

Co-Experience in a Cross-Cultural Notion: Unpacking the Effect of Culture on Users' Social Interaction

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Abstract: How people experience technology as a group has become an important subject in user experience design. Even though previous studies addressed the effect of culture on organization of user experience, few cross-cultural studies have focused on users' social interaction. This paper aims at exploring relationship between culture and user experience in social interaction, in a catchier term, "co-experience." By reviewing literature on cultural variations of interaction styles, we derived a conceptual framework of role-taking and facework to look at co-experience of interactive technology in different cultures. To test the framework in a real world, we designed a new technology, called "Visual-talk table," displaying the degree of verbal participation of each member. Visual-talk table was tested with Finnish groups and Korean groups on the question of how the technology intervenes in social dynamics. Finally the implications for design were discussed.

Key words: *user experience, social interaction, culture, interactive technology*

1. Introduction

People's social interaction has become an important subject in user experience design. The development of Information and Communication Technologies (ICTs) increasingly promotes collaborative activities. In addition, recent studies have reported that new, unexpected ways of product use emerged when products were used by group of people (for some examples, see: [1, 17]). Understanding how group of people act through technology and shape their social actions is a critical issue in design of interactive systems.

During recent decades the fields of Computer-Supported Cooperative Work (CSCW) and social computing have focused on users' embodied actions with the environment and meanings arising in the process of acting through technology [8]. Some studies in this field were particularly interested in how social norms and actions in the conventional physical world were adapted to computer-mediated settings (for example, see: [14]).

Very recently a similar study is also found in user experience literature. Co-experience is the term, firstly introduced by Battarbee [1], to define how individual user experience emerges and changes in the process of social interactions. This concept highlights the fact that there is another type of user experience, organized in the

meaning making process through interacting with other people, which can be distinguished from experiences created when alone.

The review of these studies led us to find one common aspect interacting with users' behaviors that are reconfigured in mediated settings; their cultural backgrounds. Social norms and communication strategies employed in a group determine a culture of the group: a culture can be distinguished by variations in those social norms and communication strategies in different societies. It is needless to say users' cultural backgrounds in the real-world also intervene in social interactions in technology-mediated settings. In this study, we are interested in explicating the role of culture when people collaborate in mediated settings and act through technologies. Are there cultural variations in perceiving and adapting technologies when collaborate in mediated settings? How does culture interplay with user experience of technology?

Although considering user's culture in the design of interactive systems is no longer a new notion, previous studies have typically focused on what takes place between an individual and a system (for examples, see: [7, 16]) and little is known about how culture affects multi-users' social interactions with a system. Recently a few studies on computer-mediated communication (CMC) have attempted to explore cultural effects on collaborative work in technology-mediated settings. For example, Chinese groups were more talkative in group brainstorming in a text-only chatroom than a video-enabled chatroom [20]. These studies succeeded in examining interrelationship between culture and user performance with communication media, but are not yet capable of explaining how a group of people reconfigure their actions in mediated setting and create meanings in the situations.

This study aims at exploring how users' cultural backgrounds interplay in the process of their reconfiguring of actions in technology-mediated settings. Consequently the study aims to learn what those cultural interplays inform the design of interactive systems. This paper presents a design experiment as a part of the ongoing work and discusses findings and future directions.

2. Co-Experience: Theoretical Landscape

Battarbee [1] has classified user experience frameworks into person-centered (need-based), product-centered (design checklists), and interaction-focused strands. As she also points out, a good deal of the writing has had no theoretical grounding. In those few attempts in which the concept has been given a theoretical interpretation, it has usually been linked to pragmatist philosophy. In particular, Wright et al. [21] build on Dewey's [5] philosophy in their distinguishing sensory, emotional, spatio-temporal and compositional strands of experience, stressing its sensory and emotional character rather than just cognitive. Forlizzi and Ford [10] also build on Dewey. For them, a good deal of experience is ongoing and "subconscious," but experience may also become a focus of attention (storytelling), becoming "an experience," which is meaningful and memorable, having a clear beginning and an end.

