

Understanding Sociability of Social software: An Exploratory Study

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ABSTRACT

In this paper, we describe the result of the first part of a continuous effort to identify and validate factors influencing sociability of online social software. The concept of sociability was first refined and then a series of interviews were carried out to gain understanding of how users use social software to facilitate their social interactions and social relationships maintenance. We also investigate possible factors influencing users' decision on choosing social software. The results yield qualitative data for developers to understand users' behavior and provide foundations for future empirical studies.

Keywords

Sociability, CMC, social software, usability

INTRODUCTION

Computer-Mediated Communication (CMC) has become an essential part of our daily social interactions. In China, the total number of Chinese netizens has reached 162million up to June, 2007. 69.8% of them chat online, 55.4% sending/receiving emails (China Internet Network Information Center, 2007). Today people not only use the internet to get information, but they also use it to talk with others, to work with others, to study with others, to socialize with others, and even to develop and maintain long term relationships and build up real social life online. The effect of Internet use on interpersonal communication, group working, collaborative learning and social relationships (Haythornthwaite and Wellman, 1998; Boneva *et al.*, 2001; Matei and Ball-rokeach, 2001; Nie, 2001; Haythornthwaite, 2002; Haythornthwaite, 2002; Nie and Hillygus, 2002; Haythornthwaite, 2005; Vetere *et al.*, 2005; Hayward, 2006) has been recognized. Although there are debates on the polarity of effects of the internet on interpersonal relationships and social capitals (Connell *et al.*, 2001; Matei and Ball-rokeach, 2001; Wellman *et al.*, 2001; Nie and Hillygus, 2002), it is obvious that more and more various social interactions and social relationships go online. The recent development of new social software under the name of web 2.0, such as wiki, blog, file sharing services and etc., expand the possibility for more various social interactions through the internet. However, as Krejins *et al.* (2002) pointed out, it should not be taken for granted that users will socially interact simply because the environment makes it possible. For the benefits of both developers and users, it is essential for human-computer interaction (HCI) researchers to study how to support mediated social interactions more effectively, or in other words, how to improve the sociability of these social software.

Though some design guidelines for creating social interactions have been proposed (Kollock, 1998; Kim, 2000; Preece, 2000), there is spare empirical study studying factors affecting perceived sociability of a system. Such knowledge, however, is important for providing solid guidelines and for developing valid instruments to assess the quality and to predict the success of social software. To address this void, we carried out a series of studies. This paper presents the results of the first effort we made. A series of structured interview was undertaken to investigate how users use social software for social interactions and networking in real life and to explore what factors affecting their decisions on choosing or abandoning social software. More specifically the paper makes the following contribution.

- We studied the amount of use and perceived importance of various communication media, including face-to-face interactions (FtF), telephone, short message service (SMS), email, instant messaging (IM), blog, online forum/bbs, social networking services (SNS), and online game, in people's social life. Communication purposes, audience and contexts for each tool were described, and communication characteristics and competency were compared. FtF is most important communication tools and considered appropriate for all audience, purposes and tasks, but they may not be the best choice for specific purposes and tasks. The use of any other communication tool covers a spectrum in terms of communication tasks, audience, and contexts, while centering on different aspects. People's selection of software seems depending on the perceived closeness of the relationship.
- Characteristics of communications using different social software were described and compared. Major dimensions identified by participants include depth of communication, timeliness, information bandwidth and richness, privacy control, trustworthiness of the system, and continuous effort required (as in blog, bbs, and SNS).
- Major factors influencing the usage of Social software include both technological issues (system stability, accessibility, ease of use, and etc.), and social issues (number of users, trustworthy environments, and etc.). Media richness and content quality stand out as the two most important factors. Factors influencing users to try and choose software are more related to issues, while factors influencing them to adopt or abandon software are more related to technical issues.

