

# Cultural Differences and Design Methods for User Experience Research: Dutch and Korean Participants Compared

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**Abstract.** As business competition globalizes, understanding user experience from various cultures plays a crucial role in design process. However, because most user research methods were developed in Western area, one may question if the expected result can be obtained when applying them to totally different culture. The paper explores cultural effects on the feedback collected in the process and result of user experience research conducted in two countries, the Netherlands and Korea. We presumed four factors which influence user research process: spontaneity of participation, uncertainty avoidance, tendency of problem criticism, and attitude within a group. After the two sets of user research in two countries, actual differences of results were revealed. Consequently, guidelines of user experience research in Korea were suggested based on discovered differences.

**Keywords:** H.5.2 User Interfaces---User-centered design, D.2.10 Design---Methodologies, H.1.2 User/Machine Systems---Human Factors

## 1 Introduction

As market competition globalizes, understanding users of various cultures has become important in a design process. Since the emergence of the concept of 'user experience', many diverse methods have been developed for it. Especially, 'user participatory design' is under the spotlight recently, thus explaining the growing importance of the user's role during a design process.

Most user experience research methods currently in use, however, have been developed in the United States or Western Europe and subjected to people in the areas. It makes one wonder if those methods can achieve the expected results when applied to people living in other cultures.

Concerning this question, some studies have started to focus on cultural influence on user participatory design methods recently. Van Rijn (2006) assumed that contextmapping techniques - which are types of generative workshop used in the conceptual phase of design - would work less with participants from more 'reserved' Asian culture, because the techniques heavily rely on activities such as expressing feelings in public and discussing. She tried to adapt the techniques for use with East Asian participants and pointed at trust, control and context communication as considerable factors. Moreover, in India, because Indian users would work around problems rather complain them, Chavan (2005) adapted usability evaluation methods considering cultural characteristics of India. She came up with the idea that Indian people love movies and brought 'Bollywood' atmosphere to the methods, so that participants can be motivated to criticize products like they are film reviewers. These preceding studies emphasize that considering cultural context enables to have more successful results of the user experience research.

Nonetheless, there are few studies that actually revealed and compared differences caused by cultural characteristics when conducting the same user research in different cultures. If different factors are revealed, designers will be able to adapt or develop methods considering those practical factors. Consequently, this research aimed at two points. One is to reveal actual differences of user research feedback from various cultures and the other is to propose how to take those differences into account for user experience research in a certain culture. Experimental approach was selected to reveal differences and for experiment design, literature review was done to understand influential aspects of culture and attributes of user research methods.

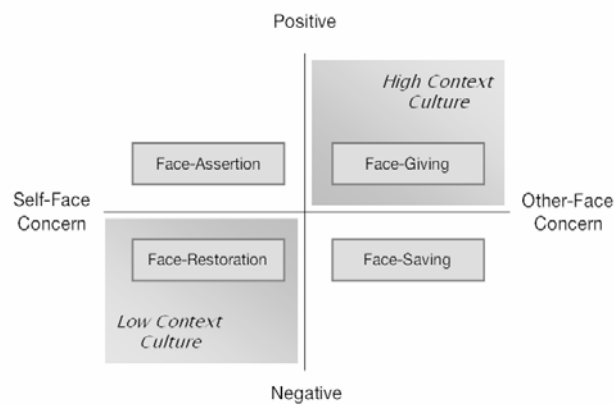
## **2 Cultural Differences in Interpersonal Communication Pattern**

Since user research method is based on the interpersonal communication process between users and researchers, the importance of different communication patterns of different cultures must be emphasized in this research. Ting-Toomey (1998) explained the difference of communication pattern in different cultures based on 'politeness theory (Brown and Levinson 1987)', through which the difference in communication pattern in individualistic-low context culture and collectivistic-high context culture can be revealed.

Individualism versus collectivism is an idea that contrasts ones who only care for oneself and one's direct family members(I-conscious) and ones who emphasize the importance of loyalty and unity for the group that cares for one(We-conscious) (Hofstede 1991). This idea is related to the communication pattern of the society's constituents and it can be explained in relation to Hall's (1977) 'context' theories (Hofstede 2001; Ting-Toomey 1998). In Hall's culture theory, information during communication or in a message is a part of context. It is more or less defined by the degree to which the message or communication is internalized by an individual. In 'high context culture', most information is included in the context, thus it expresses less externally. However, communication is direct, clear, and expressed externally in 'low context culture'. Hofstede (2001) revealed that high context communication

occurs in collectivistic culture and low context communication occurs in individualistic culture.

