitization of multiple explanations in 22 cases.

Coders then categorized those explanations in attributional terms. Because different factors may affect behavior and judgments in virtual groups, analyses followed Weiner's (1983) recommendation that attribution research take into account specific causal factors appropriate for the situation under study (see also Adams, Adams, Rice, & Instone, 1985; Lee & Hallahan, 2001; Robins et al., 1996; Van Boven, Kamada, White, & Gilovich, 2003). Therefore, dispositional classifications included *individual disposition* (references to personality traits, the person's nature, capability, character, or mood) and *collective disposition* (e.g., people in X location/men/etc. are just like that); situational classifications included *partner influences* (the behavior of other group members); *CMC* (computer intercession, asynchronous communication, Blackboard features); *geography* (separation, distance, location); *study parameters* (factors underlying project organization and execution, e.g., task); *outside incentive* (course credit, iPods); *competing demands* on participants' time; and *generic situational influences*. Some examples of negative behavior descriptions and accompanying explanations, sorted by attribution code, are presented in Appendix A. Interrater reliability (Cohen's κ) achieved .89 for behavioral valence and .82 for classifying behavior into the nine attribution categories. Disagreements between coders were resolved through discussion.

Results

Several considerations informed the analysis of the attribution data. The data required a hierarchical (multilevel) analysis because individual observations were nested within groups and groups were nested within treatments (distribution condition and inferential goal). Because individuals were theoretically expected to be affected by other group members, observations were potentially nonindependent.

Nonindependence in a nested design refers to correlation between scores of members belonging to the same interacting unit, making them more similar or dissimilar (in case of negative correlation) than scores of members from other groups (Anderson & Ager, 1978; Kenny, 1995; Kenny & La Voie, 1985; Kenny, Kashy, Mannetti, Pierro, & Livi, 2002; Malloy & Albright, 2001). Ignoring intragroup correlations among the scores generated by individuals can bias estimates of error variance and, consequently, distort p values and effect sizes (Kenny & Judd, 1986). A common way to address concerns over nonindependence of scores is to employ multilevel modeling that accounts for variability at each level of hierarchically structured data, including estimation of random effects residuals for the effects of subjects nested within groups (Kenny, Kashy, & Bolger, 1998; Moritz & Watson, 1998; O'Connor, 2004).

Although there are various tools for analyzing hierarchical data, the nominally coded data for attributions in this research deviated from normality and required an approach that could model hierarchical data with nonnormal distributions (see Ballinger, 2004; Stokes, 1999). The generalized linear mixed effects model (GLIMMIX) procedure in SAS software fits generalized linear models with random effects to correlated data with any distribution in the exponential family (SAS Institute, 2005, 2006; Schabenberger, 2005). Consequently, it can be applied to hierarchically nested designs with categorical responses by employing a user-specified Poisson distribution to correct for nonnormality of count data. Other distinct advantages of the GLIMMIX procedure include that it yields estimated means and their standard errors with which to calculate effect sizes, and that its "estimate" routine conducts contrast analysis procedures that facilitate one-tailed planned comparisons among several treatment conditions.

The first hypothesis predicted that members of completely distributed groups attribute the cause of their own negative behavior to the influence of their partners, more than do members of collocated groups. Using data from all three distribution conditions, this hypothesis was confirmed, $F(2, 153) = 3.20$, $p = .04$. Pairwise comparisons confirmed that distributed group members blamed their partners for their own negative behaviors more, $M = .23$, $SE = .06$, than did the members of collocated virtual groups, $M = .04$, $SE = .03$, $p = .02$, Cohen's $d = .47$. Thus, as predicted, remote partners provided a salient and less ego-threatening target on which one's own poor performance can be blamed in distributed groups.

Further analyses revealed that members of mixed groups' scores fell between distributed and collocated virtual groups' scores, $M = .14$, $SE = .04$, and pairwise comparisons indicated that their other blame was not significantly different from either of the other conditions ($p = .10$ for mixed vs. collocated and $p = .16$ for mixed vs. distributed).

The second hypothesis test compared groups' distribution conditions on the frequency with which members acknowledged their own characteristics in identifying the cause of their poor performances in virtual groups. This hypothesis was also supported, $F(2, 153) = 3.11$, $p = .047$. Collocated virtual group members made more dispositional attributions for their own failures, $M = .49$, $SE = .10$, than did distributed team members, $M = .23$, $SE = .06$; $p = .03$, $d = .39$. Pairwise comparisons also revealed that members of collocated virtual teams took more personal responsibility for problems in performance than members of mixed teams, $M = .29$, $SE = .05$, $p = .05$, $d = .31$.