RESEARCH QUESTIONS

In previous literature, sociability has been defined either as a characteristic of individuals or a characteristic of environments. The former refer sociability to individual's ability to sustain and utilize one's social networks, and the latter refers to certain potential associated with an environment, which is also called system sociability. The latter perspective is adopted by HCI researchers. Kreijns et al (2002) defined sociability as the extent to which the computer supported cooperative learning environment give rise to a social space. More specifically, Preece (Preece, 2000) referred sociability to social policies that support the community's purpose. Both definitions are community-oriented. However, peer-to-peer internet applications like instant messaging (IM) may not be used to foster an online community, but it help people keep contact and communicate with their own acquaintance greatly, and is important to people's virtual and real social life. Therefore we found a broader definition of sociability needed. Based on the definition given Oxford English dictionary, we defined sociability as *the extent to which users are facilitated to carry out social interactions and to maintain social relationships using the system.*

This definition embraces both the sociological perspective and the technological perspective of CMC, which is consistent with Kreijns et al's (2002) approach. Some other researchers confined CMC sociability mainly to the sociological perspective, such as people, purposes and policies (Preece, 2000). However, we found the boundary between sociological and technological issues is often ambiguous. Sociological features, like responsiveness of the communications, may embody technical features (in this case, system speed) to a great extent. Another benefit of such an approach is the user-centered perspective it takes. Compared with a structural perspective relying on analyzing and counting sociability policies or features, such a perceptual approach enables measurement of the real effects on users and their interactions.

As a first attempt to identify the factors influencing sociability, the current study aimed to develop a preliminary understanding of how people interact with each other using different media and how to improve sociability of social software. The following research questions were explored in the study:

- How users utilize social software to support their social life?
- What are the factors influencing the decision of users on trying, using and abandoning social software, respectively?

DESIGN OF THE STUDY

The goal of the current study is to reveal as many factors affecting sociability as possible. To this end, a small number of face-to-face interviews with online society members were used in preference to questionnaire and other more strictly controlled methods.

Participants were selected at random from virtual and real social networks of the research team members, with an intention to cover a variety of age and occupations and to balance for the gender. Among the 35 participants, 17 are females and 18 are males, aged from 17 to 49 ($M = 24.7$). 20 participants are university students and the rest work in industries, schools, and governments. All participants have rich experience on internet or computers. They reported to be familiar with at least three types of online communication tools in list. A majority of participants (74%) have experience with internet communication for 5 to 8 years. Most participants (88.6%) use internet everyday, and nearly a third of them spend more than 5 hours per day on internet (68%).

Face-to-face or IM-based interviews lasted between one to two hours. Interviews were carried out at a variety of places, including Café, restaurant, office and dormitory. Measures were taken to minimize interruptions and noise. We use different interview platforms depending on different environments, such as Total Recorder in. Permanent audio/video records of interview processes were captured by laptop computers, cell phones, PDAs, or MP3s, depending on different locations and available devices.

At the beginning of each interview, we introduce the goal of the study and inform that the conversation would be recorded. Then participants were asked to fill a background questionnaire and to sign the informed consent. After that, participants were guided to describe their daily use and preference of 9 communication media, including face-to-face(FtF), telephone, SMS, email, IM, blog, BBS, SNS, and online games. Questions focused on the following aspects:

- Amount of use and importance to the overall social life of different media
- Communication purpose, audience, and context of different media
- Characteristics of communications using different media
- Preferences for different media

Then the participants were asked to list factors influencing their decisions on trying new social software, keeping on using social software and abandoning social software, respectively, in an open-ended way. After that, they were asked to evaluate 17 pre-determined factors in terms of the influence on their choice of social software. These factors included both technological issues and sociological issues. Finally we asked the participants' opinion about mobile social tools and influence on their life.

