

Social Media Design Requirements for the Collectivist International Students

Kanrawi Kitkhachonkunlaphat^(✉) and Mihaela Vorvoreanu

Computer Graphics Technology, Purdue University,
West Lafayette, Indiana, USA
{kkitkhac, mihaela}@purdue.edu

Abstract. Major social networking sites (SNSs) are developed in the United States, the country with the highest individualism score. Individualist cultural values are therefore likely to be embedded in social media design. This study aims to understand the consequence of collectivist cultural values on design requirements for social media tools. The study used a co-design activity with the value sensitive action-reflection model. Participants were international students from collectivistic cultures who were enrolled at a large state university in the United States. Inductive thematic analysis was applied to analyze themes from design results. Four main themes emerged: media, cost, user-system interaction, and interpersonal interaction. Then, design requirements informed by collectivist cultural values were derived from the themes using theoretical thematic analysis. Three main design requirements emerged: the need to support strong relationship within group, the need to support narrow relationships, and the need for continuous relationship maintenance.

Keywords: Cross-cultural · Social media · Social networking · Collectivist · User experience

1 Introduction

International students are physically separated from their old friends and families. Social networking sites (SNSs) are important tools for them in relationship maintenance with families and friends in their home countries as well as new friends with shared ethnicity [22, 24]. Based on data from the Institute of International Education, at least 67.23 % of the entire international student population in the academic year 2013-2014 came from countries with collectivistic culture [10, 11]. However, SNSs designed within individualist cultures are unlikely to support efficiently the interpersonal behaviors of international students from collectivistic countries [17]. Many popular SNSs such as Facebook and Twitter were developed in the United States, the country with the strongest individualistic culture [10]. The goal of this study was to understand the consequence of collectivist cultural values on design requirements for social media tools. The study aimed to improve further designs and developments of social media tools by increasing the awareness of the dimension of culture.

2 Relevant Literature

2.1 College Students' Social Media Usage

International students have to move into a new country for their studies. A different environmental culture and the physical separation from families and friends were found to be two important causes of loneliness, especially in their first few months. This loneliness resulted in psychosocial issues such as feelings of isolation, anxiety, and confusion [22].

In order to address loneliness resulting from migration, studies have reported that international students use SNSs. Students use SNSs to exchange information with other international students from the same ethnic group or with family members and old friends [22, 24]. Direct communication through SNSs provides the perception of a close relationship between these groups and was found to reduce the students' loneliness [3]. Managing and maintaining social capital using SNSs is one way to address international students' loneliness.

Social capital in the context of social media refers to the collection of information and resources from other people in one's network [5]. Putnam defines two types of social capital based on relationships between people: bridging and bonding. People gain social capital by "bridging" connections with acquaintances, while "bonding" comes from close relationships such as friends and family. Bridging relationships result in wide gain in social capital from a large group of people. On the other hand, people maintain intimacy via bonding relationships [16].

According to [3, 18], college students use SNSs to acquire bridging social capital and maintain distant relationships, or bonding social capital. Studies reported that Facebook specifically was an important tool for U.S. students to maintain bonding social capital [6, 23]. Facebook could be a good tool for international students as well to maintain bonding social capital. However, it is possible that SNSs designed to support individualist communication goals [13] might not be ideal for communication among members of collectivistic cultures. How would SNSs design change if it were to accommodate not only individualist, but also collectivist communication goals?

2.2 Conflict in Cultural Values in the Current SNSs

The individualist-collectivist characteristic of cultures is one of the dimensions proposed by Hofstede in his characterization of world cultures. The individualist-collectivist dimension refers to the strength of relationships among people in a culture. Individualistic cultures have weak interpersonal relationships because personal achievement is valued over the goal of the group. In contrast, collectivistic cultures have highly cohesive relationships between people and the goal of the group is prioritized over that of the individual [9, 10, 19]. Interpersonal relationships among collectivists are tighter and narrower than those among individualists. The individualist-collectivist dimension is the most popular dimension applied in cross-cultural design [19].

Individualists and collectivists adopt SNSs differently. One reason for the difference is their goal in communication [13]. Members of individualistic cultures communicate

with the goal to express personal ideas, while the intention of the collectivists' words is to maintain interpersonal relationships [13]. Accordingly, it is not surprising that the two groups also have different behaviors in SNSs usage. For example, a lot of collectivists used a picture of a toy or an animal as their avatar to represent themselves on SNSs instead of their real picture, as individualists did [15].