Analyses of other attributions suggested that the differences between distributed, collocated, and mixed groups were dominated by these dispositional and partner blame effects. There were no differences between conditions in attributions to the influence of CMC, $F(2, 153) = 1.38$, $p = .25$, competing demands, $F(2, 153) = .95$, $p = .34$, or task protocol, $F(2, 153) = .86$, $p = .42$.

The research question pertained to the pattern of attributions among geographically mixed groups. The preceding analyses indicated that members of mixed groups admitted personal (dispositional) responsibility for poor performance less often than members of collocated groups, more closely resembling the attribution pattern of completely distributed groups. These findings appear to validate an attributional approach to mixed groups, based on perceptions of a geographically remote partner being as different from one's self as from one's subgroup, without recourse to in-group/out-group categorizations. The scores from mixed group members on partner/blame attributions, however, fell between the scores of distributed and collocated teams. This suggested that there could be a split in the scores based on a relative location, such that members within a collocated pair perceive things differently than do the two isolates. To address this possibility, further analyses compared scores from subgroups of collocated pairs to the two isolates' scores in mixed groups. Results showed no differences in dispositional self-attributions, $F(1, 70) = 1.52$, $p = .22$, or other blame, $F(1, 70) = .10$, $p = .75$, between members of the mixed groups who were part of a collocated pair and those who were isolates. Thus, isolates and collocated subgroups appeared to perceive self/attributional causes alike. Overall, as in completely distributed groups, geographically mixed groups admitted little personal responsibility for performance problems, but their partner/blame scores were less extreme than those of distributed teams.[3]

The next hypothesis involved the effect of the cognitive intervention—the inferential goal introduced prior to and repeated during group discussion—on participants' attention and resulting attributions. A manipulation check revealed that only 49.4% of participants were correctly able to identify which goal they had received. Although this proportion was disappointing, it shows that the goal induction, despite its repetition, was still subtle. Analyses continued using only these participants' scores, which included 30 members of collocated groups with 6 reflecting situational, 8 dispositional, and 16 no-goal assignments; 37 members of completely distributed groups included 8 situational, 7 dispositional, and 22 no-goal assignments; and 50 mixed group members reflecting 11 situational, 12 dispositional, and 27 no-goal successful interventions. It was obviously easier to recall correctly having received no particular induction. These proportions appear even across the groups' geographic distribution conditions. H3 predicted that instead of directing blame at their distant members, distributed group members under the influence of a situational goal would become more aware of sociotechnological aspects of distributed communication and redirect their attention to sociotechnical influences on their behavior. Therefore, H3 predicted higher CMC attributions for distributed members instilled with a situational goal than those with a dispositional goal or no goal. The results support the hypothesis: A planned comparison using contrast weights +2, −1, −1 to compare the effects of a situational goal to dispositional and no-goal manipulations revealed significantly greater CMC attributions in response to the situational goal, $M = .43$, $SE = .25$, than the dispositional ($M = .17$, $SE = .17$) or no-goal conditions ($M = .05$, $SE = .05$), $t(18) = 1.75$, $p = .049$ (one-tailed), $d = .58$. Thus, the cognitive redirection strategy appeared to be effective in raising awareness of the medium and its adaptation impositions, relative to two other conditions. Further analyses showed no effects of inferential goals across conditions on self/dispositional attributions, $F(1, 18) = .36$, $p = .56$, or other blame for one's own behavior, $F(1, 18) = .09$, $p = .76$.

In addition to attributions participants offered for themselves, supplementary analyses compared attributions for the self versus the attributions participants made for their partners' behaviors, across different distribution conditions. These results generally reflect an actor/observer bias in their use of CMC and other situational factors to explain their own versus others' negative behavior. For instance, there were more frequent references to CMC to account for themselves, $M = .09$, $SE = .02$, than for others, $M = .03$, $SE = .01$; $F(1, 695) = 10.95$, $p < .001$, $d = .22$.[4] Likewise, there were more attributions to competing demands for one's own poor performance, $M = .42$, $SE = .05$, than for others', $M = .24$, $SE = .02$; $F(1, 695) = 17.99$, $p < .001$, $d = .27$. Note, however, that these differences occurred across *all* distribution conditions. These findings, too, challenge previous notions that situational factors are oblivious to members of distributed groups. Consistent with the present framework, differences in self-attributions, rather than attributions for the cause of partners' behavior, appear to account for attributional problems in virtual groups.

