# The Effect of Social Presence on Language Learning: A Comparison between Face-to-Face Conversation and Videoconferencing

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## Abstract

This paper examines the effect of social presence on learner-centered communicative language learning. Social presence is the "the ability of participants in a community of inquiry to project them solve socially and emotionally, as 'real' people", as defined by Garrison et al, (2004). We compared videoconferencing software which supports target expressions in English communication and face-to-face communication in English as an experimental study. For face-to-face communication, learning material and target expression material were distributed to learners. we investigated the effect of each communication medium on three features of language learning: perceived learning consciousness, perceived social presence, and learning performance. The results show that learners using videoconferencing software were significantly more conscious of the target expressions and uttered the target expression more frequently. On the other hand, face-to-face communication has a main effect on the enhancement of active communication from the viewpoint of social presence. Learners in face-to-face communication spoke significantly more, but also uttered native language more often than those using videoconferencing software. It can be said that social presence facilitates active communication through increased motivation for learning mixed with native language, while videoconferencing software promotes concentration on communicative language learning.

## Introduction

### Synchronous CMC and language learning

As information and communication technology advances, interest has grown in using computer networks for second language learning. Lately, communication technology such as computer-mediated communication (CMC) is often used not only in the home, but also in educational settings such as in the classrooms. CMC allows second language teachers to offer Internet-based collaborative learning. Many researchers have suggested that CMC facilitates interactive language learning from the viewpoints of sociocognitive and sociocultural theories (e.g., Chapelle, 2003; Salaberry, 2000). CMC can promote social interaction such as negotiation of meaning between learners and comprehensive input as well as output. Interaction, comprehensive input, and output seem to play an important role in language learning. The importance of these factors in classroom-based communicative instruction has been verified by many previous studies concerning three important components: comprehensive input (e.g., written or spoken information in the target language which the learner can comprehend (Krashen, 1985)), interaction (e.g.,

meaningful communication to enable understanding, and drives comprehensive input (e.g., Long,1981)), and output (e.g., learning behavior in language education such as speaking or writing (Swain, 1995)). SCMC can be an effective tool for enhancing these factors to promote communicative learning. Language learners who have studied in synchronous CMC outperform learners who have studied in asynchronous CMC and without CMC in the amount of speech generated in face-to-face discussions (Abrams, 2003). Language learners use social communication devices in synchronous CMC, as well as in face-to-face communication (Lee, 2002; Smith, 2003); in particular, SCMC use in task-based communication is effective in promoting the use of communication strategies such as negotiation of meaning. These features assist learners' language acquisition of a second language; they also promote interaction between learners, which many researchers regard as one of the most important skills in communication (e.g., Long, 1989). Recent advances in technology have created a new type of SCMC, videoconferencing which allows interlocutors to feel others' presences to a much greater degree than in text-based communication. Several studies have suggested the effects of videoconferencing in language learning. Videoconferencing allows learners to eliminate physical barriers and motivates them to speak in the second language (McAndrew et al, 1996); it also allows learners to use communication devices such as facial expression and gestures for understanding each other (Bruce, 1996). On the other hand, learners tend to drop out of courses and fail to get credit in audio-graphic conferencing, compared with face-to-face settings (Rosell-Aguilar, 2006). However, the reasons for these effects of SCMC on language learning have not been considered from the viewpoints of media features and social psychology.

## Social presence and language learning

The effect of CMC in language learning should be considered from the viewpoint of psychological factors. Saraberry (2000) pointed out that new paradigm of CMC use in language learning is not clear, due to the lack of evaluative study from the viewpoints of psychological factors and theories. With the spread of communication tools, one useful criterion to evaluate quality foreign language learning, is "social presence", suggested by Short, Williams & Christie (1976) as the "degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationship", that is, the perceived proximity to real time communication in face-to-face settings. Learners' perception of presence seems to be affected by social presence. Short, Williams & Christie (1976) suggested that two factors which promote social presence are "immediacy", the psychological proximity of the interlocutors, and "intimacy", the perceived familiarity caused by social behaviors such as eye gazing, nodding, and smiling, from the viewpoint of socio-psychology. Garrison et al (2004, pp. 28-29) expand and define social presence as "the ability of participants in a community of inquiry to project them solve socially and emotionally, as 'real' people, through the medium of communication being used", based on previous research (Short et al, 1976; Garrison et al, 2004).

