AN EXPERIMENTAL STUDY OF ELECTRONIC NEGOTIATION: CONTENT ANALYSIS OF VERBAL INTERACTIONS FOCUSING ON THE EFFECTS OF CORRECTABILITY AND EXITABILITY

Taketoshi HATTA and Ken-ichi OHBUCHI

Tohoku University, Japan

Focusing on two attributes, possibility of correct (correctability) and possibility of exit (exitability), of the electronic media communication, we examined whether electronic media negotiation would prompt agreement by inducing participants to take constructive action such as trade-off, or to suppress a strong assertion. In a role-play experiment, 80 students negotiated with each other through the e-mail system in one of four experimental conditions across two levels of correctability and exitability. It was found that participants who were allowed to correct messages prior to delivery produced clearer and socially more acceptable messages than those who were not. When the other party was able to exit, participants refrained from strong assertion more often than when it was not. Furthermore, a combination of correctable and exitable situation prompted agreement. We discuss the socio-psychological processes producing constructive action in the electronic media negotiation.

Key words: electronic negotiation, content analysis, correctability of message, exitability

Since negotiation is a discussion between two or more parties aiming at resolution of incompatible goals (Pruitt & Carnevale, 1993), communication is a crucial process in negotiation (Poole, Shannon, & DeSanctis, 1992). Research has found that the type of media determines the social processes and outcomes of communication (O'Sullivan, Hartley, Saunders, Montgomery, & Fiske, 1983; Kawaura, 1990). Therefore, we were concerned with the type of media as potentially affecting the processes and consequences of social negotiations.

Recent expansion of international business negotiations between companies has been sustained by a rapid development in remote telecommunications such as e-mail, fax, and mobile phones (Moore, Kurtzberg, Thompson, & Morris, 1999). In this field, the development of computer-mediated negotiation using e-mail or GDSS (Group Decision Support System) is remarkable because of its low cost and the spatial and temporal non-bindingness. Researchers have enumerated a number of different attributes of CMC (Computer-Mediated-Communication). Among them, Hatta, Ohbuchi, and Fukuno (2002) experimentally examined the effects of exitability and correctability of electronic media negotiation and found that these attributes encouraged agreements between participants. Exitability is the perception that the other party is able to exit from a current
negotiation, and correctability is an opportunity to revise one’s messages in advance of delivery. In the present study, we examined the effects of these attributes on the verbal contents produced by participants in negotiation.

The spatial and the temporal lack of bounds of CMC means that there is no assurance for continuation of communication in these medium. In electronic media negotiation, each participant can easily exit from a negotiation and this renders it unstable. Participants in the negotiation can profit only when both parties agree. The outcome of negotiation may largely depend on whether the other party may exit at their discretion. If a participant perceives that the other party may exit, he or she may feel a low power for the negotiation. Giebels, De Dreu, and Van de Vliert (2000) indicated that low power participants were less likely to make demands than high power participants. Therefore, we hypothesized that participants would be less likely to assert their demand strongly when they perceived high exitability of the other party than when they did not (Hypothesis 1). Hornstein (1965) found that low power participants make concessions in negotiation more frequently than high power ones. Therefore, we hypothesized that participants would be more likely to make concessions when they perceived high exitability from the negotiations than when they did not (Hypothesis 2), and further we hypothesized that they would be more likely to reach agreement when they perceived high exitability of the other party than when they did not (Hypothesis 3).

The electronic medium dealt with here is a character-based communication in which participants exchange written messages with each other. In such a communication, participants produce messages by computer word processors. This enables them repeatedly to correct and elaborate the messages before delivering them. Considering that sentence composition consists of planning, production, and correction, Hayes and Flower (1986) emphasized that the opportunity to correct changes not only the expression of messages but also their content. Following this research, we assumed that correctability (the opportunity to correct) afforded by the word-processing utilities enables participants in electronic media negotiation to elaborate their messages in two ways. First, it enables the elaboration of the verbal expressions of the messages, that is, to remake the messages so that they are clearer and more comprehensible (informational elaboration). Therefore, we hypothesized that participants in the electronic media negotiation would produce clearer verbal messages if they were allowed to correct messages than if they were not (Hypothesis 4).