Actor/observer differences also occurred for dispositional attributions. Participants made more dispositional attributions for their partners' poor performance, $M = .49$, $SE = .034$, than they made about their own poor performance, $M = .32$, $SE = .04$; $F(1, 695) = 10.89$, $p < .001$, $d = .23$. Further analyses determined that this bias was present among members of completely distributed groups ($p = .01$, $d = .33$) and mixed groups ($p = .005$, $d = .29$) only. Collocated partners showed no difference in how they attributed poor performance for self versus for others ($p = .96$) (see Figure 1).

The self–other attributional contrast across different distribution conditions is also reflected in attributions to partner influences for negative behavior. As shown in Figure 2, partner blame was no different for the self versus others in attributions made by collocated members ($p = .67$). In distributed ($p = .001$, $d = .41$) and mixed groups ($p = .002$, $d = .32$), however, there was significantly greater partner blame in accounting for the self than when explaining other group members' conduct.

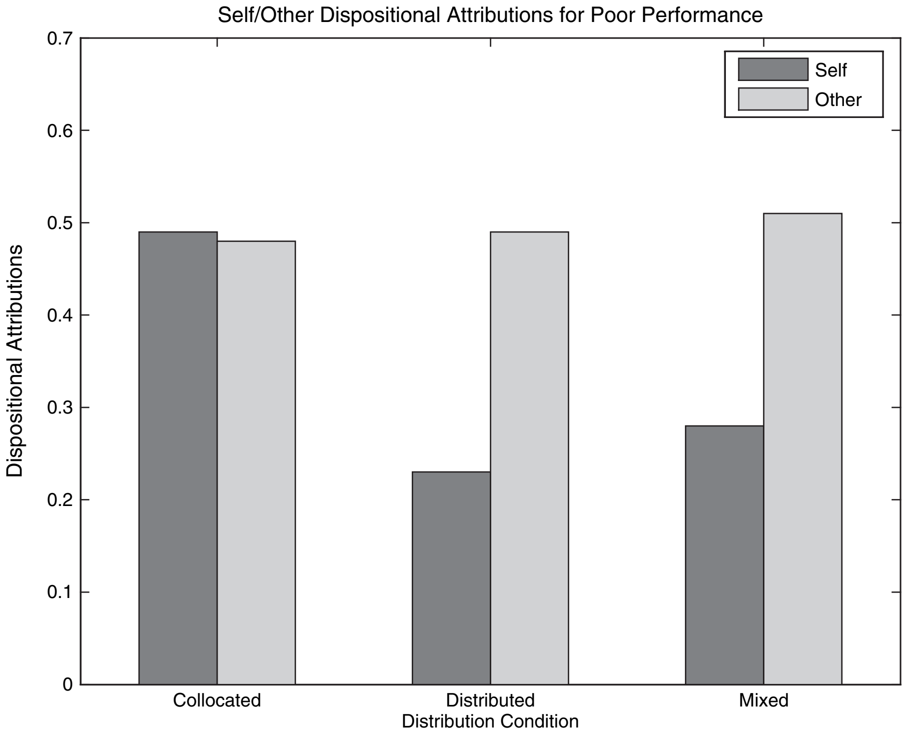

Figure 1 Self/other dispositional attributions for poor performance.

Discussion

The present research applied innovative approaches to attribution theory and the self-serving bias to the effects of collocation and dispersion in computer-mediated groups. It is among the first research to explore the tendency to attribute partners as the cause of one's own behavior in group interaction settings of any kind, and in doing so, strengthens the connection between group attribution and scapegoating principles. The study further compared competing theoretical approaches to virtual group dynamics—attributional versus intergroup—and offers contrasting attribution results to those that have been speculatively or inductively articulated in previous work regarding distributed and mixed virtual groups.