Social presence seems to increase the learners' satisfaction with learning (Gunawardena & Zittle, 1997). In asynchronous CMC (e-mail), social presence motivated learners and promoted interaction such as requests for help (Leh, 2001). Social cues such as nodding, smiling and gestures facilitated effective learners' learning in interactive television settings (Hackman & Walker, 1990). Derks et al(2008) suggests that non-verbal devices transmit social meaning such as emotions from person to person. Social presence

plays an important role in this transmission. The inability to see the interlocutor seems to have a special influence on realizing and understanding the interlocutor's emotions, due to the lack of social cues in receiving messages from the interlocutor (Derks et al, 2008). In some types of SCMC, such as audioconferencing and text chat, learners cannot use social cues such as eye-gazing and nodding, and as a result "are not aware when one person starts to type a message and may continue with a topic, or else may change the direction of the discussion while a potential contributor to the discussion types his or her message" (Levy & Stockwell, 2006).

Moreover, social presence is effective in creating an active community, increasing the frequency of interaction between learners and consequently promoting learners' engagement in communicative learning (Polhemus, et al, 2000). Lomicka & Lord (2007) also pointed out the effect of social presence in creating an active community; in particular social presence concerning interaction was seen the most frequently. It led to higher performance than individual learning in terms of received responsibility and precise description skill. Lomicka & Lord (2007) suggested that social presence seems to enhance interaction between learners, which has an effect on learning performance.

The widespread availability of broadband network technology offers opportunities for advanced SCMC using multimedia such as audio and video; such richer media might be more effective for learning, due to the availability of social cues (e.g., Hackman & Walker, 1990; Gunawardena & Zittle, 1997). Social cues such as smiling and gestures can promote active communicative learning in an interactive TV situation (Hackman & Walker, 1990). This study aims to illustrate the effect of videoconferencing software as an interactive language learning environment on the affective side and learning performance from the viewpoint of social presence, compared with face-to-face situations.

## Research aims

The studies mentioned above mainly focused on learning performance. These studies suggested similar performance, such as the number of utterances, between videoconferencing and face-to-face communication in language learning. With respect to the affective side, McAndrew et al (1996) suggested the effect of videoconferencing on improving confidence in speaking a foreign language. However, the reasons for the success of videoconferencing in communicative learning, which seem to be unclear, should be examined from the viewpoint of social presence. In this study, the effect of videoconferencing software will be examined from the viewpoint of not only language learning but also social presence by investigating the following three points, compared with face-to-face situation: 1. Perceived learning consciousness, 2. Perceived social presence, and 3. Learning performance.

For this study, we used videoconferencing software which allows learners to be conscious of their SLA objectives through learning activities in learner centered instruction. Figure 1 shows this videoconferencing software interface.

## Method

The method in this study focuses on learning consciousness, consciousness of image and focus-on-form, and the perceived usefulness of the videoconferencing software.

