How the Other Sees Us: Perceptions and Control in Videoconferencing

Cameron Teoh
University of Otago
Psychology
9054 Dunedin, New Zealand
cameront@psy.otago.ac.nz

Holger Regenbrecht
University of Otago
Information Science
9054 Dunedin, New Zealand
holger@infoscience.otago.ac.nz

David O'Hare
University of Otago
Psychology
9054 Dunedin, New Zealand
ohare@psy.otago.ac.nz

ABSTRACT
The way we are perceived and we are presenting ourselves in videoconferencing situations is influenced by many factors. Earlier work showed that there are strong effects of participant gender, partner gender, and body language availability on feelings of self-transmission efficacy in videoconferencing. Because participants rated their efficacy at domination and impression management differently when body language was restricted and unrestricted, it was reasoned that users may desire to control body language availability. This study shows that gender of the participants, task, and initial body language availability (determined by the field of view) affect perceptions of trust, social presence, dominance/persuasion, impression management, and user-defined body language availability. We present results of an experimental study with 122 participants and discuss the findings in the context of implications for the design and use of videoconferencing systems.

Author Keywords
impression management, field-of-view, teleconferencing, performance and quality in conferencing, collaboration

ACM Classification Keywords
H5.3. Information interfaces and presentation: Group and Organization Interfaces; H.4.3 [Information Systems Applications]: Communications Applications – Computer Conferencing, Teleconferencing, and Videoconferencing.

INTRODUCTION
The increasing quality and availability of videoconferencing systems allow for a widespread use of this technology for private and business purposes. In particular in goal-directed and decision making situations the perception of oneself and the control over it is of much importance. Previous studies findings indicated that users' self-efficacy in dominance and impression management can be affected by body language availability in videoconferencing (VC) (Teoh et al., 2010, Teoh et al., 2011). Control over self-transmission and message impression over computer-mediated communication (CMC) is a desired feature, and can be easy over asynchronous forms of CMC, such as email conversations. In Walther (2007), participants altered their message content and spent time editing their messages in different ways according to characteristics they were provided about the supposed recipient.

Controlling self-transmission/self-presentation over synchronous forms of CMC such as videoconferencing is more difficult, as the conversation partner(s) are able to both see and hear the transmitter in real time. Therefore, each person has to consider their actions and speech prior to executing any behaviour, as well as monitoring feedback and adjusting accordingly on the fly, as they might in a face-to-face conversation.

Most videoconferencing programs do allow self-monitoring in a way that is not present in face-to-face conversations, in the form of a small inset window on the computer screen that shows the image capture of the person's own camera (PIP or picture-in-picture). This allows participants to see themselves as they would appear to their conversation partner(s). de Vasconcelos Filho, Inkpen, & Czerwinski (2009) found that participants liked having the PIP available much more than not having the 'mirror' feedback, primarily because it enabled them to see how the other person saw the participant. Subsequently, they would be able to adjust their actions in accordance with their knowledge of their own appearance. They also found, in a second study, that participants' perceptions of their self-transmission affected their comfort with using videoconferencing to communicate with others.

These findings from Walther (2007) and de Vasconcelos et al. (2009) indicate that people do want to be able to control how others see and perceive them, and that different contexts and settings in the technology change what they do and how they feel towards the medium. This is consistent with the findings of a previous study (Teoh et al., 2011), which showed that participants felt differently enabled in their self-efficacy for dominance and persuasion (aspects of self-transmission) depending on whether or not body language was made available.

It follows then, that participants may actively control how much body language is made available to their conversation partner if prompted and given the opportunity to exercise that control. The present study extends the design of Teoh et al. (2011) and examines the effects of task type, initial field of view (i.e. the anchor point for how much body language is made available at

OZCHI'12, November 26–30, 2012, Melbourne, Victoria, Australia.

the start of the session), and gender, on the field of view as set by participants, as well as on perceptions of trust, social presence, dominance, and persuasion.

METHOD

Participants

One hundred and twenty-two students from the University of Otago were recruited for this study. There were 61 males and 61 females, aged between 18 and 62 years old (M = 21.30, SD = 5.90). Eighty-two of the participants were 100- and 200-level students from the Psychology Department recruited in exchange for course credit. A further 40 participants were recruited through Student Job Search in exchange for remuneration.