This research demonstrates that self-attributions—the explanations that individuals provide for their own behavior—are both affected by and affect virtual groups. Previous research on attribution in virtual groups focused on judgments partners make about other members' situations or dispositions, affecting interpersonal evaluations and the manner in which members work across distance and time (Bazarova & Walther, 2005; Cramton, 2001). The current study, however, was concerned with the roles of individuals' self-attributions, particularly whether they indicted others'

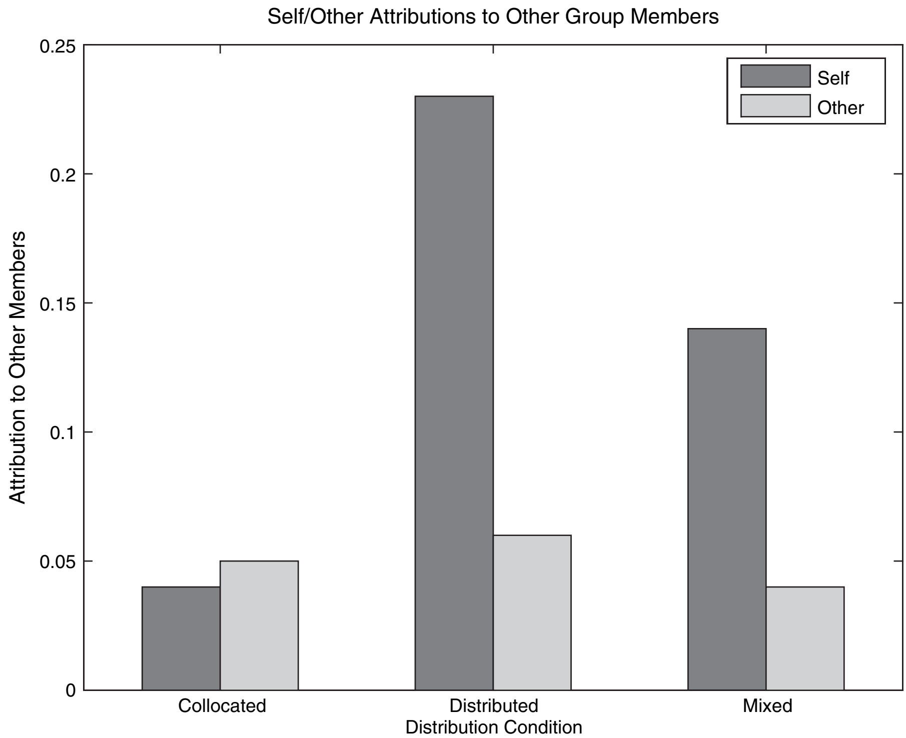

Figure 2 Self/other attributions to other group members.

behavior or recognized the role of CMC or their own dispositions, to account for their own performance in virtual groups.

The present findings indicate that the rationalizations that individuals offer for their own negative behavior in virtual groups are influenced by collocation or dispersion of partners. Members of completely distributed groups eschewed personal responsibility and blamed partners more frequently than did members of collocated groups. When individuals work with unseen, unknown, remote partners in short-term distributed groups, those remote individuals become scapegoats for individuals' own performance decrements. In contrast, when one's group partners are less unknown, simply by virtue of being from the same geographic location or institutional affiliation—even if they have not met FtF—individuals cannot as readily scapegoat their own misbehavior on amorphous or assumedly different partners. Rather, collocated group partners take more personal responsibility for their dysfunctional behavior, as shown in greater dispositional self-attributions. These findings reflect the presence of actor–observer biases in social interaction, when one blames one's behavior on a social partner, as proposed by Robins et al. (1996). The virtual groups context extends Robins et al.'s framework by specification of noncommon location of distributed partners as a condition that is especially conducive to actor–observer differences and self-serving biases. Distance makes available to individuals less ego-threatening scapegoats for attributions than self-dispositional attributions would entail.

The results from the partially distributed, mixed groups differ from recent speculation and previous results on in-group/out-group dynamics as a basis for judgments in virtual groups. Fiol and O'Connor (2005), drawing on the SIDE model (Postmes et al., 2002), suggested that attributions in mixed groups parallel the lines of in-group favorability and out-group derogation. Although the present framework shares with group identification approaches the prediction that distant partners are the targets of blame, the results indicate a different underlying mechanism. Mixed groups' attribution patterns were not more biased than distributed groups, as a social identification model would predict; they were marginally less biased overall, and partially collocated "in-groups" responded no differently than isolates. The predictions and findings from completely collocated groups, also, do not comport with broader social identification theoretic predictions that in-group identification corresponds with (a) greater social influence, (b) more esteem enhancement, and (c) the reciprocation of normative behavior (see Harwood, Giles, & Palomares, 2005; Lea et al., 2001). In the collocated groups, where members from the same institution communicated virtually—the condition most suited to in-group identification (see Spears & Lea, 1992)—recognition of individual rather than social influences on behavior was more frequent, interpretations were unflattering rather than esteem enhancing, and participation behaviors were no different than elsewhere.[5] Whereas social identification theory has its place in the study of virtual groups, the design of the present research could have yielded results to support it, and instead, reflected a more individual and interpersonal orientation to judgments about the self and others in online groups.