From the perspective of SNSs developers, even if overall functions of the SNSs are the same, there are details that the individualistic and collectivistic developers design and implement differently. Marcus and Krishnamurthi pointed out that this difference could be seen in the access to a person's friend list on SNS. Making that list public is considered an implementation of individualist values, whereas collectivist values that are more relationship-oriented would restrict access to the friend list and other personal information. [15]. A study on SNS users from collectivistic cultures who commonly used both Facebook and Renren, a Chinese-developed SNS with the same functions as Facebook, even found that the collectivists felt free to share content more on Renren than Facebook. The collectivists applied some sharing features- picture tagging, link sharing, and sharing others' - significantly less on Facebook than on Renren. The reason for more sharing was because Renren allowed sharing content with specific groups, while Facebook sharing was to wider audiences [17].

The SNSs designed and developed by in individualistic cultures may not support well the values of users from collectivistic cultures because individualist values are embedded in the design. Anticoli and Toppino explained that designers always embed their cultural values into their designs, intentionally or unintentionally [1]. Their culture's values and attitudes influence designers' way of thinking and mental models of emotion expression. It is hard for designers to avoid the interference of values in design [10, 19]. Identifying design requirements for SNS from collectivistic cultures can provide specific insights on how interfaces could be altered to serve their truly international audiences. Co-design is a suitable method for exploring collectivist SNS users' preferences due to the fact that it allows users to get involved in a design process as a co-designer.

3 Methodology

This study applied co-design activities [20] with the value sensitive action-reflection model [25] to collect qualitative data from SNS users from collectivistic cultures. Co-design is a design method in the area of participatory design [20]. The main characteristic of co-design is the involvement of users as a part of the design team. The researcher plays a facilitator role to prepare, control, and communicate during the design process [21].

The value sensitive action-reflection model is a framework that adds the consideration of values to a co-design activity [25]. The model is an extension of co-design and value-sensitive design. In addition to previous methods, the model adds more consideration of human values, stakeholder and designer views, and as such is appropriate for exploring cultural values in design.

3.1 Participants

Six international students from collectivistic cultures participated in the co-design activities [10]. They were all from countries whose national individualism score was lower than 25, also known as intently collectivist. We conducted three co-design sessions. Each session consisted of the facilitator and a pair of friends with the same nationality, to ensure shared cultural and national experience between participants. The pairs of participants had a certain level of familiarity with each other to enable discussions especially on the topic related to relationship maintenance with close friends and family using SNSs.

The group of participants consisted of five graduate students and one visiting scholar, two males and four females. The participants varied in background – two English as second language students, one Educational Psychology student, two Computer Graphics Technology students, and one Geotechnical Engineering visiting scholar.

In term of nationality, two of the friend pairs were Chinese and one was Thai. Both China and Thailand are countries with an equally low score of individualism, 20 out of 100. For comparison, the United States scores 91 on the individualism-collectivism scale [10].

3.2 Environment

The facilitator hosted each co-design session in a quiet room where participants could talk freely. The facilitator prepared materials including sketching paper, different color pens, post-it notes of different sizes and colors, clips, tape, and scissors, for participants to use during the co-design activity. There was a large table with space surrounding it to enable movement. Consequently, each pair could easily grab tools to design and share the developing design with the partner.

3.3 Co-Design Activity

There were three main parts in the activity - design activity, stakeholder prompt, and designer prompt. The co-design activity started with the design activity by informing participants of the design topic “Designing a dream social media tool.” The participants were encouraged to design without the limitation of platform, type of devices, or number of devices. The target users of the design were international students who are studying in the United States. The designed social media tool aimed to help the target users maintain relationship with the following groups: family members who are living in the international students’ home countries and close friends who are living in the international students’ home countries.

The participants were asked to list the expected key functions for their dream social media tool. Then, they expanded key features for each listed key function. After that,

the participant required to create low-fidelity prototyping of their design using materials provided by the facilitator.

The second part of the co-design activity was the stakeholder prompt [25]. The purpose of the prompt was to reconsider the design from the perspective of the stakeholders. The facilitator randomly selected a user scenario from the collection, set of generated scenarios with a situation reflecting the collectivistic culture that required the use of the social media tool. The participants considered the scenario and were encouraged to revise the design as needed. After that, the facilitator asked for the explanation of how the person in the scenario could use the design.