## Subjects

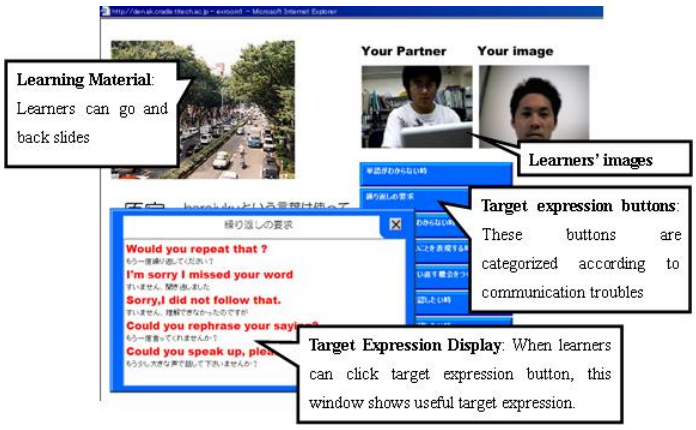


Figure 1 Interface of Videoconferencing Software

The subjects in this study were 20 university students (male: 13, female:7, range of age: 21-29, average: 24.7) who did not know each other prior to the experiment. They were all nonnative speakers of English. All the participants had reached at least the high school standard level in grammar and vocabulary, and had TOEIC (Test of English for International Communication) C level scores (C level: score range 470 – 730; learners' average: 582.5). A learner at the TOEIC C level "has sufficient knowledge for daily activities and conducting business within certain limits," and "has acquired fundamental knowledge of grammar and structure and has the vocabulary to communicate essential information, even when lacking expressive power" (Educational Testing Service, 2008). Computer literacy among the subjects was high. They all used computers everyday for e-mail, Internet, writing reports, programming, and so on.

## Procedure

The purpose of this study is to evaluate the effect of the videoconferencing software, compared with that in face-to-face situations. All the subjects used both the face-to-face situation and videoconferencing software. In order to minimize the effect of the order in which the communication types were attended, we divided the subjects into two groups. The first group used the face-to-face communication first, followed by the videoconferencing software (F-V group: 10 subjects). The second group used the communication types in the opposite order (V-F group: 10 subjects). As a pair task, the subjects attended at least one topic in learner-centered communication in each communication. They participated in each task for 10 minutes. After each task, they were required to answer a questionnaire. Each subject in each pair was connected to the videoconferencing software from a separate location. All the computers were connected to a LAN, and a laptop computer with a web camera, and a headset was also set in each room. The task involved decision making, and the learners had to select one among four candidates in a situation regarding employing cram school teachers through face-to-face communication. In the videoconferencing software, the learners were engaged in the same construction task, which involved them selecting one among four candidates who for an accounting task.

### Data collection

The aim of this study is to investigate the effect of the videoconferencing software from the viewpoint of language learning by undertaking a comparison with the face-to-face situation. In order to examine this effect, data was collected in two ways. The first was through a questionnaire. We investigated the contribution of the videoconferencing software to the perceived consciousness of language learning,

perceived consciousness of social presence and image. This questionnaire asked all the subjects to rate these items on a four-point scale. The questions posed to the subjects are shown in table 1. The second data collection method was that of video recording. In order to conduct an objective research, all communication was recorded and items described in table 2 were measured for each subject.

## Results

## Perceived learning consciousness during communication

All the data collected in this experiment were analyzed using a two-way analysis of variance (ANOVA). The ANOVA result revealed a main effect for the communication medium in 1-2 "Rate the perceived consciousness of communicating the desired meaning in English, even if you make a grammatical mistake" (+: $p < 0.1$, $F(1,18) = 3.528$). A significant effect of the videoconferencing software on the perceived usefulness was observed with regard to the effect of the willingness to pay attention to the target expressions (1-15, **: $p < 0.001$, $F(1,18) = 11.372$). Figure 2 shows the average scores and main effect of each item.

Table 1 Questionnaire Metrics about Learning Consciousness and Social Presence

| # | Metrics | Scale |
|---|---|---|
| 1 | Rate the perceived consciousness of accuracy in English communication | 1: not at all–6: very much |
| 2 | Rate the perceived consciousness of communicating the desired meaning in English, even if you make a grammatical mistake | 1: not at all–6: very much |
| 3 | Rate the attention to the target expression display or material | 1: not at all–6: very much |
| 4 | Rate the perceived easiness of retention of the target expressions in communication | 1: not at all–6: very much |
| 5 | Rate the perceived consciousness of your partner's attitude during English communication | 1: not at all–6: very much |
| 6 | Rate the perceived effort made to engage in communication during English communication | 1: not at all–6: very much |
| 7 | Rate the relief during English communication | 1: not at all–6: very much |
| 8 | Rate the perceived effort to transfer your desired meaning with gesture | 1: not at all–6: very much |
| 9 | Rate the fun of English learning in that medium | 1: not at all–6: very much |
| 10 | Rate the perceived satisfaction with the second language communication in that medium | 1: not at all–6: very much |