However, user experience has mostly been used in an individualistic way, by placing the individual into the center of thinking. To address the problem of social action in user experience literature, Battarbee [1] introduced the notion of co-experience. She specifically posed the question of how experience is related to social action. She linked her notion to symbolic interactionism, following Blumer's [2] formulation of this framework. According to this framework, people act toward things through the meanings they have for them and meanings arise from

interaction with other people. Then meanings are handled in, and modified through, an interpretive process used by the person in dealing with things he encounters.

As we shall argue, this concept opens important vistas for designing collaborative systems. However, studies on co-experience have one important limitation. The concept has its origins in Helsinki, Finland, and although other studies have been conducted in North America and Europe, no cross-cultural studies have been done.

3. Conceptual Framework: Role-Taking and Facework

3.1 Role-Taking and Its Cultural Variations

What people see as a proper way of acting in any situation depends on how they position themselves and others into it. In particular, what interactionists call “role-taking” plays a crucial role: identities and roles are key resources when people construe lines of actions for any situation [18]. Battarbee inherited her idea of interaction from Blumer, understanding action as a labile process, reducing role-taking almost to situational improvisation [1, 2]. This view may have been appropriate in Chicago in the 1930s, a city of restlessn ess with high immigration and social disorder. However, once these meanings are learned, they remain relatively stable, and even in restless environments, people strive for stability and respectability of conduct [9]. In more stable surroundings, structural roles and identities, such as those from age, social status or gender, play a greater role in shaping social interactions in given situations.

This idea is in line with a power distance index, one of cultural dimensions by Hofstede [15], which deals with perceptions of the superior’s style of decision-making and of colleagues’ fear to disagree with superiors, and with the type of decision-making which subordinates prefer in their boss. In more stable and tradition-respecting societies, power distance is typically higher and determined by structural roles. Interactions in a group thus follow social norms generated from power distance among structural roles. As co-experience is a co-constructive process, we assume that social norms defined by cultural systems result in cultural variations of co-experience.

3.2 Facework

Facework is also one of frameworks that can explain different interaction strategies in different cultures. Faces are the public image of an individual, or group, that their society sees and evaluates based on cultural norms and values and facework refers to the communication skills one uses to uphold and manage face [12, 19]. Ting-Toomey [19] postulated face negotiation theory to explain how different cultures communicate and manage conflict. Based on numerous case studies, she proposes cultural-level facework on the dimension of individualism versus collectivism by Hofstede [15]. In her propositions, individualistic cultures predominantly express self-face maintenance interests while collectivistic cultures are more concerned with other-face maintenance. In addition, members of collectivistic cultures are more concerned with mutual-face maintenance than individualistic cultures. As shown in Table 1, she also proposes interpersonal conflict-managements styles related to facework in two different cultures.

Based on facework framework, we can easily presume that members of a collectivistic culture, typically with high power distance, more try to maintain face of a higher-status person than members of an individualistic culture do. For this reason, facework can also serve as a framework to explain how role-taking is expressed in a behavioral level.

Table 1. Cultural variations in role-taking and facework

	Collectivistic culture	Individualistic culture
Role-takings	Strong function of structural role from age, social status or gender as well as situational roles	Strong function of situational roles
Facework interaction strategies	<i>Face-giving</i> : supporting others' needs for appreciation	<i>Face-restoring</i> : protecting own freedom and space
Conflict communication styles	Avoiding, obliging, compromising, indirect emotional expressions	Direct, dominating, competing, emotionally expressive

Table 1 summarizes the framework of role-taking and facework that helps us to observe co-experience in different cultures. This framework leads to the research questions of this study:

- *How do role-taking and facework affect co-experience of interactive technologies in different cultures?*
In a *collectivistic* culture, one has to act not only in terms of situational identities, but also on structural identities by, for example, giving priority to more senior and higher status people. If the technology intrudes with social order, it may insult seniors and embarrass juniors. However, if the technology overly denotes a power or a dominance of a higher status person, it may also disrupt one's face. On the other hand, members in an *individualistic* culture play down issues like honorifics and status. They tend to go with the flow and their turn-takings may have less to do with a hierarchy within a group.
- *Then, how should the design of interactive technologies consider cultural influence on co-experience?*
Understanding the effect of culture on co-experience can inform designers how to design interactive systems that culturally fit. Technology can be designed following social norms and facilitating group dynamics. Or technology can also manipulate them.