One of the important concepts of Ting-Toomey's theory is 'face', which begins with the idea that everyone is very aware of how other people think of them as they engage in a conversation. There are two aspects to face. 'Positive face' is the desire to be liked and approved by other people while negative face is the desire not to be disrupted, intruded, and forced by others. She developed 'facework framework' based on the distinction of positive face/negative face and self-face concern/other-face concern in the politeness theory to explain the cultural difference (Fig. 1).



**Fig. 1.** Ting-Toomey's facework framework explains the difference in communication pattern in individualistic-low context culture in which one desires not to be disrupted, intruded, and forced by others., and collectivistic-high context culture in which one desires to be liked and approved by other people and concern about others' reaction (Ting-Toomey 1998)

With the framework, she also proposed the difference of face-related characteristics in collectivistic-high context culture and individualistic-low context culture (Table 1). The proposed characteristics explain people's interpersonal communication style in a more behavioral way. Thus, this proposition will have a profound implication on user experience research methods and aid in establishing direction for the study of culture and user experience research relationship.

**Table 1.** Individualistic/low context versus Collectivistic/high context facework (Hall 2004)

Key elements of 'face'	Individualistic/low-context	Collectivistic/high-context
Identity	Emphasis on 'I' identity	Emphasis on 'we' identity
Concern	Self-face concern	Other-face concern
Need	Negative face need	Positive face need
Supra-strategy	Self-positive and self-negative facework	Other-positive and other-negative facework

Mode	Direct mode	Indirect mode
Style	Controlling, confrontational, solution-oriented style	Obliging, avoiding, affective oriented style
Speech acts	Direct speech acts	Indirect speech acts
Nonverbal acts	Individualistic nonverbal acts, direct emotional expressions	Contextualistic(role-oriented), nonverbal acts, indirect emotional expressions

If Ting-Toomey's facework framework is applied to user experience research, 'self' becomes the participant and 'other' becomes the researcher or other constituents of a group in the case of a group work. Consequently, when user research is done in collectivistic-high context culture and individualistic-low context culture, two tendencies can be expected as follows.

Firstly, a participant in collectivistic-high context culture will tend to be considerate of researcher and other participants' feelings and will attempt to maintain others' face.

Secondly, a participant in individualistic-low context culture will have a tendency to guard one's freedom and personal space.

The two tendencies above established the direction of this research and were explored by experiments.

### **3 Relationship between Cultural Differences and User Experience Research Methods**

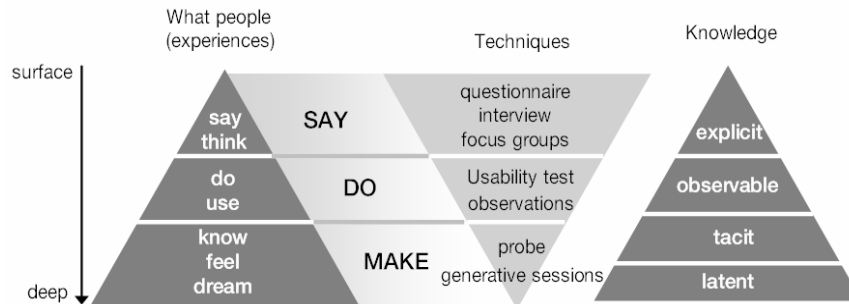
User experience research methods heavily rely on the process of communication between the researchers and users. Therefore, it is crucial to understand the attributes of user experience research methods regarding their communication patterns, as well as its connection to cultural differences.

#### **3.1 Classification of User Experience Research Methods Regarding Communication Patterns**

Knowledge about user experience gained from a user research can be distinguished by possibility of observation and explicitness (Sanders 1999). Knowledge that can be spoken or thought about is explicit, so it can be expressed in a language. However, if that knowledge is in the process of cognition or below that level, such as in a dream, it becomes tacit and latent. Sanders (1999) explains that in order to effectively observe knowledge at different levels, different methods must be applied according to the characteristics of that knowledge level (Fig.2).