Table 2. Data collected through the analysis of video records

| # | Items |
|---|---|
| 1 | Total number of turns |
| 2 | Utterances of the target expressions |
| 3 | Self-corrections |

4 Nonverbal devices

5 Ratio of Japanese utterances in the total number of utterances

## Perceived consciousness of social presence and images

Face-to-face communication seems to make learners have a positive attitude toward second language communication from the viewpoint of social presence overall. Compared with the videoconferencing software, face-to-face communication seems to support learners from the viewpoint of affective aspects such as the social presence; a significant effect was found on 2-5 “Rate the perceived consciousness of your partner’s attitude during English communication” (+: $p < 0.1$, $F(1,18) = 3.032$), 2-8 “Rate the perceived effort made to engage in communication during English communication” (*: $p < 0.05$, $F(1,18) = 6.338$), 2-10 “Rate the relief during English communication” (*: $p < 0.05$, $F(1,18) = 7.141$), 2-18 “Rate the fun of English learning in that communication”(*: $p < 0.05$, $F(1,18) = 7.230$), and 2-16 “Rate the effort to transfer your desired meaning with gesture”(***: $p < 0.001$, $F(1,18) = 32.834$). On the other hand, the design of the videoconferencing software was found to have a significant effect on the selection of the target expressions. This significant effect was found for 2-12 “Rate the perceived consciousness of learning English communication” (*: $p < 0.05$, $F(1,18) = 5.028$). The metric 2-18 also mean that face-to-face communication seems to assist the affective aspect of a learning activity. Figure 2 shows these results.

## Learning performance

As for learning performance, items 3-1 to 3-4 listed above in table 2 were analyzed by the ANOVA, and a chi-square test was conducted for the ratio of Japanese use. There were significant effects of the communication medium on the mean number of turns, target expression use, and nonverbal expression use: face-to-face communication seemed to increase the number of turns (***: $p < 0.001$, $F(1,18) = 34.093$) and nonverbal devices (***: $p < 0.001$, $F(1,18) = 18.613$), which leads to active communication. For the mean number of turns and use of nonverbal devices, we confirmed the strong order effect (turns +: $p < 0.1$, $F(1,18) = 3.269$; nonverbal devices *: $p < 0.05$, $F(1,18) = 6.536$). On the other hand, the videoconferencing software has a positive effect on the promotion of the use of the target expression (+: $p < 0.1$, $F(1,18) = 3.488$). However, face-to-face communication has a negative effect on language learning: it seems to forge an atmosphere to use the native language (*: $p < 0.05$, $\chi^2 = 5.341$). Figures 3 and 4 show the mean frequency of each performance. Table 3 illustrates a cross table for the ratio of Japanese-language use during each communication.

## Discussion

The findings of this paper suggest that learners seem to recognize several points of difference between face-to-face communication and using the videoconferencing software. In general, both communication media have a similar effect on the perceived consciousness of learning during communication. However, one major difference between the two is the recognition of communication as fun or learning for learners. Face-to-face communication can enhance receipt of social presence, engendering a positive attitude toward communication. In subjective evaluation, the learners deeply felt the presence of their partners and were relaxed during communication. We found

that these results reflected the objective data such as the frequency of use of nonverbal devices, the use of Japanese, and the number of turns during communication. Learners in face-to-face communication tended to transfer their desired meaning with gestures, even if they make a grammatical error. Therefore, learners try to continue English communication in face-to-face. On the other hand, the videoconferencing software allows learners to be conscious of learning during communication. Based on subjective evaluation, the learners seemed to focus on the fact that they were studying English communication and they found it easier to pay attention to the target expressions, compared with the paper material in face-to-face communication. In fact, they uttered the target expressions during communication. These results are somewhat different from those found by McAndrew et al. (1996), which suggested the only effect of face-to-face communication was on the confidence in second-language communication.