The third step was the designer prompt [25]. The objective of the prompt was to consider designer concepts using envisioning cards [7]. The cards were developed using the concept of value criterion card [7]. The content on the cards contained concepts from area of social media or collectivistic culture. For example, some of the cards read, *“Group Opinion: A lot of people with close relationships are using social media to communicate with each other. Discussions to reach final conclusion for something are common. Feature that well support group action and group decision making will help to create great user experience.”*

Brainstorm to identify one or more design feature(s) to support group decision making.”

“Situation Awareness: Knowing of what other people is doing is one of the important benefits of social media. The information related to current situation of people with close relationships leads to more meaningful interactions and great user experience.”

Brainstorm three design features that help users (international students) to know the current situation of their friends and families living in their home country.”

The participants considered the concept on a randomly selected card. Then they were encouraged to revise the design as needed. After that, the participants clarified their design by answering the questions stated on the card.

3.4 Data Collection

The facilitator audio-recorded the conversations of all three co-design activities. During each session, the facilitator encouraged participants to talk out loud. Participants were encouraged to discuss their ideas, their experiences, and their expectations related to SNSs. When the participants created their design, the facilitator asked for clarification on unclear points in the design. The facilitator encouraged the participants to explain the underlying reasons for their design decisions. The facilitator also repeated her understanding to the participants to check if she understood correctly.

The duration of the co-design sessions ranged between 60 to 85 min with 225 min of audio record time in total. The facilitator also collected artifacts including lists of key functions, lists of key features, and finished low-fidelity prototypes, one of which is illustrated in Fig. 1.

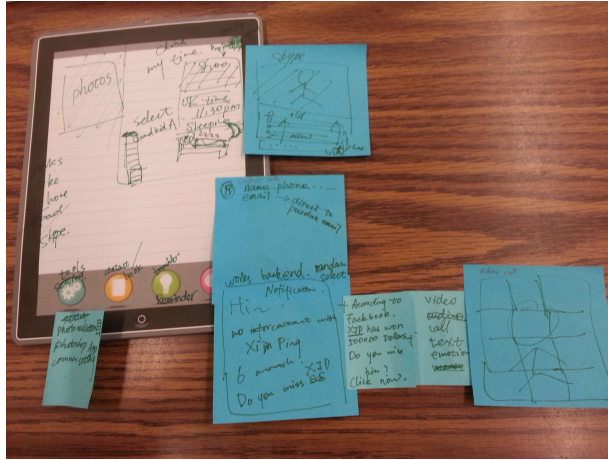


Fig. 1. Low-fidelity prototype from a co-design session

3.5 Data Analysis

One of the authors transcribed the conversations from the design activities. Then, the data including transcriptions, list of design functions, list of design features, and low-fidelity prototypes were analyzed using inductive thematic analysis [2]. Thematic analysis is a flexible analysis method, which allows the analysis across different types of data.

Initial codes were merged into themes. Then, we analyzed the social media design requirements from the themes and subthemes using theoretical thematic analysis [2] informed by collectivist cultural values.

4 Results

Four main themes emerged from the data analysis - media, cost, user-system interaction, and interpersonal interaction. The themes represent different dimensions of needs that the collectivistic international students expected to see in social media tools. There are also subthemes which are discussed in detail in this section.

4.1 Media

The media theme related to types of the media needed in social media tools for collectivistic cultures. The participants expressed the desire to have multiple types of media especially rich media including audio chat, video chat, group video chat, and fragrance transmission. Video chat was highly mentioned to be used as the main media. A group agreed that they did not need other communication functions if the video chat would be available.

Male: *Right. I don't need fancy functions. I only need to clearly see their face, clear picture, and clear voice. Then, all problems are solved.* [comments were edited for minor grammar issues]

Even if rich media was mentioned frequently, basic text media was still required. The participants needed written communication for situations such as communication in noisy environments, sending secret information, sending detailed information, and communication when both parties were not simultaneously available.

Female A: *So, how will you communicate with your lawyer in public places?*

Female B: *Texts... Yeah... I know I have to still use it. Oh, I think text is still necessary. They can leave me text if I am not available.*

4.2 Cost

The cost theme presented the need for free or inexpensive services for social media tools. Data transmission and software installation had to be free and easy, with no additional hardware costs.