Materials/Apparatus

The experiment was run in two booths side by side, which were set up to look identical to each other. Each room had a desk and a swivel office chair, with a computer monitor, keyboard, and mouse on the desk. The computer tower was on the floor next to the desk.

The webcams used in this experiment were Logitech Pro 9000s with a wide field of view to allow the participants' gestures to be captured in case they make wide movements. The desktop videoconferencing software Skype (v4.2) was used for the experiment.

Two initial view/field-of-view settings (the anchors) were used: head-and-shoulders only, and head-to-torso. In the unrestricted head-to-torso view, the field-of-view setting on the camera was fixed at the widest field-of-view. This allowed participants to see their conversation partner's head, shoulders, and torso down to the desk, as well as any posture or hand gesture cues. In the restricted head-and-shoulders only view, the field-of-view setting on the camera was adjusted so that the field-of-view captured just the participant's head and shoulders.

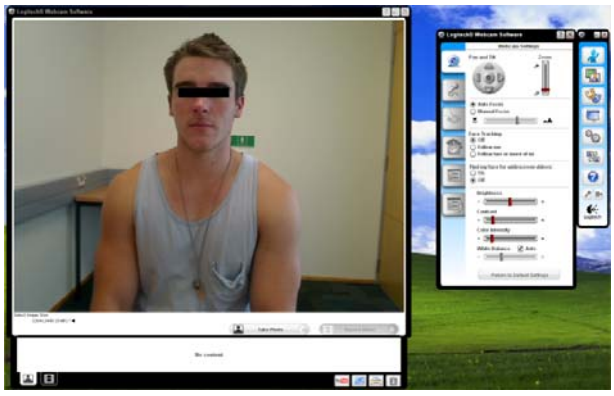

Figure 1. Screenshot of webcam software showing participant's video feed and settings panel for the wide field-of-view (zoom) anchor.

As shown in Figure 1, the field-of-view has been set at the widest setting. To quantify the setting, an onscreen measurement was taken with a ruler from the top of the field-of-view slider. At the widest setting, the centre of the setting indicator is 19.5mm from the top of the slider. This method of quantifying the field-of-view was used because there was no way of digitally acquiring the setting, and there was no access to the source code of the program in order to modify it.

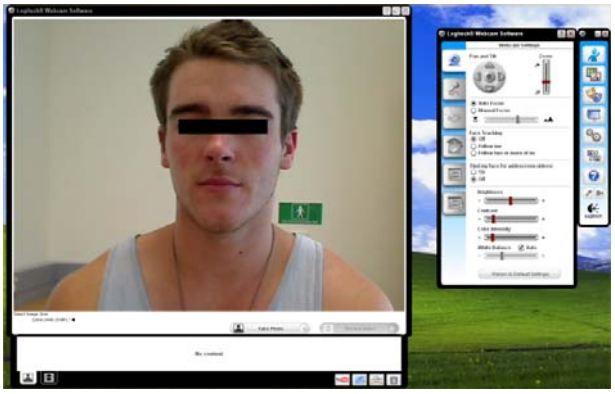

Figure 2. Screenshot of webcam software showing participant's video feed and settings panel for the narrow field-of-view (zoom) anchor.

Figure 2 shows the field-of-view set at the narrow, head-and-shoulders-only view. At this setting, the centre of the indicator is 15mm from the top of the slider. The upper (narrow) range of the field-of-view available was not used because the field-of-view was too close-up; at the very narrowest, the field-of-view would show only the eye of the participant.

Occasionally, due to some participants being very tall or very short, the participant was asked to adjust the height of the chair to facilitate the appropriate framing.

Task. Two tasks were used, chosen from McGrath's Task Circumplex (1984). The aim was to compare how much body language participants chose to transmit, and how these choices were affected by the type of tasks they were doing during the videoconference. To do so, a very co-operative, less interdependent task, as well as a more persuasion-oriented, interdependent task, was required.