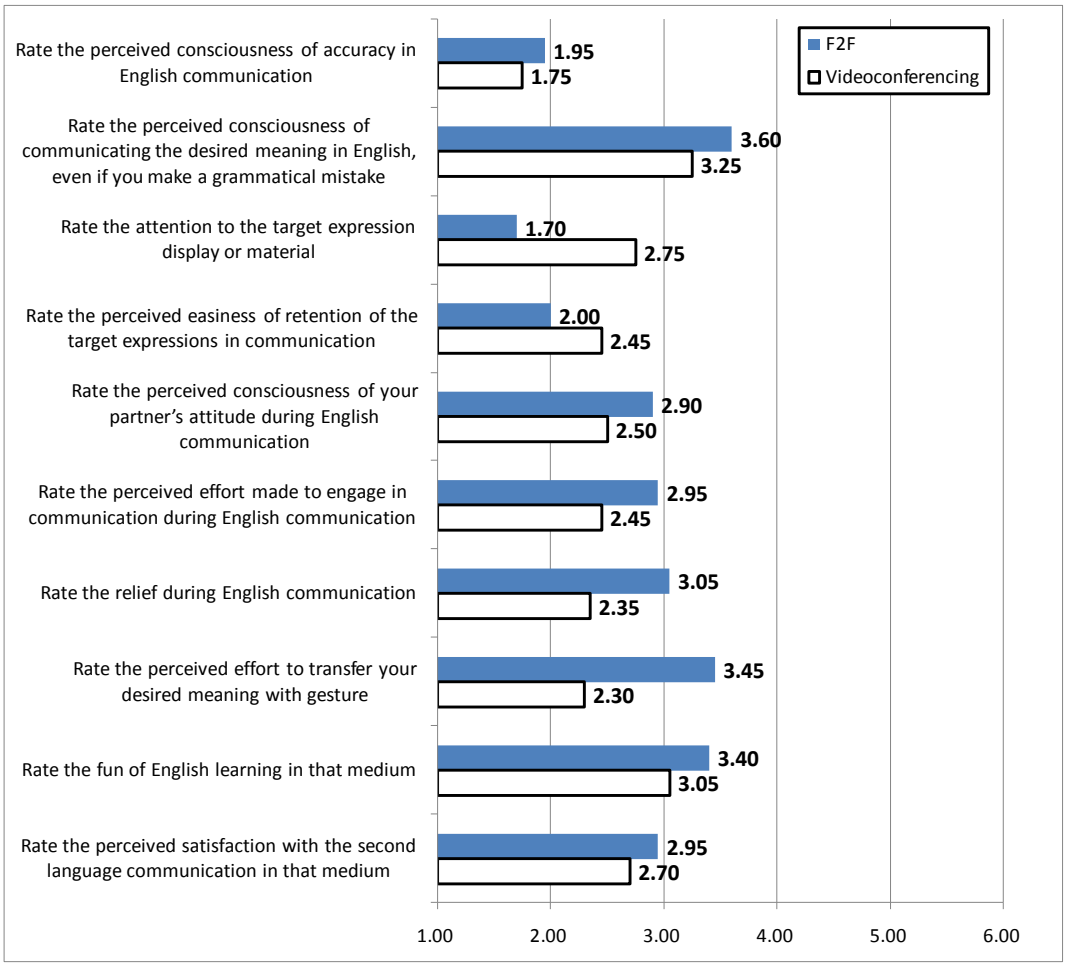


Figure 2 Mean score of the perceived consciousness of learning consciousness and social presence

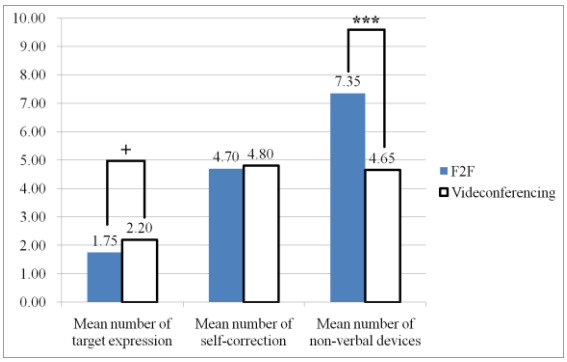


Figure 3 Mean frequency of target expression use, self-correction, and nonverbal devices