'Say, do and make framework' reflects the way to communicate between the designer and the user. Different communication characteristics of varying cultural backgrounds will have an impact on user-researcher communication during a user

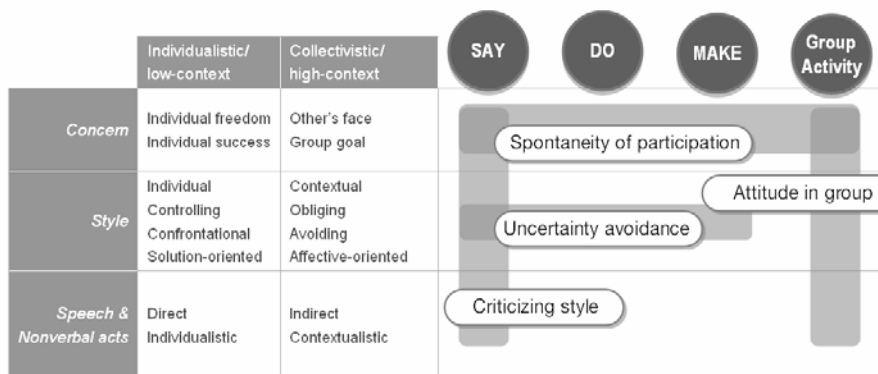
experience research. Not only that, its effects will also differ according to the type of communication, whether it be ‘saying’, ‘doing’, or ‘making’.



**Fig. 2.** Cognitive level of user experience and corresponding methods of user research with different communication patterns (Sanders 1999)

### 3.2 Extraction of Influential Factors

In order to find out what aspect of cultural difference has an influence on user research process and result, some influential factors were extracted. First, characteristics of cultural difference regarding communication pattern was integrated and mapped to communication pattern of user research. Group activity was also mapped together to take into account some cases where the group constituent was one of the targets of face-keeping. Thus, the following shows the extraction of four influential factors (Fig. 3).



**Fig. 3.** The gray bars in the right side stand for the relation areas that characteristics of cultural difference can influence communication pattern of user research methods. By mapping them, four influential factors were extracted from the relation areas.

**Spontaneity of Participation.** In individualistic-low context culture where individual freedom is valued and spontaneous participation is widely accepted (Puri 2004), participants will think highly of their participation during user research. Nevertheless, in collectivistic-high context culture where others' face is important and spontaneous participation will not be as frequent, participants think of user research as a test or a task that is unwillingly done as a favor to the researcher. This is deeply related to motivating the participant of user experience research, thus will have a huge impact on self-observation that gives very little control from the researcher.

**Uncertainty Avoidance.** Uncertainty avoidance in user research methods is defined as the anxiety that the participant of the user research feels due to the ambiguity of the task given to the participant. Uncertainty avoidance also has to do with the participant's attitude towards the user experience research. If the participant is from collectivistic-high context culture thus sees his participation as a task or a test, he may be worried that his response or action during user research will disappoint the researcher. Generative tools, probe techniques and open-ended questions aimed to awaken user's latent experience and obtain unexpected answers are all examples of research methods that can be affected by uncertainty avoidance.

**Tendency of Problem Criticism.** Having tendency to criticize problems is closely related to one's attitude towards the environment and one's speech. Westerners are non-conformists and they tend to find problems and criticize when they believe that a product or a situation is not what they expected. On the other hand, oriental people are conformists and they believe that they have to adapt to a product or a situation even when they know that the puzzle doesn't quite fit (Chavan 2005). This tendency can be discovered during a usability test method where the actual product or a system is evaluated and problems are derived.

**Attitude within a Group.** In an individualistic-low context culture, discussions and expressing one's own opinion within a group comes rather naturally (van Rijn 2006). On the contrary, in collectivistic-high context culture, people feel uncomfortable to draw attention to themselves within a group. Unlike westerners, oriental people are more inclined to agree with the majority and rely on others to speak up (Chavan 2005). Attitude within a group can influence focus group interview, generative workshop, or generative group session.

## 4 Experiment and Result Analysis

Experiment was designed to discover how four factors – spontaneity of participation, uncertainty avoidance, tendency of problem criticism, and attitude within a group - affect user research process and result.