For the persuasion-oriented task, the Intellective task type from the Choose quadrant was selected. Intellective tasks are ones where participants need to come to an agreement to a solution for a problem that has an objectively correct answer. Having an objectively correct answer to the problem gave participants a clear goal to achieve. Also, in order to increase investment in attaining the correct answer, the participants were told that if they did not come close enough to the correct answer, they would have to do a 15-minute online math task as a penalty. Both these things were included in the design and selection of the task to increase the persuasive interaction between the participants, and to discourage them from simply ceding to their conversation partners in order to end the experiment quickly.

The task used was called Lost At Sea (adapted from Nemiroff & Pasmore, 2001), the same as the task used in the previous study (Teoh et al., 2011). It describes a scenario in which the two participants are stranded in the middle of the ocean after their yacht caught fire. The task provides a list of 15 items, which the participants had to prioritize in order to ensure their rescue and survival.

This task was split into three phases: in the first phase, participants were to come to an agreement about the optimal ranking of the top 5 items; in the second phase, the ranking for items 6-10, and finally in the third phase they ranked items 11-15. Prior to discussing the task together, participants were instructed to rank all 15 items privately. This was another measure to increase persuasive interaction, as participants would arrive at the discussion phase having already generated arguments for and against various items.

For the co-operative task, the Idea Generation task type from the Generate quadrant of the circumplex was selected. Idea Generation tasks involve simply brainstorming for ideas; in this task, all input from each participant contributes to task completion, and there is little debate over the feasibility of the ideas. In this task, participants were asked to generate ideas to help the region of Christchurch, New Zealand, battered by the severe earthquakes over the last year. Like the Lost at Sea task, this task was also split into three phases: 7 ideas to help the survivors, 7 ideas for rebuilding the economy, and finally 7 ideas for handling and preventing future incidents.

To discourage persuasive interaction, participants were told that the realism and feasibility of the ideas generated was not important, as long as they were loosely grounded in reality and not in fantastical ideas like unicorns and magic. They were told that most ideas would be acceptable, and that there were no right or wrong answers. They were encouraged to just throw out ideas, one after the other.

Questionnaires. After completing each task, participants were asked to complete a series of questionnaires on the computer using *Medialab (*www.empirisoft.com). They were asked demographic questions such as age and gender, and then they were asked about their experience with either type of scenario For the Idea Generation task, they were asked if they had any friends or family in Christchurch, and if they had prior experience with rebuilding or rescue efforts.

For the Intellective task, they were asked how much experience with sailing they had. They were also asked how well the participant knew their conversation partner. After this, they were presented with four questionnaires: the Individualised Trust Scale (Wheeless & Grotz, 1997), the Social Presence scale (Short, Williams, & Christie, 1976), as well as the Impression Management, and Persuasion/Dominance, scales that were used in the previous study.

Design

There were three independent variables. Gender composition of the conversing pair was between-subjects, and had three levels: male/male, female/male, and female/female. Task type was within-subjects as all participants experienced the same two tasks (Lost at Sea and Rebuilding Christchurch). The initial field-of-view (anchor) for the webcam was also varied, and it had two levels: narrow (head-and-shoulders only) and wide (head and full torso with hand gestures visible). This variable was also within-subjects as one task was administered with the narrow initial field-of-view, and the other task was administered with the wide initial field-of-view. Because one variable was between-subjects and two were within-subjects, this was a 3X2X2 mixed-design experiment.

The experiment was fully counter-balanced for task order and initial field-of-view order. Some participants received the Lost at Sea task first and the Rebuilding Christchurch task second, and for others it was the other way around. Also, some participants received the narrow field-of-view anchor first and the wide field-of-view anchor second, and vice versa for the other participants.

Procedure

Participants were introduced to one another once they had both arrived, and sat at a meeting table where all debriefing and instruction took place. Then they were asked to read the information sheet, and sign the consent form. They were told that they would be discussing two scenarios over videoconferencing, and that each scenario was broken down into 3 discussion phases. At this point, either the Rebuilding Christchurch scenario or the Lost At Sea scenario was described and administered, depending on the counter-balancing order for each pair of participants.

For the Rebuilding Christchurch task, participants were asked to read the scenario quietly and without discussion at the meeting table, while the videoconference link was started. Then, they were told that for Phase 1, they were to come up with 7 ideas between them for aiding the survivors, and shown to their respective booths. After they had generated 7 ideas, they were each given a sheet to write the ideas down. This continued for Phase 2 (rebuilding the economy) and Phase 3 (prevention/handling of future incidents.)