Female A: *I think that the younger people will use the kind of thing like more fancy technologies.*

Female B: *They don't have to buy extra devices. They can download plug-ins to their smartphones or any device that they have currently. They can download software like....it's an app... We can design an app.*

4.3 User-System Interaction

The third theme describes the expected interaction between users and the imagined social media tool. The participants highly recommended the use of voice command as an alternative interaction. The participants would have liked the voice command to support multiple languages - English, English with foreign accent, and multiple accents of local languages.

Female A: *How about we add the audio control? Like some old people... they can not move like young people, even my parents. So they can say "call Female B's name", and they can call me.*

Male: *Thai-English. The tool should be able to understand Thai-English accent. (Laugh) Sometime it is too hard to understand the Thai-English accent.*

Female: *It also has to support different accents. China is big, and we have different accents.*

The system should be able to display text in both English and other alphabets. The participants mentioned they would like to have a language switching function. A translation function was required for communication with foreign relatives as well as for uncommon English words. Handwriting was also needed as an alternative input method.

The participants also focused on enabling easy interaction with the system for older adults. In addition to the voice recognition function, the participants also needed a smart system that could hide all technical details, so the elderly can operate it by unassisted.

Female: ...*or we have to have writing recognition for Chinese characters. My old grandparents, they don't know how to use Pinyin.* (A phonetic system using to input Chinese characters into electronic devices)

Female: *So, how the grandparents can do it (setup a Skype call) without any help. So, they can do it as many time as they want. Now my grandparents can only see me only when my parents do it for them.*

4.4 Interpersonal Interaction

The interpersonal interaction theme focuses on the interactions among users that were expected to be supported by the dream social media tools. The major discussion was about time management functions. The participants expected to communicate using rich media such as video chat and audio chat; however, those media required both parties to be available at the same time. Consequently, the problem was huge time difference between countries. The participants needed the social media tools to consider the schedules of both parties and suggest appropriate time slots to call. The participants also wished to have a way to reject incoming rich media calls during the predefined “Do not disturb” period. However, the participants mentioned that text messages should be allowed during that period.

Female: ...*The point is we are busy. Time difference. When she wants to call me, I am busy. When I want to call her, she is busy. So, when both of us are free, we don't know. She thinks I am busy. Maybe there is a calendar function. She inputs her schedule. I input my schedule. The phone compounds the schedule automatically and finds the time for us within a day that both of us are free. So, we can call each other.*

The participants needed a function to display the other users' status. The status included their current activities as they appear in their schedule, local time of both parties, and updated status acquired from other SNSs.

Female: *So my time...my China time is like 8am. And the time in UK is like.... I don't know. So, it shows that my grandkid is sleeping. It will be a picture of the boy sleeping in bed. Here is the blanket cover him. Let's say if my grandparents are not blind but they cannot read. Let's say they aren't educated at all, they can understand my kid is sleeping. I can't call him now.... Like that.*

A function to search for an existing friend was also required. The participants would like to search and add known friends from the existing databases. Manual search using real name as the keyword was preferable. The displayed friend list should provide at least the name and the picture of other users.

Social media tools should have clear boundaries between users with close relationship and other acquaintances. The participants divided people connected with them online into multiple groups basing on interpersonal relationships. They expected to treat and receive information from each group differently.

Female: *Yeah, this one is the mail screen when you open it. This square (top left of the designed screen) is for psychological need. I would like to relate to close friends and family. This square (top right) is for career. It is related to me. This (top left) is for relatedness. I would like to feel back up (supported) from friends and family. It is more important than work.*

For privacy and access, the participants would like to have the authority to prevent people from freely joining their group chat or group video chat as well as choices to decline or accept invitations. The participants also needed options to accept or reject media that are submitted to them before they can see the content inside.

5 Discussion

The researchers applied theoretical thematic analysis to the themes and subthemes that emerged from the data using concepts of collectivistic culture. Theoretical thematic analysis is the analysis method that allows researchers to analyze some specific aspect of qualitative data using a predefined coding frame such as concepts [2]. Collectivistic behavior in SNSs usage [4] was the coding frame used in our study. Three main design requirements for development of social media tools with the consideration of collectivistic culture were derived from the analysis.

First, social media tools have to support strong relationships within a group. The relationships among people in collectivistic cultures are often tighter than those in individualistic cultures. The media theme suggested that collectivists needed multiple types of media, especially video chat. Those media usually require synchronous communication. The requirement corresponds to findings in previous studies that people with closer relationships need multiple media to communicate [8], and video communication provides more feelings of closeness than other communications such as phone calls [14].