#### **4.1 User Research Method Selection**

As explained in “3.2 Extraction of influential factors”, it is expected that spontaneity of participation will show difference in self-observation method, uncertainty avoidance will show difference in probe technique or generative tool, tendency of problem criticism will show difference in usability test method, and attitude within a group will show difference in focus group interview or generative group session. Therefore, in this research, *probe*, *usability test*, and *focus group interview* were selected to find out the effect of four factors mentioned above. The experiment was designed to explore following questions in each method.

##### **Probe**

*Q 1.* Will the different tendencies of participants from individualistic-low context culture, who are more of spontaneous participants, and participants from collectivistic-high context culture, who see user research as a test or a task, influence the level of diligence and motivation during the probe process?

*Q 2.* Will the different tendencies of participants from individualistic-low context culture, who do not mind uncertainty much, and participants from collectivistic-high context culture, who are more likely to avoid uncertainty, influence the feedback of probe’s ambiguous questions?

##### **Usability Test**

*Q 3.* Will the different tendencies of participants from individualistic-low context culture, who do not like to conform to standards, and participants from collectivistic-high context culture, who are more likely to be conformists, influence the willingness to find a product’s problems during the usability test?

##### **Focus Group Interview**

*Q 4.* Will the different tendencies of participants from individualistic-low context culture, who emphasize their freedom and self-centrism, and participants from collectivistic-high context culture, who emphasize others’ face and collaboration, influence the participants’ attitude to express opinions during focus group interview?

#### **4.2 Participants**

In this study, selecting people who can well represent individualistic-low context culture and collectivistic-high context culture was very important. In addition, all variables except the cultural difference must be kept under control.

First of all, we selected the Netherlands (individualism figure of 80) as an individualistic-low context culture and Korea (individualism figure of 18) as a

collectivistic-high context culture according to the individualism figure from one of Hofstede's cultural dimensions (1991). Then, from each country, six university students who are in their 20s and are studying engineering were selected. In both countries, male to female ratio was one to one and none of the participants had previous experience with any of the tests.

### 4.3 Experiment Design

Three methods were selected to conduct the user experience research in two different cultures. Discoveries of the research process and result was qualitatively compared and analyzed. 'Design of next generation's portable media device' was selected as the topic of the experiment for the purpose of applying three methods and also due to the perception on technology trend at each country. In order to observe answers to four questions stated above, each user research was designed as follows.

#### Probe

In this experiment, Gaver's (1999) cultural probe that emphasizes ambiguity and freedom was selected and the format of sensitizing workbook, which is a part of contextmapping study (Sleeswijk Visser 2005), was borrowed. In order not to compromise diligence, the task consisted of 6 days of workbook and 4 days of photography (Fig. 4).



Fig. 4. Probe toolkit provided in the experiment

To observe how participants of Korea and the Netherlands act to ambiguous and open-ended tasks during workbook writing and photographing, we provided very expandable and self-interpretable tasks that can highly reflect an individual's own experiences. The following are examples of the workbook tasks.

*1st day.* "When and What": Matching game that connects the type of media and its context; must also add explanation

*2nd day.* "Media Diary": Record each media-related activity on a timeline; stickers are provided

*3rd day.* "My Favorite Box": Record a list of things one wishes to include in a "favorite box" and write reasons for it; stickers are provided

Moreover, concrete terms were avoided but more comprehensive terms that could be interpreted in several different ways were used in the workbook. We provided the workbook with a plenty of white spaces to escape from formality of writing to see how well participants can make use of the free-form.

### **Usability Test**

To observe participants' eagerness to find problems during the usability test, the participants were allowed to talk about the product's problems while and after using it for given tasks. To ensure that the product itself or the nature of the task was not affected by the difference in culture, we gave out seven different tasks, such as menu navigation, setup, media player control and others, on two kinds of products (Iriver U10 and Sony PSP).

### **Focus Group Interview**

Focus group interview was selected to discover how comfortable a participant is about sharing his own experiences and thoughts in a group. In the experiment, the type of focus group interview for the product concept development stage was used.