Second, it enables the elaborate messages by revision of their content. Frase (1987) and Hayes and Flower (1986) analyzed the cognitive processes of sentence correction and indicated that individuals critically review their own messages and re-edit them from the readers’ point of view (social elaboration). In their survey study with CMC users, Kawaura, Ikeda, Kawakami, and Furukawa (1989) found that 30 % of the respondents answered that in producing message, they imagined the reactions of the receivers, suggesting that social elaboration may be involved in CMC. Social elaboration is changing of messages into socially more acceptable ones. In negotiation, therefore, this involves actions that are profitable to both parties, that is, those that include trade-offs or compromise, rather that those asserting self-interest or profit. Pruitt and Carnevale (1993)
found that actions such as trade-offs or mutual compromise are likely to lead to agreements. Therefore, we hypothesized that participants would produce more trade-offs or compromise when they are allowed to correct their messages in advance of delivery rather than when they are not (Hypothesis 5). Further, we hypothesized that participants would be more likely to reach agreement when they are allowed to correct their messages in advance than when they were not (Hypothesis 6).

**METHOD**

**Participants:**

The participants were 80 Japanese university students (40 males and 40 females), and they were randomly paired to participate in the electronic media negotiation. Unacquainted pairs were chosen. After the experiment, each participant was given a book token for 500 Yen as a reward.

**Procedure:**

When a pair of participants arrived at the laboratory, each participant was asked to briefly introduce himself/herself to the other. They were then engaged in practice for 10 minutes, Following this, they were engaged in the negotiation session for 45 minutes. In order to motivate the participants to negotiate, the experimenter gave them the following instructions, “The goal of each participant is to maximize his or her personal score; the participant who obtains the highest score in each condition will be given an additional 3000 yen as a bonus; but if a pair does not reach agreement within the time limit, the scores of both participants will be zero”. After explaining that this is a negotiation on labor conditions between an employee and an employer, the experimenter randomly assigned the participants to one of these roles. Then the experimenter took the participants to separate booths, and asked them to negotiate with each other via a computer, explaining how to use a chat software.

The employee was instructed to begin by producing a message on the word-processor display. On completion of the message he or she clicked a button labeled “Deliver” and the message was then displayed on the employer's screen, accompanied by a sign “Your turn,” prompting him or her to produce a message in response to the employee. When the employer clicked the “Deliver” button, in turn, his or her message was sent to the employee’s computer. In this manner, both parties continued to exchange their messages until they reached an agreement, or until the time expired. When 40 minutes had elapsed, the experimenter informed the participants that only 5 minutes remained. After the negotiation, the participants were asked to respond to a series of questions including the measures of informational and social elaboration\(^1\).

**Negotiation task:**

The task used in this experiment was a modification of the paradigm used by Fukuno and Ohbuchi (1997). Each participant was presented with a payoff schedule for the role, indicating the issues to be resolved and the amount to be gained for each of some possible alternatives for each issue. The payoff schedule consisted of four issues (e.g., wage per hour, transportation expenses, training period, and working-time per month) and the gain for each of nine possible alternatives for each issue (Table 1). Among the issues, wage per hour was distributive, transportation expenses and training period were integrative, that is, logrolling was possible, and working-time per month was compatible. The distributive issue was a completely fixed-sum (i.e., gains for one resulted in the equal degree of losses for the other party); the logrolling issues were a variable-sum depending on combinations of the alternatives of the two issues (i.e., gains for one party did not result in the equal degree of losses for the other); and, in the compatible issue, the value of each alternative was the same for both negotiators (i.e., a gain for one party resulted in an equal gain for the other). The experimenter stressed that the participants must continue the negotiation until they agreed on all of the four issues or until the time expired.