RESULTS

Amount of use in daily social interactions

FtF, phone call and SMS were considered as essential communication channels by every participant, and 33 participants out of 35 in total mentioned *web* as an essential channel as well. Among online social software, *E-mail* and *IM* were used by all participants. 80% participants were bloggers, 71% were BBS users, and 69% were SNS users. But only 10 participants were online game players. Regarding the amount of use, FtF was reported of the heaviest use as expected. Among the online social software, IM was reported to be of the heaviest use, followed by BBS. The average use time of both was longer than 50 min/day. This is in consistency with the result of BIGresearch's survey (available at <http://www.bigresearch.com/news/big062205.htm>) in 14000 participants. IM was found the most frequently used tool no matter in which age group. Especially among the 18-24 year-olds group, 78.4% were using *IM* frequently. Especially in China, the use of IM is prevailing. According to the national survey, nearly 70% Chinese netizens are IM users, whereas only 55.4% use email (China Internet Network Information Center, 2007). Although the sampling method and size of the current study provide little evidence to the overall figure of social software usage, it is interesting to note this interesting phenomenon that *IM* seems gradually substituting the dominant situation of *email*. One plausible reason might be the relative formal communication pattern of email. As the focus of online interactions move from work related issues to more social and entertaining issues, the informal pattern of IM satisfies the user needs better. Especially in cultures featuring a high-context communication style, like China (Hall, 1997), the synchronous communication via IM may provide more contextual information by enabling a continuous conversation, and this reduces the needs for explicit coding of information, which is often required for the effective use of email. The use of SNS was polarized. All university students (20 in 35) use SNS frequently and some of them are extremely heavy users (over 3 hours per day), while other people do not use it at all.

Communication purposes, audience and contexts of different media

In general, traditional communications (FtF and phone call) were considered more direct and real and rich in non-verbal cues, and communications via online social software were considered more informational, more relaxing, easier to expand one's social network through internet communication without limitation of time and places, but it is also easy to generate trust crisis.

As shown in Table 1, Different media have different communication purposes and contexts. FtF is considered appropriate for all situations, but most participants mentioned that FtF may not be the best choice for specific purposes and tasks. Any other communication tool covers a narrower spectrum of communication purposes and contexts, centering on different aspects. Email is mainly used for work or study issues, using a formal tone. Phone call and IM are proper for both formal and informal occasions, but phone call is used more frequently for formal issues whereas IM more frequently with informal issues. SMS, blog, BBS, SNS and online game are most usually used in informal occasions. BBS, email and blog are considered satisfying the information seeking need well. SMS, SNS and IM are mainly used to maintain relationship. In particular, IM is believed to be superior in emotional communications, exchanging support and getting company.

Table 1: *Communication contexts, audience and purposes of different media*

Tool	contexts	objects	purposes
a) Face to face	Any context	Anyone, especially familiar people	All kinds of communication including chat, work, etc.
b) Phone call	Formal and informal occasions, especially proper for emergent issues	Known people, (like family members, friends or colleagues)	Solve urgent problems, get fast feedbacks Chat, consultation, work, etc.
c) SMS	Relaxing, solving some temporary but not very complicated issues	Familiar people	Chat for fun, maintain and promote relationship, etc.
d) Email	Formal issues, (formal communication not so instantly needs reply)	Strangers, known people (workmates, friends in abroad, teachers, seniors)	Transfer files, communicate deeply, share information
e) IM	Relax	Known people and familiar people (Friends, workmates)	Transfer files, chat for fun, work, kill time, maintain relationship
f) Blog	Life issues, relax	Anyone	Show oneself, share information, maintain relationship
g) BBS	Informal and formal issues, relax	Anyone	Share information, seek for help, entertainment
h) SNS	Life issues, relax	Some with strangers, most with friends.	Show oneself, share pictures or interesting information, maintain or expand relationship
i) Online game	Relax	Most with strangers, some with friends	Pastime, play for fun, set up common topics, strengthen friendship

In particular, we found that the selection of certain media is closely related to the perceived closeness of the relationship. To illustrate such relationships clear, we divided people's social network into 3 categories- familiar people, known people, and strangers, and positioned different media according to their capability and properness to facilitate communication with different audience. As shown in *Figure 1*, FtF, blog and BBS are considered suitable for all kinds of relationships; phone call and IM are used often with known people and familiar people, but rarely with strangers; SMS is considered more suitable for familiar people. In particular, the targets of email are generally known people, but rarely familiar people, especially in young people. Some students said, "it is weird to send email to a close friend". SNS is used for both maintain existing connections and expand one's social network. In online gaming, communications take place mainly between strangers. But several participants also mentioned that sharing topics related to the game may help develop and strengthen new relationships among players who are previously strangers to each other.