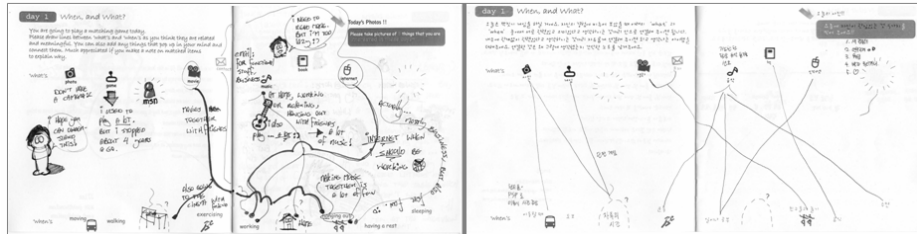
## **4.4 Results**

User experience research was done once in the Netherlands and once in Korea. The first experiment was performed in Delft, the Netherlands at Delft University of Technology and the second experiment was performed in Daejeon, Korea at Korea Advanced Institute of Science and Technology. After the experiment, the feedback and results were compared and analyzed, focusing on each user experience research method.

**Probe.** Participant's feedback during probe period, which is the procedural aspect, and sufficiency of workbook writing and photography, which is the result aspect, were analyzed.

*Participant's Feedback.* Even though both Dutch participants and Korean participants felt the ambiguity of terms on the workbook, they attempted to interpret those ambiguous terms on their own to complete the task without any help. Dutch participants wrote in the workbook almost everyday but Korean participants revealed through the 'comments' page of the workbook that they had trouble writing in the workbook everyday, so sometimes they wrote several days of work all at once.

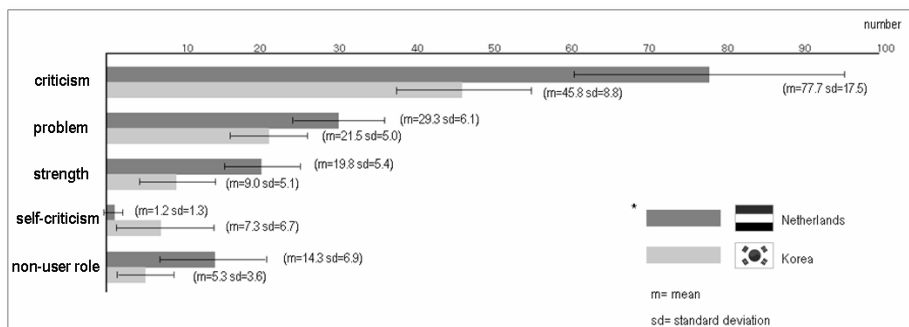
*Sufficiency.* We compared and analyzed Dutch and Korean participants' workbooks and photographs in order to discover how sufficient each group was in expressing their experiences in the workbook and how diligent they were in taking photographs.



**Fig. 5.** Example of a Dutch Participant’s workbook (left) and Korean participant’s workbook (right) task on the first day: shows that Dutch participant wrote the workbook more freely (drawings and word balloons)

Dutch participants’ sufficiency was higher than that of Korean participants’ in terms of workbook task and photography. Instead of giving detailed answers, Korean participants gave short answers to workbook questions. Not only that, they were also poorer in applying various forms such as drawing and applying provided stickers to the workbook tasks (Fig. 5).

**Usability Test.** For the usability test, protocol analysis was used on verbal comments and behaviors of participants in order to compare tendency to criticize a problem and attitude towards participation. Frequency of product criticism, including both discovering a problem with a product and strength of a product, tendency towards self-criticism, and non-user role behavior were set as the coding scheme and measured (Fig. 6).



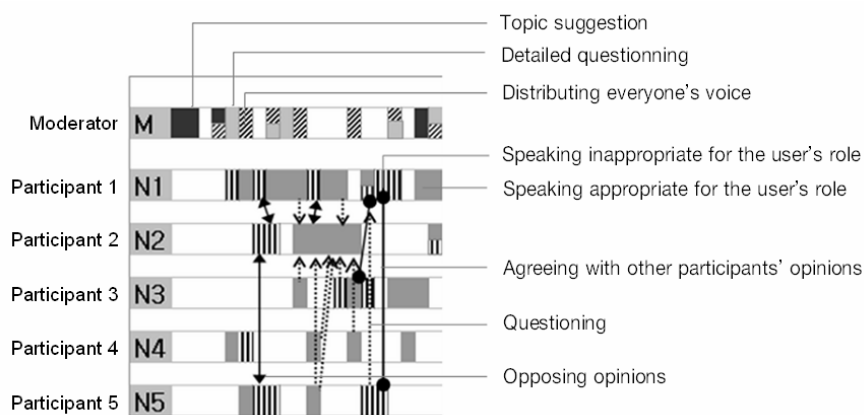
**Fig. 6.** Comparing performance during usability test between two groups: the frequency of criticism was higher with Dutch participants.