Moreover, the strong relationships in collectivistic cultures include cross-generational relationships. A lot of young people from collectivistic cultures wish to keep in touch with their grandparents. Social media tools with the consideration of collectivistic culture should support the communication between different generations, especially with elders. Design for aging is a challenging issue due to elders' physical and literacy limitations.

The second design requirement is the support for narrow relationships, high cohesive relationships but only within small groups [4]. The relationships among members of collectivistic cultures are often narrower than those in individualistic cultures. Our participants wanted to share personal data, but only with their own high-intimacy group. Being relationship-oriented was very important for the participants in our study, which is similar to behavior identified in other studies [15, 17]. In order to accommodate the use of collectivists, good social media tools need a content management function to show different information to different group of people based on interpersonal relationships. Multiple levels of content managements might be needed. A group close friends should be able to access different piece of information in comparison to a group of co-workers or acquaintances. Social media tools that consider cultural difference require features such as invitation and acceptance to let people make the decision for content management. Studies related to self-disclosure in collectivistic cultures support this requirement [7, 17].

As a way of supporting narrow relationships, social media tools with the consideration of collectivistic culture should accommodate local languages for both text

display and voice command. In many countries, the local language comprises of multiple accents. The tools should be able to support all major accents.

The last design requirement is the support of continuous relationship maintenance. Collectivistic cultures have high in-group cohesion. They would like to have situational awareness of in-group members and to make sure that all members stay in touch [12, 13]. To take collectivistic culture into account, social media tools should be able to monitor and display users' current status to provide situational awareness clues. Then, the user can adapt their role and behavior to the behavior of other people and the situation within the group, as collectivists usually do [12].

Moreover, collectivists would like to preform actions to let people in the group know that they are paying attention to them. The actions do not necessary need to contain rich meaning, such as sending an emoticon. The purpose of the actions is to signal the receivers that the sender does care of them [13]. Social media tools with the consideration of collectivistic culture should provide features to easily transmit the sense of attention and care.

6 Conclusion

The goal of this study was to understand the consequence of collectivistic cultural values on design requirements for development of social media tools with the consideration of collectivistic culture. The focus was international students from collectivistic cultures who were enrolled at a large state university in the United States. The researchers used a co-design activity [20] with the value sensitive action-reflection model [25] to collect qualitative data. Inductive thematic analysis [2] was used to analyze themes from the conversations during the co-design activities, key functions, key features, and the low-fidelity prototypes from the design result. Then, design requirements for social media tools for collectivistic cultures were extracted from the themes using theoretical thematic analysis [2] informed by collectivistic cultural values.

Four main themes emerged from the study - media, cost, user-system interaction, and interpersonal interaction. The analysis applying collectivistic cultural values suggested three design requirements. First, social media tools for collectivists have to support strong within group relationships. The tools have to provide multiple media types especially video chat. Elders should be able to use the tools by themselves.

Second, social media tools for collectivists should support narrow relationships. The tools should support multiple levels of content management to show different information to different group of people based on interpersonal relationships. Social media tools have to support local languages including different local accents.

Third, social media tools should help continuous relationship maintenance. The tools were required to have functions to monitor and display users' current status as well as to transmit expressions of attention and care.

The design requirements developed from this study can guide further designs of social media tools to be more collectivist-friendly. It is possible that the study results could be transferrable to the maintenance of bonding capital in individualist cultures as well. How-

ever, the current study considered only cultural dimension, individualism-collectivism. Other dimensions of culture related to personal relationships, such as power distance and uncertainty avoidance, should be taken into account in future work.