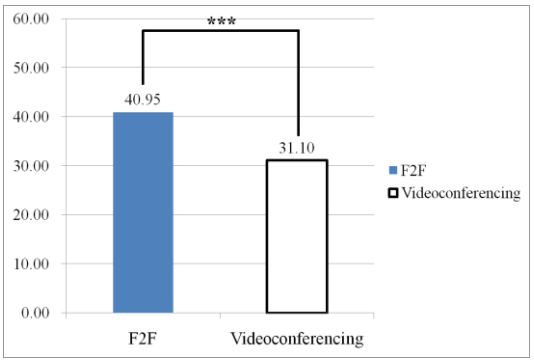


Figure 4 Mean number of turns during each communication

Table 3 Number of Japanese and English words used among all utterances

| | English | Japanese | Total |
|---|---|---|---|
| Videoconferencing | 549 | 50 | 599 |
| F2F | 730 | 101 | 831 |
| Total | 1279 | 151 | 1430 |

$\chi^2$ =5.431, $p < 0.05$

They argued that the two communication media were similar in their performance aspects, such as the number of turns, utterance form, sentence complexity, and the number of words per sentence. The results in this study reveal different data from their research.

Though both face-to-face communication and the videoconferencing software enable learners to communicate with the use of voice and nonverbal devices, we found the abovementioned difference between them. There are two possible reasons for this. One is the effect of the target expression display during second language communication. As these subjective data suggested earlier, learners recognized the effect of the target expression display in terms of the ease of selection of the target expression. Moreover, they were more conscious of learning during communication. These effects contribute to high learning performance in target expression use. Second, the degree of social presence seems to affect this difference. In a comparison of videoconferencing software and face-to-face communication, O'Malley et al. (1996) suggests that learners in face-to-face communication tended to have confidence in understanding each other due to social presence, which plays an important role in perceiving the similarity with face-to-face communication when using the videoconferencing software. Two positive reasons for the difference between face-to-face communication and the videoconferencing software in terms of the reception of social presence can be person identification and eye-gazing, which are suggested as important factors for the enhancement of social communication (Bruce, 1996). Basically, face-to-face communication and the videoconferencing software have the same features with regard to ways of communication such as availability to voice. However, the two abovementioned points are critically different from each other. In the videoconferencing software, the learners seem to be difficult in

recognizing their partner's face clearly. Face-to-face communication allows learners to see each other clearly. It is natural to comprehend each other by looking at the face. Second, eye-gazing is one of the importance factors in communicating with each other. In the videoconferencing software, it seems to be very difficult to catch the partner's eyesight because the learners tended to see the partner's image and not the web camera. This negative aspect was pointed out by Toku et al (1992), Morikawa et al (1998), and some others. They pointed out that the lack of eye contact can be a fatal factor that causes a misunderstanding or breakdown of communication. As the results mentioned above show, in face-to-face communication, learners tend to use gestures in order to transfer their desired meaning. This seems to aid continuous communication in English. Thus, they seem to enjoy English communication. The results of this study also show that learners felt a stronger presence of the partner in face-to-face communication than when using the videoconferencing software. Thus, social presence has a strong effect on perceived evaluation and learning performance.

## Conclusion

This study aims to investigate the effect of videoconferencing software from performance and social affective viewpoints. Videoconferencing is compared with face-to-face communication and the difference between them is clarified. Face-to-face communication encourages active communication with the use of nonverbal devices and the native language, which leads to enhancing the learners' perception of their partners' presence. On the other hand, videoconferencing software can assist in raising the consciousness of learning during communication, due to the integration of the videoconferencing software with several functions such as online material and target expression display. When using videoconferencing in communicative language learning, proper design of the software would seem to be essential.

However, this suggestion may not be immediately applicable to practical situations. There are major differences between a classroom and an experiment room. First, in the classroom, learners have to work in the same location. Such an environment is certain to affect learners' consciousness and the usefulness of videoconferencing, and may consequently cause low performance. The other issue is the learning content itself. CMC can be an obstacle for active communication, and can be a load on learners (Chun et al., 2000) when using media such as text-chat and videoconferencing software. Since this study was designed within an experimental setting, a long term investigation in classroom settings will be needed to extend the examination of the effectiveness of videoconferencing. Furthermore, the relationship between social presence and learning performance should be clarified concretely.

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