At the start, and for the duration, of Phase 1 the field-of-view of the webcam was set to the starting anchor. In between Phase 1 and Phase 2, and Phase 2 and Phase 3, each participant was asked to experiment with the field-of-view settings on the camera, and to adjust it to where they felt most comfortable for themselves. During this process, they could see what the webcam in their own booth was capturing, and were told that it was what their conversation partner would see during the videoconference. After the participants had finished all phases, they were asked to fill out the questionnaires on the Medialab program.

For the Lost at Sea task, participants were shown to the booths and asked to read the scenario in private, then rank all 15 items for their private ranking. When both participants finished ranking the 15 items, the sheets of paper were taken away and the videoconference link started. They were told that they should come to an agreement about the optimal ranking for the top 5 items. When they had agreed on the ranking, they were given the ranking sheets to write down the team ranking. This continued for Phase 2 (items 6-10) and Phase 3 (items 11-15).

As with the Rebuilding Christchurch task, participants experienced the anchor point of the webcam field-of-view for the duration of Phase 1 of the Lost At Sea task. They were then asked to adjust the field-of-view of the webcam in between Phase 1 and Phase 2, and in between Phase 2 and Phase 3. After the participants had ranked all 15 items together, they were asked to fill out the Medialab questionnaire while their team ranking was ostensibly being compared against the correct ranking.

After participants had finished the first task and the first round of questionnaires, they were asked to return to the meeting table to begin the second task. After the participants had finished the second task and second round of questionnaires, they were asked to fill out the exit interview questionnaire, also on Medialab. Regardless of what order the tasks were in, participants were told after they had completed the Lost At Sea task that their team ranking had been close enough to the correct answer and that they would not have to do the 15-minute online math task.

Additional contrast was created between the two tasks, depending on which one the participants received first in their session. If the Rebuilding Christchurch task was administered first, they were told during the instructions for Lost At Sea that, "unlike the first task, in this one you are personally at immediate risk because you are the ones lost at sea." If the Lost at Sea task was administered first, they were told during the instructions for Rebuilding Christchurch that, "unlike the first task, in this one you are not personally at immediate risk because you are here in Dunedin and not in Christchurch where the damage is occurring."

After all tasks and questionnaires had been completed, participants were debriefed about the purposes of the experiment and dismissed. They were not told the correct ranking for the Lost at Sea task, in order to prevent their possibly biasing future participants who might have been in their lectures or social groups.

RESULTS

For each participant, scores were recorded for the Individualised Trust Scale, the Social Presence scale, the Dominance scale, and the Impression Management scale. For each item, participants recorded their response on a 7-point Likert scale. A high score on each scale indicated that participants trusted their partner (Individualised Trust Scale), felt that the medium had high social presence (Social Presence scale), felt that they were the more dominant partner in the conversation (Dominance scale), and felt that they were successful at projecting the image of themselves that they desired (Impression Management scale).

Principal components analyses (PCA) were conducted for the Dominance and Impression Management scales, and reliability analyses were conducted for all scales. For the PCA, components were extracted with varimax rotation for the Dominance and Impression Management scales; each scale had 12 items, and extraction was set at an eigenvalue of 1. The Dominance scale had 3 components accounting for 63.2% of variance, whereas the Impression Management scale had 2 components accounting for 58.8% of data variance.

The Individualised Trust Scale (14 items, $\alpha = .77$), the Social Presence scale (15 items, $\alpha = .78$), and the Impression Management scale (12 items, $\alpha = .88$) were reliable. The Dominance scale, however, had moderate reliability (12 items, $\alpha = .67$); in the previous study, the Dominance scale had slightly better reliability ($\alpha = .75$).