References

1. Anticoli, L., Toppino, E.: The role of culture in collaborative ontology design. In: Proceedings of the 2011 International Conference on Intelligent Semantic Web-Services and Applications, p. 4. ACM (2011)
2. Braun, V., Clarke, V.: Using thematic analysis in psychology. *Qual. Res. Psychol.* **3**(2), 77–101 (2006)
3. Burke, M., Marlow, C., Lento, T.: Social network activity and social well-being. In: Proceedings of the SIGCHI Conference on Human Factors in Computing Systems, pp. 1909–1912. ACM (2010)
4. Cho, S.E.: Cross-cultural comparison of Korean and American social network sites: exploring cultural differences in social relationships and self-presentation (Doctoral dissertation, Rutgers University-Graduate School-New Brunswick) (2010)
5. Coleman, J.S.: Social capital in the creation of human capital. *Am. J. Sociol.* **94**, S95–S120 (1988)
6. Ellison, N.B., Steinfield, C., Lampe, C.: The benefits of Facebook “friends:” Social capital and college students’ use of online social network sites. *J. Computer-Mediated Commun.* **12**(4), 1143–1168 (2007)
7. Friedman, B., Hendry, D.: The envisioning cards: a toolkit for catalyzing humanistic and technical imaginations. In: Proceedings of the 2012 ACM annual conference on Human Factors in Computing Systems, pp. 1145–1148. ACM (2012)
8. Haythornthwaite, C.: Social networks and internet connectivity effects. *Inf. Commun. Soc.* **8**(2), 125–147 (2005)
9. Hofstede, G.H.: *Cultures and Organizations: Software of the Mind*. Intercultural Cooperation and Its Importance for Survival, McGraw-Hill International, London (1991)
10. Hofstede, G.H.: *Culture’s consequences: Comparing values, behaviors, institutions and organizations across nations*. Sage, Thousand Oaks, CA (2001)
11. Institute of International Education. Top 25 Places of Origin of International Students, 2012/13–2013/14. Open Doors Report on International Educational Exchange. (2014). Retrieved from <http://www.iie.org/opendoors>
12. Khaled, R., Biddle, R., Noble, J., Barr, P., Fischer, R.: Persuasive interaction for collectivist cultures. In: Proceedings of the 7th Australasian User interface conference, vol. 50, pp. 73–80. Australian Computer Society, Inc. (2006)
13. Kim, H.S., Sherman, D.K.: Express yourself: culture and the effect of self-expression on choice. *J. Pers. Soc. Psychol.* **92**(1), 1 (2007)
14. Kirk, D. S., Sellen, A., Cao, X.: Home video communication: mediating ‘closeness’. In: Proceedings of the 2010 ACM conference on Computer supported cooperative work, pp. 135–144. ACM (2010)
15. Marcus, A., Krishnamurthi, N.: Cross-Cultural Analysis of Social Network Services in Japan, Korea, and the USA. In: Aykin, N. (ed.) IDGD 2009. LNCS, vol. 5623, pp. 59–68. Springer, Heidelberg (2009)
16. Putnam, R.D.: *Bowling alone: The collapse and revival of American community*. Simon & Schuster, New York (2000)

17. Qiu, L., Lin, H., Leung, A.K.Y.: Cultural differences and switching of in-group sharing behavior between an American (Facebook) and a Chinese (Renren) social networking site. *J. Cross Cult. Psychol.* **44**(1), 106–121 (2013)
18. Raacke, J., Bonds-Raacke, J.: MySpace and Facebook: applying the uses and gratifications theory to exploring friend-networking sites. *Cyberpsychology Behav.* **11**(2), 169–174 (2008)
19. Salvendy, G.: *Handbook of human factors and ergonomics*, pp. 162–168. . John Wiley & Sons, New York (2012)
20. Sanders, E.B.N., Stappers, P.J.: Co-creation and the new landscapes of design. *Co-Design* **4**(1), 5–18 (2008)
21. Sanders, E.B.N., Westerlund, B.: (2011). Experiencing, exploring and experimenting in and with co-design spaces. *Nordes*, (4)
22. Sawir, E., Marginson, S., Deumert, A., Nyland, C., Ramia, G.: Loneliness and international students: an Australian study. *J. Stud. Int. Educ.* **12**(2), 148–180 (2008)
23. Vitak, J., Ellison, N.B., Steinfield, C.: The ties that bond: Re-examining the relationship between Facebook use and bonding social capital. In: 44th Hawaii International Conference on System Sciences (HICSS), 2011, pp. 1–10. IEEE (2011)
24. Ye, J.: Traditional and Online Support Networks in the Cross-Cultural Adaptation of Chinese International Students in the United States. *J. Computer-Mediated Commun.* **11**(3), 863–876 (2006)
25. Yoo, D., Hultgren, A., Woelfer, J.P., Hendry, D.G., Friedman, B.: A value sensitive action-reflection model: evolving a co-design space with stakeholder and designer prompts. In: *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, pp. 419–428. ACM (2013)