4. Experimental Design

To explore questions raised above, we conducted a cross-cultural experiment with a new designed technology, called "Visual-talk table." The research questions were reformulated into a sensitizing concept in designing Visual-talk table. In the experiment, we wanted to observe how people in different cultures interact with this new technology and eventually to show how design ideas can be derived from the experiment findings.

4.1 Apparatus: "Visual-Talk Table"

The design idea of Visual-talk table started from the question of how technology can influence or facilitate group dynamics. For that purpose, visualizing the degree of member's participation during a group activity was chosen as a main functionality. Visual-talk table gives visual feedback of each member's real-time verbal participation so that group members can compare their contribution to others. With this design intervention, we were interested in exploring questions as follows;

- How would people react when Visual-talk table displays their real-time participation? Would they get motivated to participate more or annoyed?
- How are their experiences of Visual-talk table related to their social positions in a group and their cultural backgrounds?

We designed interaction of Visual-talk table subtle, peripheral and environmentally-immersive instead of straightforward or direct. This was to prevent participants from being distracted much by visualization and to

have aesthetic qualities in interactions. The form of table was chosen because typically the combination of a table and chairs can invite a group of people and create social interaction in nature, for example, tea time, a brainstorming meeting or a group game. We mounted a net of LEDs on the tabletop so that participation is visualized by lightings. As Figure 1 shows, we designed a honeycomb pattern which consists of 75 hexagons containing microprocessor units with dual LEDs in each. A honeycomb pattern is capable of displaying various kinds of patterns on it and associated with patterns of tablecloth. Visual-talk table is typically for four persons, and four directional microphones are installed in each quadrant of the table.



Figure.1 The design of Visual-talk table: patterns of light ripples and traces

On the table, light areas are divided into two; one is a *ripple area* displaying participants' ongoing talking and another is a *trace area* displaying the accumulated amount of each participant's speaking. When a microphone senses the voice from an assigned quadrant, LEDs mounted on the tabletop are turned on from the side of a person currently speaking. As speaking continues, the light ripples with yellow color spread. They go off when speaking stopped. When a person speaks long enough for ripples to reach the trace area in the middle of the table, one of blue LEDs in the person's sector is turned on. The light ripples and traces enable members to recognize who talked the most and the least as well as interaction flows by the shape of traces.

4.2 Participants

Visual-talk table was placed in an open kitchen area of a research room in University of Art and Design Helsinki, where people often gather for coffee and less formal meetings every day (figure 2).



Figure.2 The set-up of Visual-talk table in a research room

To compare behaviors of different cultural groups, participants consisted of Finnish groups and South Korean groups at Finland academic institutions. According to the cultural dimensions by Hall [13] and Hofstede [11], Finland and South Korea have distinctive characteristics: Finland is of *low-context and individualistic* culture and South Korea of *high-context and collectivistic* culture. 3 groups from each country participated and there

were 3 to 4 persons in a group (10 Finns; 11 Koreans). Koreans were born and raised in South Korea and had been in Finland to study for less than 3 years. The groups were mixed according to age, gender, and familiarity with each other as friends or work colleagues. In Finnish groups, there were one all female group, one 2-female/1-male and one 2-female/2-male group and the ages of the participants varied from 20 to 46. In Korean groups, there were one 2-female/2-male group, one 3-female/1-male group, and one 1-female/2-male group. Their ages varied from 21 to 39. All groups knew each other as colleagues, organization members or friends because they were from the same institutions or student organizations. While participating in the experiment, Korean groups spoke in their native language. It was important to allow Korean participants who study abroad to speak in their mother-tongue so as to facilitate their native culture in a group. Finnish groups spoke in English for a better communication with a non-Finnish speaking researcher. English is an official language at universities that Finnish participants work in, and they were all fluent in English.