Repeated-measures MANOVAs were conducted on all measured variables for Gender X Task X Anchor (initial field-of-view setting), Partner Gender X Task X Anchor, and Gender Group X Task X Anchor. The results are presented in the following section:

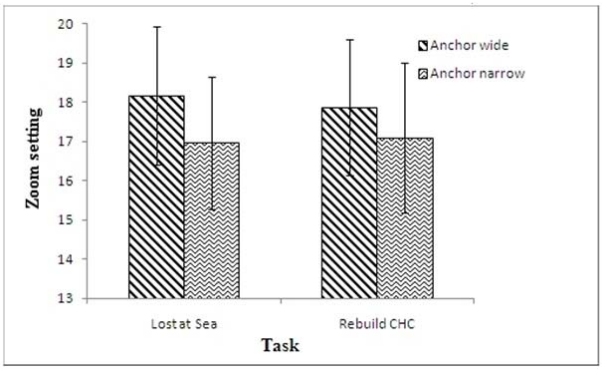

Figure 3. Mean field-of-view settings by participants for the Lost at Sea and Rebuilding Christchurch tasks, as a function of initial field-of-view setting (anchor).

The anchor settings had a significant interaction effect with the tasks on where the field-of-view was set ($F(1,118) = 29.80$, $p < .001$, $eta^2 = .20$). Overall, the initial field-of-view settings affected the degree to which participants changed the field-of-view when they were asked to. In both tasks, the field-of-view was set wider when the anchor was set wide ($M = 18.02$, $SD = 1.72$) than when it was narrow ($M = 17.03$, $SD = 1.82$). That is, participants tended to choose a setting close to the anchor.

As Figure 3 shows, the difference was slightly larger in the Lost at Sea task than it was in the Rebuilding Christchurch task. For the Lost at Sea task, the difference was 1.2 ($M = 18.17$ vs $M = 16.97$), and for the Rebuilding Christchurch task, the difference was .78 ($M = 17.87$ vs $M = 17.09$).

Gender had a significant main effect on the field-of-view settings. Overall, women made more of themselves visible to their conversation partners than men did in both tasks and regardless of where the initial field-of-view was set ($F(1,120) = 9.72$, $p = .002$). On the Lost at Sea task, women ($M = 17.98$, $SD = 1.42$) set the field-of-view wider than men did ($M = 17.14$, $SD = 2.10$; $F(1,121) = 7.54$, $p = .007$). There was a similar finding for the Rebuilding Christchurch task, where again women ($M = 17.86$, $SD = 1.59$) set the field-of-view wider than men did ($M = 17.11$, $SD = 1.99$; $F(1,121) = 5.37$, $p = .02$).

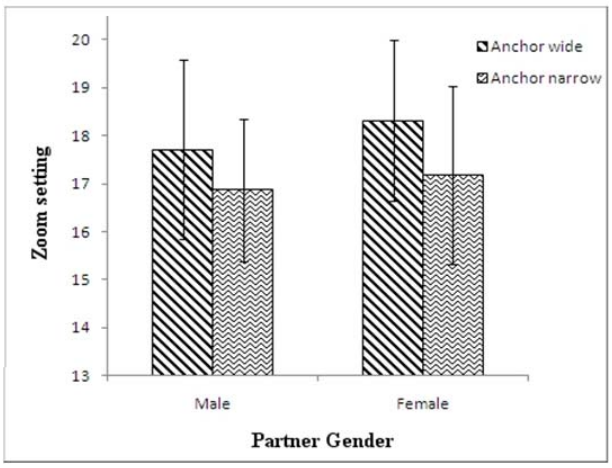

Figure 4. Mean field-of-view settings by participant as a function of partner gender and initial field-of-view setting (anchor).

As shown in Figure 4, partner gender had a significant interaction effect with the anchor (initial field-of-view setting) ($F(1, 118) = 5.67$, $p = .02$). Overall, field-of-view was set wider when the anchor had already been set wide than when it was set narrow, but the difference was larger when the partner was female than when the partner was male. When the partner was female, the difference was 1.13 ($M = 18.32$ vs $M = 17.19$). When the partner was male, the difference was .85 ($M = 17.72$ vs. 16.87).

Gender group showed a significant main effect on field-of-view setting, with participants in female/female groups setting the field-of-view widest, followed by male/female groups, and then male/male groups ($F(1, 116) = 6.20$, $p = .003$; $eta^2 = .1$). This is likely accounted for by the earlier finding that women tended to set the field-of-view wider than men did, and not due to the gender combination of the dyads, especially since partner gender had no significant main effect on field-of-view setting.