In addition to differences in self-attributions for members of distributed versus collocated groups, the likelihood of recognizing CMC's impact on behavior was greater in accounting for one's self but not for one's partner. Whereas Cramton (2002) suggested that virtual team members do not consider remote partners' disparate situations, it appears that distributed partners actually do not even attend to common situational factors in an unbiased way. Because CMC constraints were uniform across locations, it is ironic that individuals were more likely to recognize its impact on their own rather than their partners' conduct. These findings illuminate a critical contrast between other researchers' expectations about virtual group attributions and our own. Cramton's attributional framework proposes that members of distributed groups make more dispositional attributions about the causes of their partners' behavior than do members of collocated groups. The difference between collocated and distributed groups occurred in this research in the focus on dispositional attributions for the self versus others across conditions but not because collocated partners blamed partners' dispositions less. Collocation engenders greater dispositional self-attributions among collocated group members, who more readily recognize their own responsibility, compared to distributed members who deflect it.

These attributional biases are also affected by cognitive redirection strategies that, when effectively prompted, increase participants' consideration of situational constraints on members' behaviors. This redirection may allow participants to recognize the adaptations that virtual work requires, as the studies by Walther et al. (2002) suggested. The inferential goal technique in the present study, using several prompts to stimulate attributional attention, was subtle. The manipulation was presented along with other, more objectively critical instructions (login instructions, the site URL, task requirements), and no stakes were tied to its adherence. As a result, its implementation was only partially successful, but where participants followed it, its effects were significant: A situational orientation prompted by an external observational goal raised awareness of the medium and its communication impacts among partners, who made more CMC-oriented attributions for themselves. In applied settings, prompting by managers or by technological systems reminding participants to consider the constraints and requirements of virtuality may redirect cognitions and thereby reduce scapegoating. Future research exploring the training, management, or incentivization of virtual group behavior (e.g., Jonas, Boos, & Sassenberg, 2002; Walther & Bunz, 2005; Warkentin, & Beranek, 1999) would do well to explore the means by which to encourage greater adherence to, and other manifestations of, inferential goal interventions.

By focusing on one's own acknowledgement or deflection of blame, we uncover an explanation, implications, and inroads to corrective action. Extending the self-attribution framework, we can predict the consequences of partner-oriented self-attributions in the development of virtual groups and their members. If members of distributed groups are prone to blame others for their own behavior rather than to recognize their own dispositional culpability, these perceptions are likely to impede individual learning and development when participants work in successions of short-term distributed groups. Biased self-attributions blaming partners might dissipate in long-term groups as members of such groups are often motivated to seek and provide positive interpersonal information and relational communication. Without such motivation, however, self-serving attributions may persist. Individuals who do not recognize their own need for improvement or corrective action are unlikely to adapt to the situational demands of virtual group work. Because "attributions made for events and behavior may also be reflected in subsequent interpersonal communication" (Manusov, in press) that often reciprocally confirms expectations, the consequences of these underlying perceptions may be a self-fulfilling prophecy of futility.

Future research should examine whether long-term CMC group members also internalize the attributional patterns, redirections, and behavioral adjustment similar to those described in this study. The boundary of short-term groups was an explicit consideration in the present research, considering the growing body of research showing that longer term virtual groups are more likely to iron out their problems over time. Research has not examined whether such adjustments occur as a result of lessons learned from initially poor performance, rather than increased interest in learning more and doing better from the outset (Walther, 1994). Whether one reflective step backward is required in order to make several steps forward in virtual groups may be addressed through such research.

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Notes

1 No notable differences in patterns and directions of attributions were found when minority members' information was excluded from the analyses. No ethnicity effect in the present study is consistent with a meta-analysis of the self-serving bias conducted by Mezulis, Abramson, Hyde, and Hankin (2004): Whereas ethnicity effects were found among non-Western cultures living outside the United States, "within the US samples, there was remarkable consistency in the magnitude of the self-serving attribution bias across diverse ethnic groups" (p. 735).