4.3 Procedure

To design for co-experience, Battarbee [1] suggests naturalistic methods providing social settings in a real context, based on one particular strand of interaction sociologist [2]. This framework is feasible primarily for within-culture studies that aim to capture variance in interaction. To observe how cultural differences influence co-experience, we adopt a more structured, quasi-experimental methodology [4].

In the experiment, the groups were introduced to Visual-talk table and sat around it. They were told a basic idea of Visual-talk table as a technology that responds to their talk participation. How Visual-talk table specifically behaves was not told in order participants to get to know how to interact with it. The groups were given a discussion topic: making a plan for three-day Helsinki tour for visitors. The topic was chosen because it enables the groups to generate a large number of ideas, browse and negotiate options, and make final decisions. At the same time, the topic was engaging and contextually relevant to the participants. There was no big gap of knowledge to the topic among participants because subjective experiences and interests play out in discussions. The group discussions were video-recorded for follow-up analysis. After the discussions, participants were asked about how the behaviors of Visual-talk table had influenced their actions and emotions while having discussions. On the day or the following day of the experiment, the participants reviewed the videos together with the researcher and were interviewed of their experiences of Visual-talk table.



Figure.3 Group discussions around Visual-talk table: a Korean group (left) and a Finnish group (right)

4.4 Data Analysis

The first data was noted taken by the researcher observing participants' behaviors throughout the group discussions. Notes were taken focusing on research questions presented above. Secondly, we analyzed findings from on-site interviews asking how much attention participants paid to the table and how they felt with and reacted to the behaviors of Visual-talk table. Thirdly, the video review with the participants helped to verify and specify findings from the observations and interviews. When reviewing videos, we especially focused on the events, such as 1) *when turn-takings took place* and 2) *when the degree of participation was not equal*.

5. Findings

In the presentation of findings, we focus on 1) *how participants recognized behaviors of Visual-talk table* and 2) *how behaviors of Visual-talk table affect participants' feelings and actions*. We also discuss 3) *how co-experiences of Visual-talk table, constituted with those feelings and actions, have similarities and differences in two different cultures*. We firstly present the overview of the findings and then take a more detail look at findings relevant to research questions.

5.1 Overview of Findings

The time groups took on a task ranged from 11:08 minutes to 29:20, with an average time of 21:13 minutes. We found no big difference of the time between Korean groups and Finnish groups: an average time of Korean groups was 20:14 minutes and Finnish group 22:12 minutes. In follow-up interviews right after the group discussions, participants said that they had not paid much attention to the visual feedback, i.e. light ripples on the tabletop, as the group discussion had went on. However, when watching videos of their group discussions, they remembered implicit interactions they had with Visual-talk table.

5.2 The Less Talkative, The More Sensitive to the Technology

From the interviews and video-reviews with participants, it was found that participants became more aware of the technology when the light ripples are all off than when all on. This finding was similar across two cultures.

The dark area, to me, was more recognizable than the bright area. When I found lights in front of me were off, I felt like, I needed to talk. (male participant from the Korean group)

When I found there was no light in front of me, I felt like that I should talk. But it was not a stressful way but a more supportive way. (female participant from the Finnish group)

We also observed that this sensitivity to Visual-talk table was mostly found from the participants who were reticent throughout the group discussions. On the other hand, talkative participants among group members said that they had not paid their attentions on the technology but focused on the task at hands. When reviewing videos with the participants, talkative participants commented that recognizing no light ripples in front of them had not provoked them at all.

5.3 A Peripheral and Subtle Way of Interaction

From the observations on 6 groups, light ripples on Visual-talk table did not seem to disturb participants' ongoing discussions. Participants commented that, once the discussion started, the behaviors of Visual-talk table hardly took their attentions away from the discussion. Throughout discussions on the given topic, participants'

comments on the technology were hardly found except when they asked a researcher if they could put a water glass on the tabletop.

Both Koreans and Finns commented that they felt motivated or supported from the visual feedback rather than embarrassed or annoyed when they had found no light ripples in their quadrants. We argue that Visual-talk table enabled participants to save their face by providing peripheral, subtle and aesthetic feedbacks: because the interaction was subtle, participants did not worry much about how others noticed the feedback on the table.