Presence

Overall, the co-presence part of the Social Presence scale was affected more than the social presence part of the scale. The co-presence section contains items pertaining to the degree to which participants felt they were 'together' with their conversation partner. The social presence section of the scale involves the perception of the communication medium in terms of its warmth, size, etc.

Partner gender significantly affected the co-presence ratings in the Rebuilding Christchurch task ($F(1, 118) = 5.80$, $p = .017$, $eta^2 = .05$). In this task, participants felt slightly more 'together' when their conversation partner was a woman ($M = 4.65$, $SD = .86$) than when the partner was a man ($M = 4.28$, $SD = .85$).

Though it was partner gender that affected co-presence ratings in the Rebuilding Christchurch task, it was the initial field-of-view settings (anchor) that had a significant effect on co-presence ratings in the Lost at Sea task ($F(1, 121) = 7.27$, $p = .008$, $eta^2 = .06$). Co-presence ratings were higher when the anchor was wide ($M = 4.77$, $SD = .96$) than when the anchor was narrow ($M = 4.33$, $SD = .86$).

Dominance

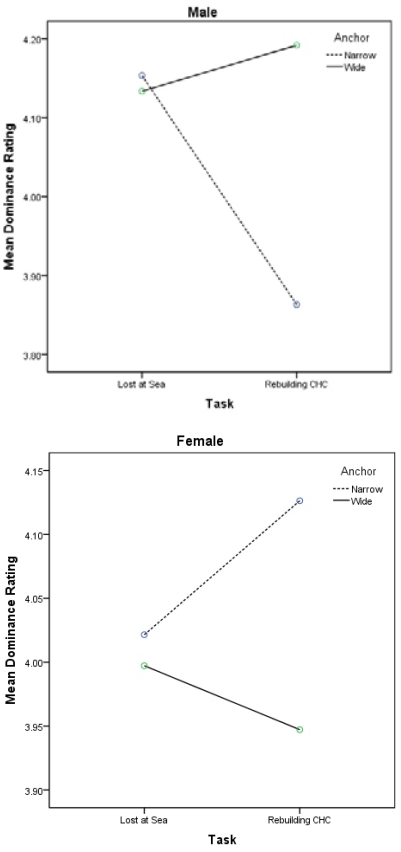

Figure 5. Mean ratings on the Dominance scale for male and female participants, as a function of task and initial field-of-view setting (anchor).

There was a significant three-way interaction between gender, task, and anchor settings on ratings of dominance ($F(1, 118) = 5.65$, $p = .019$). Figure 5.8 shows that both male and female participants rated themselves as being the more dominant partner equally when the field-of-view was set narrow or set wide (body language was available or not) for Lost at Sea. However, in the Rebuilding Christchurch task, males felt more dominant when the field-of-view was set wide (body language available) ($M = 4.19$, $SD = .62$) than when the field-of-view was set narrow (no body language available) ($M = 3.86$, $SD = .49$), whereas female participants felt more dominant when the field-of-view was set narrow (no body language available; $M = 4.13$, $SD = .52$) than when the field-of-view was set wide (body language available; $M = 3.95$, $SD = .48$).

Pre-Discussion Considerations

Participants were observed to spend long periods of time on the Rebuilding Christchurch task, and the time spent was much longer than anticipated or instructed. The participants debated animatedly and at length with their conversation partners about each of the ideas they proposed, despite repeated instruction that the feasibility and realism of the ideas were not important and that they should not think too much about each idea. They had also

been encouraged to think of the task as less serious than the Lost at Sea task, and to 'just toss up' each idea one after the other without much discussion. Yet participants persisted in spending a long time on the task.

What this behaviour may indicate is that perhaps the task was not being perceived as an Idea Generation task, but as a Judgement-type task from the circumplex. That is, they were discussing the task as a problem that they needed to arrive at a solution to, which did not have clear and objective answers. This may be because of the context and connection between the task (ongoing natural disaster in Christchurch affecting many people) and the participants (residents in New Zealand, who may also have family and friends in Christchurch).