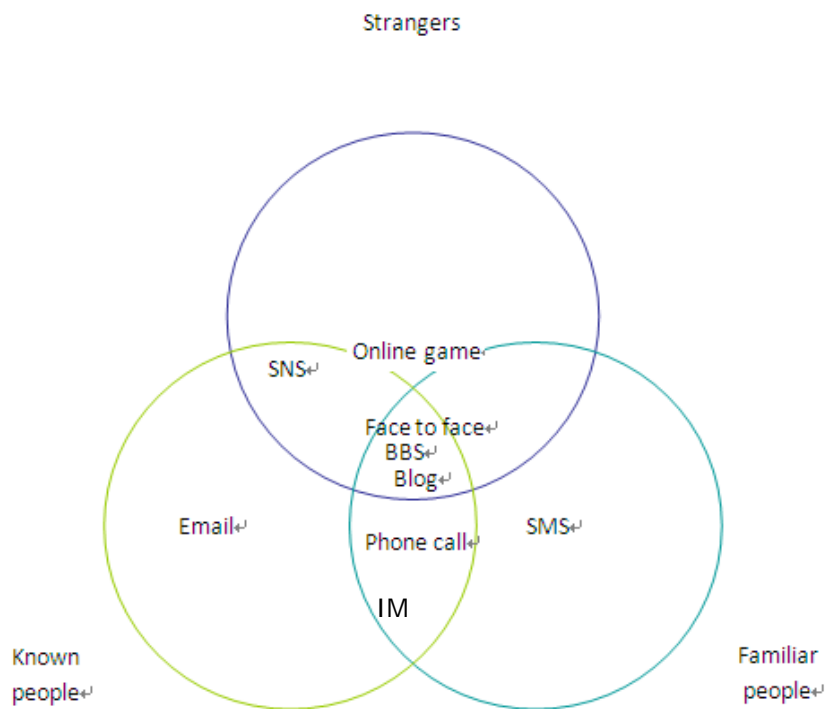


Figure 1: Personal social networks and communication media

Most participants thought existing social software could meet their requirements for various communication tasks, audience and contexts, but there are still concerns regarding security problem, system stability, difficulty and high time cost to build a stable and deep relationship.

Characteristics of communications using different media

Since there is a great diversity in functions, purposes, system restraints of different media, we need a general framework for analyzing the characteristics of different media. According to Richard (Richard, 2000), the social world can be conceptualized as a set of relationships within and between three orders: the individual order, the interaction order, and the institutional order. Based on this conceptualization, we specified four types of major social phenomenon and sorted characteristics of media addressed by participants into this structure: identity (individual), instrumental interaction (interaction), emotional interaction (interaction), and relationship (institutional).

- Email: It facilitates both instrumental and emotional interaction, due to its convenience to use, high accessibility of the service, good searchability, capability to attach big files, and provision of a permanent log of conversation; the asynchronous communication leaves users adequate space and time for thinking. This is good for formal communications, and also supports deep and detailed communication in friendship and other intimate relationships. On the other side, however, the asynchronous communication and junk mails were also blamed for low speed and efficiency for information exchange. In addition, some participants pointed out that the lack of contextual information leads to misunderstandings of the message, which weakens the effect of emotional interactions. Stability of the system is another big concerns for email systems.
- IM: IM is considered a versatile and money-saving channel for both instrumental and emotional interactions. In particular, the synchronous nature leads to less misunderstandings and the easy and relaxing atmosphere is good for emotional interactions. The large user base of IM applications and the function of buddylist also it an effective tool for maintaining relationship.

The disadvantages of IM include the need for simultaneous availability of partners and the requirement for common platforms/applications. Some complained some popular IM application on their instability and not being able to save permanent log of conversations online. Meanwhile, many participants mentioned that IM brings aimless and meaningless conversation among friends.