5.4 A Higher-Status Person Doesn't Want to Look Dominant in Korea

We did not find significant discrepancy of participation resulted from differences in ages or social positions of the group members in both cultures. The distribution of turn-takings or decision makings was not found to be related to members' structural roles in a group. Instead, looking at a sub set of data from Korean groups, we found that higher-status members in Korean groups had become reticent when they had recognized full lights ripples in their own quadrants of Visual-talk table. This was found from one oldest male member in a three Korean students group and a president (the oldest among members) in a Korean student union group. They commented that they did not want to look dominant to other members.

When I found the lights were all on in front of me, I felt like I was conquering the table. Then I felt that I might stop talking and listen to. (the oldest male participant in a Korean student union group; he is a president of the union)

On the contrary, we did not find this tendency from any higher status members, i.e. senior researchers or senior students, in Finnish groups.

6. Discussion and Conclusions

6.1 Co-Experience and Culture

This paper presents the conceptual framework of co-experience and culture and findings from the pilot study with Korean and Finnish groups. For the pilot experiment, we designed Visual-talk table that visualizes the degree of each member's verbal participation to explore how the technology can change social dynamics of group members. Findings from the Korean groups and the Finnish groups showed that facework is a promising framework that plays a considerable role in co-experience of technology. Because facework is, as our conceptual framework proposes, different in different cultures, it determines in terrelationship between culture and co-experience.

Firstly, our findings showed that participants from both Korea and Finland appreciated peripheral and subtle interaction of Visual-talk table because those ways of interaction supported facework of both cultures: face-saving in Korea and face-restoring in Finland. Secondly, in a sub set of Korean group data, we found a higher status member in a group was sensitive to visual feedback when the table denoted more participation from him. The higher status members in Korean groups were concerned of Visual-talk table making them looking dominant in the group task. We did not find similar tendency from the Finnish groups.

These findings imply cultural affect on organization of co-experience. These implications will provide new concepts or criteria in the design of interactive technology. For example, technology can be designed to facilitate group dynamics for meetings requiring equivalent participation from people in different positions. For a high-context and collectivistic culture like Korea, technology can be designed in order to encourage reticent people to

participate more and to prevent higher status people from dominating situations by providing visual feedback of their participations.

Even though we argue that findings from this study will open new vistas for the design of interactive systems, since this was a pilot study, based on the findings, further studies should be conducted more rigorously. In further steps, experiments should be conducted in a more natural environment for a longer period of time. To investigate how face work and role-taking in different cultures intervene in social interaction with technology, groups of more various compositions should be observed. In addition, one of the limitations of this pilot study was to recruit diverse Korean groups since the study was done in Finland. Even though we tried to facilitate Korean culture during the experiment, we should note that living abroad might influence their behaviors and attitudes. To unpack cultural affect more rigorously, we plan to recruit local people in native countries.

6.2 A Role of Technology

While supporting facework of both cultures, Visual-talk table still encouraged reticent participants to verbally participate more. Because having light ripples looks more engaging, the less talkative ones became more sensitive to the visual feedback, while more talkative ones did not pay much attention. However, it was also commented by participants that they might have become more sensitive and would have shown different behaviors if Visual-talk table provided more delicate feedback, for example, more levels of light ripples and more reactive speed.

We argue that we could get different results depending on what kind of feedbacks technology displays. In a previous study where each member's participation was displayed as a histogram on a screen wall, denoting over, average and under participation, under-participants did not tend to increase their participation while over-participants reduced their speech unless they held critical information [6]. The direct, straightforward and mathematical interaction forced over-participants to save their face. Moreover, under-participants commented that they did not much believe the system denoting their under-participation. This different report implies that how interaction is provided determines people's experiences even though technology is designed for the same purpose.

To conclude, this paper discussed how culture affects organization of co-experience and what it implies for the design of interactive systems. Although the findings were from the early step of ongoing study, they opened important vistas for user experience design that culturally fits. Based on these findings, further studies considering group composition, types of tasks and types of interactions are expected to provide clearer and deeper understanding of this issue.

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