The situation in Christchurch has been prominent in the media, and participants who may not have spent time in Christchurch may yet have known people from and in the affected area. Thus, the topic was likely not a neutral one for participants, and they may have been highly motivated to discuss the matter deeply and been invested in the outcome of the task.

One of the implications of this is that, if indeed the Rebuilding Christchurch task was conducted as a Judgement task, it would indicate that the task was more 'persuasive' in nature than the Lost at Sea (Intellective) task. This is because the Judgement task is lower on the vertical axis of the task circumplex than the Intellective task. The vertical axis of the circumplex denotes how co-operative vs. combative the tasks are, and thus how much persuasion is required during the interaction to secure the desired outcome. Judgement tasks are not necessarily combative in the sense that participants are fighting each other, but rather potentially disagreeing with each other on what the most appropriate solution to the problem is and having to persuade the other that theirs is the best idea.

The implication of that reclassification of the Rebuilding Christchurch task as a Judgement task rather than as an Idea Generation task is in the interpretation of the results when comparing the Rebuilding Christchurch and the Lost at Sea tasks. The case for supporting the reclassification of the Rebuilding Christchurch task is strong, and thus the results were interpreted in that way in the following discussion.

DISCUSSION AND CONCLUSION

Task type affected the field-of-view settings of the webcam. Participants adjusted the settings more during the Rebuilding Christchurch task than in the Lost At Sea task, moving further away from the anchor or initial points. In the Lost At Sea task, participants tended to stay close to the anchor points. It appears that when executing a more persuasive task, participants are more motivated to adjust and think about the field-of-view settings, which in turn adjusts the image and information received by their conversation partner.

The results showed that there was a significant gender difference in ratings on the Dominance scale in the Rebuilding Christchurch task, depending on the field-of-view anchor point. Male participants felt like the more dominant partner when the anchor point was set wide (when body language was available) than when the anchor point was narrow. The pattern was reversed for women, who felt like the more dominant partner when the anchor point was set narrow (when body language was not available) than when the anchor point was wide.

This indicates that men feel more dominant when their body language is available to their conversation partner, which shows that there may still a degree of physicality that they are trying to transmit during the interaction. On the other hand, women feel more dominant when their body language is not available to their conversation partner. A possible explanation for this is that women may not feel physically imposing because of their relative slightness compared to men, and may feel that their slight physical appearance is detrimental to efforts to dominate in persuasive situations.

There were also significant gender differences in the field-of-view settings of the webcam. Overall, female participants preferred to set the field-of-view of the webcam wider (to show more) than male participants did. This could be an indicator of their preferences for body language availability, as when the field-of-view of the webcam was set wider, more of themselves could be seen.

However, adjusting the field-of-view of the webcam does not just change how much of the participant is visible, but also the perceived proximity between the participant and the computer. Many participants, particularly female participants, showed startled and uncomfortable reactions when they adjusted the webcam to field-of-view in, and would hurriedly pull the field-of-view back out as far as it would go. Particularly when the field-of-view was adjusted quickly, it appeared that the screen or webcam was approaching the participant's face very suddenly. Of the participants who were noticeably startled, many also commented on the peculiar perception of the screen or webcam coming towards them.

This unintended effect appeared to be more salient than the perception of body language availability, which may have negatively affected the participants' awareness of the field-of-view's effect on the latter. Because of the salience of the perceived proximity and approach of the computer screen and webcam, and the associated discomfort experienced by participants, the results for the field-of-view settings may have been affected. Many of the female participants appeared to pull the field-of-view all the way out in reaction to the proximity effect, and this may account for the gender differences for the field-of-view settings.

Partner gender affected co-presence ratings (how 'together' participants feel with their conversation partner) in the Rebuilding Christchurch task. Participants felt more 'together' when their partner was female, while executing a more persuasive task. This may indicate that women interact in a way that encourages a feeling of closeness or a feeling of social bonding. Alternatively, when interacting with a woman, participants may feel

encouraged to bridge a perceived gap, or interact closely with the woman.

One limitation was that in the previous study, participants were only required to state a preference for body language availability. This study required participants to actively and manually change the field-of-view of the camera, and thus the amount of their own body language that was made available to their conversation partner. Unfortunately, there may not have been sufficient motivation for participants to take a lot of time and care in choosing their settings.