---

\(^1\)These measures are not used in the present study and are reported in an unpublished manuscript.
Independent variables:

The experiment was designed with 2 levels of correctability × 2 levels of exitability, and the pairs of participants were randomly assigned to one of the four conditions. Correctability consisted of two conditions: in the correctable condition, each participant was allowed to correct the message in advance of delivery to the other party, and in the uncorrectable condition, the participants were not allowed to correct the message. The computer display for the participants was divided into an upper and lower section. The upper section of the screen, a message-sending column, displayed the message each participant had written, which the lower section, a message-receiving column, displayed the messages received from the other participant as well as those that the participant had already delivered. In the correctable condition, a standard word-processor was used so that participants in this condition could revise their messages on the screen before delivering, while participants in the uncorrectable condition were not allowed to do this, since the word-processor was specially set to deliver the message immediately after the participants typed it on the screen.

Exitability consisted of two conditions: exitable and unexitable. In the exitable condition, the experimenter separately told each participant that the other party was allowed to exit the negotiation at any time. In the unexitable condition, the experimenter told the participants that neither party was allowed to exit the negotiation without agreement. In both the exitable and unexitable conditions, the negotiation ended when an agreement was reached by one party’s acceptance of the offer made by the other party, or time ran out.

Dependent variables:

Ohbuchi, Chiba, and Fukushima (1996) developed a scoring system for the content analysis of verbal responses in conflict situations. Among the 14 response categories measured by this system (rejection, assertion, demand, threat, explanation, supplication, suggestion, persuasion, question, compromise, consideration, acceptance, trade-off, and tap), we focused on two socially elaborated actions (trade-off and compromise) and three strongly assertive actions (assertion, demand, and threat). These response categories were as follows: Compromise (to make concessions); trade-off (to make concessions on an issue combined with making demands on another issue); assertion (to argue that one’s offer was reasonable); demand (to argue that one’s offer was not negotiable); and threat (to suggest a breakdown in negotiation when the other party did not accept one’s offer). Three raters independently coded each message according to these categories.

### Table 1. Profit Schedules for Employee and Employer

<table>
<thead>
<tr>
<th></th>
<th>Employee</th>
<th>Employer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Issues</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wage per hour</td>
<td>Transportation expense</td>
<td>Training term</td>
</tr>
<tr>
<td>1050 (600)</td>
<td>90% (680)</td>
<td>0days (320)</td>
</tr>
<tr>
<td>1000 (525)</td>
<td>80% (595)</td>
<td>2days (280)</td>
</tr>
<tr>
<td>950 (450)</td>
<td>70% (510)</td>
<td>4days (240)</td>
</tr>
<tr>
<td>900 (375)</td>
<td>60% (425)</td>
<td>6days (200)</td>
</tr>
<tr>
<td>850 (300)</td>
<td>50% (340)</td>
<td>8days (160)</td>
</tr>
<tr>
<td>800 (225)</td>
<td>40% (255)</td>
<td>10days (120)</td>
</tr>
<tr>
<td>750 (150)</td>
<td>30% (170)</td>
<td>12days (80)</td>
</tr>
<tr>
<td>700 (75)</td>
<td>20% (85)</td>
<td>14days (40)</td>
</tr>
<tr>
<td>650 (0)</td>
<td>10% (0)</td>
<td>16days (0)</td>
</tr>
</tbody>
</table>

Note: Each issue consists of 9 alternatives and figures in parentheses are the scores each participant gains.
categories, and scored the frequencies of each of 14 categories for each participant. The frequency score of each category was converted into the percentage for the total frequency of 14 categories for each participant, and then it was averaged between the three raters. Reliability coefficients ($\alpha$) were .76 for compromise, .81 for trade-off, .74 for assertion, .66 for demand, and .93 for threat. As well as individual scores, pair scores were computed by aggregating the individual scores of the two participants in each pair.