**Eagerness of Usability Test.** ‘Criticism’ of Fig. 6 shows that Dutch participants criticized the products more actively. Dutch participants more frequently discovered a product’s weakness and also its strength.

*Tendency towards Self-criticism.* Dutch participants believed that most problems that occurred during the test were due to the problem with the product. However, relatively speaking, Korean participants believed that problems that occurred during the test were due to their mistakes. However, it varied greatly from individual to individual (Mean 7.3, Standard deviation 6.7), discrediting the conclusion that Korean participants have more tendency towards self-criticism. Presumably, the participants were well-educated engineering students thus they were comfortable with the whole test situation and handling digital products.

*Diligence of user role.* Korean participants were better than Dutch participants at maintaining the user role. Dutch participants explored product functions that were not part of the task. On top of that, sometimes they criticized the task itself. Hall's research (2004) has shown that Dutch participants had a wider range of observation and also discovered a wider range of problems, not to mention their frequent escape from the user role. This also supports the discovery that participants from individualistic-low context culture tend to be less diligent when it comes to focusing on the given task.

**Focus Group Interview.** For the focus group interview, protocol analysis was used according to the timeline to gather all participants' frequency of presenting an opinion and interaction style, and to observe the role required by the moderator.



**Fig. 7.** Explanation of timeline analysis: Every time a participant spoke, it was marked on the timeline as either appropriate for the user's role (shared an opinion coherent with the interview topic) or inappropriate for the user's role (shared an opinion incoherent with the interview topic). A moderator's role can also be distinguished into three categories, which are topic suggestion, evenly distributing everyone's voice, and detailed questioning

*Active participation and even distribution of voice.* Fig. 8 shows a large area of 'opinion suggestion (user role)', implying that Dutch participants engaged more

actively in the discussion. The Korean timeline shows that there are temporal spaces between opinions and it seems as though another opinion came up when the moderator asked a question or pointed out someone to speak. Dutch timeline, however, seems to show continuous expression of thoughts and ideas without much help from the moderator. Since Dutch participants were more active when suggesting opinions, they were also more likely to escape from their user role in comparison to Korean participants.