In a real, professional setting, business users put effort into their appearance and behaviour because that may impact on their jobs through the perceptions of their co-workers, superiors, clients, and associates. Two students who are not well-acquainted (and do not expect to be further acquainted in the future) may not be very interested in exactly how the other perceives them. It would be interesting to replicate this study in a more business-like setting where motivation to impress or persuade is high.

Overall the results showed that task type, participant gender, and the gender of the conversation partner were important factors that affected perceptions regarding the medium and interactions with their conversation partner, as well as affecting participants' choices in how they manipulated the medium to transmit themselves. There are implications not just for design but also in training.

Business users may find themselves uneasy with videoconferencing if they feel they are not being transmitted how they would prefer to be perceived. To encourage users to modify the settings of the program to change how they are being transmitted, it may help to make the pertinent settings (i.e., field-of-view/body language availability) more prominent and salient to the user. Having one or two features stand out from the host of other possible modifications (like colour saturation, contrast, digital expressions/facial masks) may make experimenting with the settings more approachable.

Yet, as a lot of videoconferencing or video chat software is marketed to a cross of different populations, it may not be desirable to make prominent some of these settings if the users do not particularly care about changing them. In these cases, for example in very casual use, making the settings prominent may be perceived as intrusive and unnecessary. As seen in this experiment, casual users may not be motivated to optimize their self-transmission, and see the adjustments as a hindrance to finishing the task.

It is also important for developers to not show assumptions made about their users' differences. That is, developers must not tell users that one set of settings would be more appropriate for them than another because of their gender. For one, gender equality and division are sensitive issues. And for another, many users will find that their preferences run counter to what is 'typical' of their gender. A more general 'awareness' approach such as suggested above would still encourage users to adjust their settings without indicating in which *way* they *should* adjust their settings.

Another important component is on the training end of the application of these findings. IT departments in businesses/offices are involved in instructing business users on how to use the applications they have been provided with, and videoconference settings could be a part of that. Again, without instructing users on how they *should* set the field-of-view or BLA settings, IT trainers would show the users how to change these particular settings, in this way both prompting their attention towards the settings and hopefully encouraging them to be comfortable with taking that control over their self-transmission. Pointing out that the users may desire different settings depending on the context of the communication/meeting may also help users to think of the self-transmission process as one that they can exercise a fair amount of control over, depending on who they would be speaking to and the nature of the task they are conducting.

ACKNOWLEDGMENTS

We'd like to thank the participants in our study, the technical and administrative staff who helped us and thankfully acknowledge the funding from the departments of Information Science and Psychology.

This study was part of the PhD thesis of the first author supervised by the second and third authors.

REFERENCES

de Vasconcelos Filho, J. E., Inkpen, K. M., & Czerwinski, M. (2009). Image, appearance and vanity in the use of media spaces and videoconference systems. Paper presented at the International ACM conference on Supporting group work, Florida, USA.

McGrath, J. E. (1984). Groups: Interaction and Performance. Englewood Cliffs, NJ: Prentice-Hall, Inc.

Nemiroff, P. M., & Pasmore, W. A. (2001). Lost at sea: A consensus-seeking task. In E. Biech (Ed.), The Pfeiffer Book of Successful Team-Building Tools: Best of the Annuals, 165-172.

Short, J., Williams, E., & Christie, B. (1976). The social psychology of telecommunications. London: Wiley.

Teoh, C., Regenbrecht, H., & O'Hare, D. (2010). Investigating factors influencing trust in video-mediated communication. Proceedings of OZCHI 2010, ACM Press, 312-319.

Teoh, C., Regenbrecht, H., & O'Hare, D. (2011). The Transmission of Self: Body Language Availability and Gender in Videoconferencing. Proceedings of ACM OZCHI 2011, Nov 28 - Dec 2, 2011, Canberra, Australia, 273-280.

Walther, J. B. (2007). Selective self-presentation in computer-mediated communication: Hyperpersonal dimensions of technology, language, and cognition. Computers in Human Behavior, 23, 2538-2557.

Wheeless, L.R., & Grotz, J. (1977). The measurement of trust and its relationship to self-disclosure. Human Communication Research, 3(3), 250-257.