In the measurement of informational elaboration, the raters independently scored the verbal clarity of each message on a 3-point scale ranging from 2 (Most elaborated) to 0 (Least elaborated). The most elaborated responses were the messages that involved specific offers. An example was “I (the employer) will raise your wage to 1000 yen per hour on the condition that you will agree to undergo training for 14 days.” Somewhat elaborated responses (Score 1) were the messages that did not involve specific offers and needed confirmation by the other party. An example was “I (the employer) will consider raising your wage on condition that you will undergo training.” The least elaborated responses (Score 0) were the messages that had inconsistent contents or mere repetition of a previous offer. An example was “It would be most beneficial to our company for you to work as much as possible. I (the employer) would still prefer to see you work here as much as possible.” For each participant, the total score of all the messages was divided by the number of messages, and then it was also averaged between the three raters ($\alpha=.98$). The pair scores were also computed by aggregating the individual scores for the rated clarity of messages.

The measure of agreement was the number of pairs in each condition that agreed on all of the four issues within 40 minutes in the negotiation session. The reason for this cut-off was that an agreement reached after 40 minutes was not regarded as voluntary but as pressured by the experimenter’s announcement that only 5 minutes of the allotted period remained.

**RESULTS**

Table 2 shows the means of the individual scores of the five categories in each condition. These scores were tested by MANOVA using correctability and exitability as the independent variables. A main effect of correctability on trade-off was marginally significant, $F(1, 76)=2.99, p=.088$. Table 2 shows that the participants in the correctable condition made trade-offs more frequently than those in the uncorrectable condition. The interaction effect on assertion was significant, $F(1, 76)=5.66, p<.05$, and that on demand

<table>
<thead>
<tr>
<th></th>
<th>Assertion</th>
<th>Demand</th>
<th>Threat</th>
<th>Compromise</th>
<th>Trade-off</th>
<th>Clarity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correctable</td>
<td>0.063 0.109</td>
<td>0.064 0.081</td>
<td>0.004 0.015</td>
<td>0.166 0.119</td>
<td>0.130 0.120</td>
<td>1.797 0.116</td>
</tr>
<tr>
<td>exitable</td>
<td>0.033 0.057</td>
<td>0.042 0.062</td>
<td>0.000 0.000</td>
<td>0.147 0.134</td>
<td>0.151 0.126</td>
<td>1.817 0.115</td>
</tr>
<tr>
<td>unexitable</td>
<td>0.094 0.139</td>
<td>0.087 0.093</td>
<td>0.007 0.021</td>
<td>0.184 0.101</td>
<td>0.109 0.113</td>
<td>1.777 0.116</td>
</tr>
<tr>
<td>Uncorrectable</td>
<td>0.062 0.113</td>
<td>0.036 0.057</td>
<td>0.006 0.027</td>
<td>0.166 0.152</td>
<td>0.084 0.119</td>
<td>1.696 0.306</td>
</tr>
<tr>
<td>exitable</td>
<td>0.089 0.143</td>
<td>0.040 0.066</td>
<td>0.010 0.038</td>
<td>0.174 0.157</td>
<td>0.082 0.096</td>
<td>1.760 0.187</td>
</tr>
<tr>
<td>unexitable</td>
<td>0.035 0.062</td>
<td>0.032 0.047</td>
<td>0.001 0.006</td>
<td>0.157 0.151</td>
<td>0.086 0.140</td>
<td>1.631 0.385</td>
</tr>
<tr>
<td>Exitable</td>
<td>0.061 0.111</td>
<td>0.041 0.063</td>
<td>0.005 0.027</td>
<td>0.160 0.145</td>
<td>0.116 0.116</td>
<td>1.788 0.156</td>
</tr>
<tr>
<td>Unexitable</td>
<td>0.064 0.111</td>
<td>0.059 0.078</td>
<td>0.004 0.016</td>
<td>0.171 0.128</td>
<td>0.098 0.126</td>
<td>1.704 0.290</td>
</tr>
</tbody>
</table>
was marginally significant, $F(1, 76)=2.97, p=.089$. It was revealed by the simple effect test that the effects of exitability on both assertion and demand were significant only among the participants in the correctable condition, $F(1, 78)=3.14, p=.080, F(1, 78)=4.23, p<.05$. Among the participants who were allowed to revise their messages, as Figs. 1 and 2 indicate, those in the exitable condition made fewer assertive actions than those in the
unexitable condition. Further, the effects of correctability on these responses were significant only among the participants in the unexitable condition, $F(1, 78)=2.95$, $p=.090$, $F(1, 78)=6.44$, $p<.05$. Among the participants who believed the other party was not allowed to exit from the negotiation, as Figs. 1 and 2 indicate, those in the correctable condition made more assertive actions than those in the uncorrectable condition.