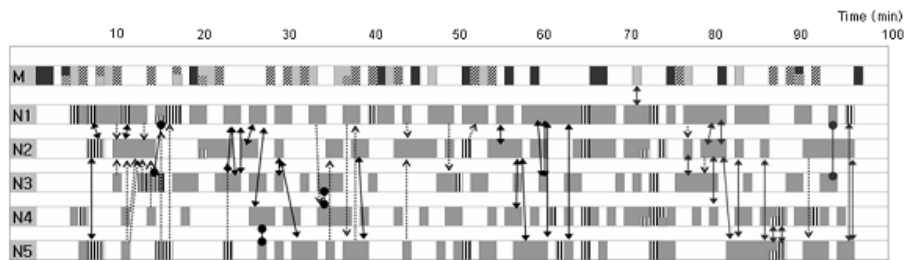


Fig. 8. Analysis of Dutch Participants' Focus Group Interview Timeline

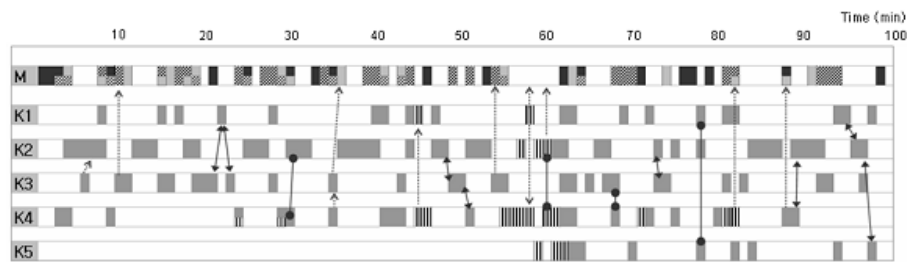


Fig. 9. Analysis of Korean Participants' Focus Group Interview Timeline

Dutch participant actively engaged in a discussion soon after the interview started, whereas Korean participants took a while to start speaking up. During the beginning stage of the interview, Korean participants only spoke when they were called on by the moderator. As time passed, participation increased little by little. Both Korean and Dutch group had a break after 50 minutes of discussion. As in Fig. 9, moderator's role of calling on participants to speak significantly decreased after 50 minutes. Not only that, group constituents started to speak evenly and more frequently after 50 minutes of interview. This proves that Korean participants spoke more frequently as time elapsed and that they need a break or a refreshing time to increase the rate of participation.

*Role of the moderator.* In Korean group, participants rarely spoke voluntarily before they were called upon by the moderator. Therefore, moderator needed to call on participants constantly and ask more detailed questions to carry on the discussion. On the other hand, Dutch moderator did not have to do much since Dutch participants actively engaged in discussion as soon as the discussion topic was suggested by the

moderator. Some Dutch participants, however, had the tendency to speak too long or speak about the same topic for too long, requiring the moderator to control such behavior.

*Interaction among participants.* Voluntary interaction amongst group members was more obvious in the Dutch group. As the arrows of Fig. 8 and Fig. 9 show, when someone finished speaking in the Dutch group, opposing opinion and corresponding questions were actively generated. On the other hand, Korean participants tended to ask the question to the moderator. It can be assumed that the uncertainty avoidance causes such behavior, in which the constituents are less likely to engage in free discussion but are more likely to seek for confirmation from the moderator. There was no significant conformity of opinion in either group.

## 5 Discussion and Proposition

After conducting probe, usability test, and focus group interview in the Netherlands and in Korea, we discovered that productivity and effectiveness was poorer in Korea. Through this, we discovered the differences in spontaneous participation, uncertainty avoidance, tendency of problem criticism, and attitude within the group in Korea, which is a typical collectivistic-high context culture, and the Netherlands, which is a typical individualistic-low context culture.

As a result, when self-observation research methods are used in Korea, constant communication between the participant and the researcher is crucial to boost the participant's motivation.

When product evaluation or concept evaluation is conducted in Korea, sensitizing is very important so that the participants can have a critical attitude. In addition, we expect that indirect interview will be more efficient than a face-to-face interview.

Based on the result, we have compiled guidelines for each of the method when conducting user experience research in Korea.

### 5.1 Probe

**Constant Communication.** When probe is used in Korea, constant communication between a participant and a researcher is necessary during the probe period to boost participant's motivation and stimulate the participant's sense of responsibility. The communication between a researcher and a participant should be playful and informal as to make it less burdensome.

**Playful Methods.** To alleviate any burden from the participant and induce fun, some playful tasks and factors must be added to the probe tool. Not only that, the design should also be done more in-depth and some "cute" and "friendly" factors should be augmented so that participants can feel more comfortable and friendly (van Rijn 2006).

## 5.2 Usability Test

**Sensitizing.** To increase the efficiency of usability test in Korea, some type of orientation or sensitizing process must be provided to teach participants to have a critical mind.

**Less Direct Interview.** Attempt to switch to less direct method to find problems rather than face-to-face interview.

## 5.3 Focus Group Interview

**Friendliness and Warming-up.** To carry out focus group interview in Korea, warm i-ng-up sessions before the interview and a session to increase friendliness among participants are needed.

**Obligated to Speak.** Provide devices that will make the participants feel obligated to speak (for example, toy microphone) or factors that will promote detail explanation of one's opinion.

## 6 Conclusion

This study discovered actual differences from the same user research process done in two different cultures. The differences emphasize the need to consider cultural influence on user experience research. Through findings, this study also suggested guidelines about how to take the different factors into account for user experience research in Korea.

Nonetheless, the limitation of this qualitative research lies in that the sample was small. Besides, the participants did not sample the general population since they were students in their twenties from highly educated engineering schools. Therefore, this paper can become the foundation for future research, which will aim to include a wide range of age groups and numerous participants. If this research continues on, valid data of various cultural groups will become available. Moreover, the guidelines of considering cultural effect in user experience research suggested by this paper will have to prove its usefulness by cases of real life applications.

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