2 The inequality between the number of collocated and distributed groups is partly attributable to the attrition noted above. When one collocated member of a mixed group did not participate, the group was reclassified as a completely distributed group. A larger number of mixed groups was created in order to examine effects of the ratios of unique or common information items among group isolates on information exchange and decision-making (see Stasser & Titus, 1985) results of which are reported elsewhere . The effects of common/unique information ratios were examined in the hypothesis tests for the present study and did not significantly affect attribution results.

3 Because the measures isolated attributions for negatively valued behaviors versus positive ones, similar analyses were run on attributions for positive behavior. No differences in dispositional self-attributions or attributions to other group members (other credit) were found across distribution conditions.

4 These tests (with more *df*) involved comparisons between each participant's self-explanations and the explanations he or she provided for each two or three partner's behavior. The hierarchical analysis procedures described above protected for repeated observations nested in subjects nested in groups and conditions.

5 It is theoretically possible that attributions were *not* biased if partners in distributed groups acted much differently than in collocated groups. Most of the negative behavioral reports, however, regarded participation levels (frequency, timeliness, etc.), and analyses showed no actual differences in the participation levels (number of message postings) between collocated ($M = 4.89$, $SE = .70$) and distributed groups ($M = 4.33$, $SE = .67$), $p = .57$.

6 Although attribution coding categories included geography/distance, collective dispositions, generic situations, and outside incentive factors, these classifications did not apply to any of the rationale statements that participants offered for their own, negative behaviors (whereas they did pertain to positive and partners' behaviors). Comments appear verbatim with original spellings.

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Appendix

Examples of Participants' Statements Describing Behaviors and Explanations, by Attribution Coding[6]

Self-Reported Worst Behavior	Reason Given for Behavior
Dispositional attributions	
Didn't participate enough	Personality
I did not successfully convince my all team mates that my plan was the best	My lack of articulation
I neglected to read a posting by our late fourth member, and made a posting that asked where his response came from. It made me look really careless	I didn't read the postings thoroughly
I pretty much did not help out the group at all	Unfortunately, I did not take this group as seriously as I should have
Not be as outspoken as I usually am	To be honest? I was kind of lazy. I didn't feel it was necessary
I did not explicitly explain to Michael and Katie why I disagreed with them regarding the convention center's ranking. I thought that my method used in ranking the three proposals spoke for itself … I thought that my method made the most sense	I didn't want to spend too much time on this discussion
Partner attributions	
I didn't give all my opinions to the group	No one else was taking an initiative
I didn't contribute as much as I wanted to the project	None of the other group members seemed too interested in communicating more than necessary
At the end I just gave up because we were so far behind and	The discussion was going nowhere and no one else was really involved
I was short tempered with one of the group members	He was relentless and wouldn't give way at all with his opinion. Plus, I felt his judgments of the projects was so arbitrary
I believe I could have posted more on the site, I did post more than almost anyone in the group but I feel maybe that wasn't even adequate. A few members of the group did not really do anything but give their initial opinion, making the idea of "discussing" void	Never really got the feeling the rest of the group cared about the decision we made
I didn't contribute quite as much as I should've.	However, there weren't many things posted by the other members for me to respond to

(continued)

Appendix A *Continued*

Self-Reported Worst Behavior	Reason Given for Behavior
CMC attributions	
I hesitated in starting the discussion	When it comes to message boards, I often am afraid of posting because I attempt to create a message that will not offend anyone and is not filled with errors. Because of this, I tend to take a long time creating messages in message boards
I wasn't able to check the discussion board multiple times during the day, so I missed out on a large portion of the final discussion	Couldn't access the board all the time
I didn't check the site as often as I should have, there should have been more discussions	There were not set times to meet with the group, just go on as you please
I did not respond to the group for about a week since initiating discussion	Also this method of communication is not very effective b/c I don't think that many people are used to using it
I may have been overzealous at the end by just starting the final answer thread	(a) The deadline was too close for a drawn-out discussion/and (b) with asynchronous chats you can't guarantee that anyone is going to be checking the board so therefore I took the initiative
Attributions to competing demands	
Didn't participate enough	Time constraints. I don't check blackboard on a regular basis
I didn't participate enough	My busy work schedule
Attributions to project parameters	
I would just agree with what was said for the sake of avoiding arguments	The way the project was designed
I never really considered any other sort of ranking	The information given to me seemed to suggest only one way to rank the initiatives