The means of the pair scores of the five categories in each condition were tested by MANOVA using correctability and exitability as independent variables. The interaction effect on assertion was significant, $F(1, 36)=5.29$, $p<.05$, but there was no significant difference in any of the comparisons among the means (Table 3).

In the analysis of informational elaboration, a main effect of correctability was marginally significant, $F(1, 76)=3.90$, $p=.052$. As Table 2 shows, the participants in the correctable condition made clearer verbal messages than those in the uncorrectable condition.

Fig. 3 shows the number of pairs that reached an agreement in each of the four conditions. In order to test the differences between the conditions, we conducted a log-linear analysis with a model of correctability \times exitability \times agreement. The interaction of correctability \times exitability \times agreement showed significant parameters ($p<.01$). The CR test revealed that the pairs in the correctable and exitable condition reached agreement most frequently among the other conditions ($CRs=2.74$, 1.95, and 1.95).

In order to examine the relationships between the two types of elaboration and the agreement, we computed correlation coefficients between the five response categories, the rated verbal clarity of messages, and the agreement at both the individual and pair levels. Table 4 indicates that the three assertive responses (assertion, demand, and threat) positively correlated with each other, a concession response (trade-off) negatively correlated with these assertive responses, and the assertive responses correlated negatively but the concession response correlated positively correlated with the agreement.
In the present study we focused on correctability of messages and exitability from negotiation that are prominent characteristics of electronic media negotiation. By means of laboratory experimentation, we attempted to examine a series of hypotheses regarding the effects of correctability and exitability on the processes and outcomes of electronic media negotiation.

We assumed that correctability might prompt informational and social elaboration in the processes of message production. The results by each participant were consistent with

![Fig. 3](image)

**Fig. 3.** Number of agreement: The interaction effects of exitability and correctability.

<table>
<thead>
<tr>
<th>Dependent Measures</th>
<th>Individual</th>
<th>Pair</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Assertion</td>
<td>.52**</td>
<td>.53**</td>
</tr>
<tr>
<td>2. Demand</td>
<td>.28*</td>
<td>.29</td>
</tr>
<tr>
<td>3. Threat</td>
<td>.44**</td>
<td>.29</td>
</tr>
<tr>
<td>4. Compromise</td>
<td>-.10</td>
<td>.29</td>
</tr>
<tr>
<td>5. Trade-off</td>
<td>-.23*</td>
<td>-.27</td>
</tr>
<tr>
<td>6. Clarity</td>
<td>.21</td>
<td>-.41**</td>
</tr>
<tr>
<td>7. Agreement</td>
<td>-.32**</td>
<td>-.42**</td>
</tr>
</tbody>
</table>

* $p<.05$.  ** $p<.01$.  

**DISCUSSION**

In the present study we focused on correctability of messages and exitability from negotiation that are prominent characteristics of electronic media negotiation. By means of laboratory experimentation, we attempted to examine a series of hypotheses regarding the effects of correctability and exitability on the processes and outcomes of electronic media negotiation.

We assumed that correctability might prompt informational and social elaboration in the processes of message production. The results by each participant were consistent with
Hypothesis 4, we found that in the correctable situation they made clearer messages than those in the uncorrectable situation. These results suggest that word-processing utilities used in electronic media negotiation encouraged the participants to exchange more understandable messages when they were allowed to revise the messages. It was further found that the participants negotiating in the correctable condition were more likely to make constructive actions such as trade-offs than those in the uncorrectable condition. These results supported our hypothesis regarding social elaboration (Hypothesis 5), suggesting that correctability enabled the participants to revise their messages to be socially more acceptable. Further, the results of correlational analysis suggested that socially elaborated messages (trade-off) prompted agreement in negotiation.

Using Hayes and Flower’s (1986) conceptualization, we defined social elaboration as a cognitive process by which an individual revises his or her message keeping the receiver’s perspectives in mind. Perspective-taking may be prompted by the word-processing utility in computer-media negotiation. It provides participants with a visual feedback of their own messages, which induces them to perceive their messages from a more objective point of view. Perspective-taking of negotiators has been documented by other researchers. For example, Galinsky and Mussweiler (2001) attempted to inspire perspective-taking among their participants by providing information about the other party’s available alternatives, and they found that this experimental manipulation decreased cognitive biases and increased rational responses. Using participants of different levels of perspective-taking abilities, Neale and Bazerman (1983) and Kemp and Smith (1994) found that high ability participants obtained more in both personal and joint gains than those of low ability. In addition to these research findings, the present study suggests that correctability in electronic media negotiation might have inspired perspective-taking by the participants, and thereby, led to productive outcomes of negotiation.

Consistent with Hypothesis 6, it was further found in the present study that correctability encouraged agreement, but this effect occurred only when the other party was exitable. The exitable situation is risky because the other party’s rejection of offers is likely to lead to a breakdown in negotiation. The present results suggest that correctability of the electronic media assisted negotiators particularly in such a tough situation.

The other concern in the present study was the effects of exitability of the electronic media negotiation. A merit of CMC is that participants are free from spatial and temporal restrictions that are often found in other types of communication. This also allows participants to exit easily from electronic media negotiation, which generates instability in negotiation. In the present study, we attempted to examine how this attribute influences on the verbal responses by the participants and the outcomes of negotiation. The results were consistent with our expectations (Hypotheses 1 and 3). That is, the participants who interacted with a party who was exitable from the negotiation less frequently showed assertive actions and more frequently reached agreements than those who interacted with an unexitable other party. We interpreted this that the participants in the exitable condition perceived that they had low social power because the agreement largely depended on the other party’s willingness to continue the negotiation, and that the
perception of power difference tended to make them refrain from strong assertion of their demand in the situation. The interaction effects shown in Figs. 1 and 2 suggested that the participants changed their assertive actions (assertion and demand) depending on the perceived exitability only when they were allowed to revise their messages in advance of delivering it. This means that correctability of messages assisted them in regulating their behaviors according to the situational conditions.

**Hypothesis 2**, that the participants in the exitable condition would make more compromises or concessions than those in the unexitable condition was not supported. Since the frequency of this type of response was very low in both conditions ($M=.16$ and $=.17$), it was suggested instead that the participants generally did not prefer such a one-sided concession even when they were in a low-power status.

The patterns of correlations between the dependent variables shown in Table 4 indicated the existence of two different clusters of verbal responses in the negotiation situations and, among them, the concession responses (i.e. trade-off) prompted agreement but the assertive ones (assertion and threat) hindered it. This has been found repeatedly in research on negotiation and conflict resolution (Pruitt & Carnevale, 1993; Rubin, Pruitt, & Kim, 1994; Mosterd & Rutte, 2000). Further, the present study suggests that the production of these responses was influenced by perceived exitability of the other party and the correctability of messages.

Although the electronic media are increasing in their diversity, most of them are characterized by spatial and/or temporal non-bindingness. Among them, we focused on character-based medium such as e-mail in the present study. Its essential feature is correctability. Exitability generally makes electronic negotiation unstable and uncommitted, but we found that correctability promotes participants to select more constructive actions even in such an unstable situation. Electronic negotiation is widely used for internet shopping, business negotiation, or preliminary employment contracts. The present study implies that the character-based media substantially contribute even to these exitable negotiations.

REFERENCES


Hornstein, H. A. 1965. Effects of different magnitudes of threat upon interpersonal bargaining. Journal of

(Manuscript received April 30, 2002; Revision accepted September 10, 2002)