- **Blog:** blog is considered a good for building both virtual and real identities. It supports instrumental interaction greatly due to the ease of publishing and commenting and capability of transferring a large amount of information. It is considered especially helpful for deep communications, since the posting action encourages the writer to deliberately elaborate his/her ideas or feelings. Similar to IM, the large user base and the function of buddylist lends blog capability for relationship maintenance. In blog communities, the lack of protection of privacy is considered impeding emotional and personal disclosure. The lack of immediacy and interactivity also limits the effect of emotional supports. In addition, the unequal status of blogger and reader may limit the development of the relationship between users.
- **BBS:** The high informational value and searchability of BBS were well recognized by participants. These features support instrumental interactions significantly. It has potential for facilitating emotional interaction because the stable user composition makes finding friends with same interests easily. Similar to blog, the open space lacking protection of privacy of BBS and the low immediacy limits intimate interactions. Some participants complained that some BBS communities are unfriendly to novice users and easily brings flaming. The anonymity and low social responsibility makes public BBS or forum places lacking of trust and it is difficult to build real and lasting relationships.
- **SNS:** SNS is characterized by the high authority of identity. Members of successful SNS in China comes from mainly an identical group (for example, xiaonei.com only accept university students as members), so there is high similarity among members, which leads to a relatively high level of trust in the community. The relaxing and trusting environment is good for emotional interactions and support instrumental interactions among acquaintance as well. As its name implies, SNS is especially good for form, develop and maintain social relationships. As SNS develops fast, some users find they receive more and more spam and disturbances from unknown others. The communication in SNS is also reported to be often superficial.
- **Online game:** online game players share common topics (the game), and this could initiate interactions among strangers easily. The virtual environment makes it possible to build another totally different virtual identity, which cannot be achieved in real life. On the other hand, the virtual or often false identity makes relationships in online gaming also “virtual”. Friendship built in online gaming is hard to develop to real life.

Comparisons of sociability of different media

14 participants (40%) like IM the most, 10 participants (29%) preferred blog the most, and the next is email, with 8 advocates (23%). On the opposite, users’ least used and liked tool is online game. One reason for the negative attitude towards online game may be that only 10 participants were online game players. Among them, only one plays a lot. Besides the time-consuming playing and possibility of indulgence, many participants also mentioned that they don’t use it because it has negative social impact. The attitude towards SNS is polarized as the use of SNS. Among frequent users of confined SNS environments (university SNS), 3 participants reported that SNS is their favorite social software, whereas in infrequent users of public SNS services, 5 participants reported that they like SNS the least as a social communication tool.

Participants were asked to rank the perceived sociability of all communication media and the importance of these tools to their life. The ranking was averaged and final result is shown in table 2. FfF is no doubt ranked the top on both lists. It comprises verbal and nonverbal, auditory, gestural, and expressional communications, and accepted by most people at most contexts. Among online social tools, email and IM stand out from other tools. SNS have better sociability than blog, but blog seems to be more important in people’s life. In our interview, many participants mentioned that they use blog for express one’s emotion and relieve one’s feelings, but SNS are more likely to be a pure tool for maintain people’s relationship. The high importance of blog may be resulted from the need of identity building and promotion of individuals.

Table 2: Comparison between rank of social tools’ sociability and importance

Sociability		Importance	
Average rating	Rank	Average rating	Rank

Face to Face	1.914286	1	1.38095	1
Phone Call	3.771429	2	2.71429	2
SMS	3.914286	3	3.42105	3
Email	4.771429	5	3.94118	5
IM(text/audio/video)	4.228571	4	3.77778	4
Blog	6.057143	7	5.875	6
BBS	6.2	8	6.38462	8
SNS	5.457143	6	5.91667	7
Online Game	6.714286	9	7.6	9

Factors influencing use of internet social tools

Participants were first asked factors affecting their choice of social software in an open-ended way. The amount of friends in the system, ease of use, whether the function could meet one's needs and system speed were found influencing users' on either adopting or abandoning a tool. Additionally, accessibility influences a lot when people want to **promote** a tool to other friends, and friends' recommendation, curiosity, and innovativeness of the service influence users' decision on **trying** a new tool. Other reasons for abandoning a tool include forced add-ons or changes of the system, out-of-date content and technical defects.

Then the participants were asked to rating the influence of a list of technological and sociological factors on their decision on choosing software on 5 point scales. After the first round of analysis, we present some primary results here:

- The most important factor is information richness ($M = 4.3$, $STD = 0.20$) in software control or in social environment, followed by system stability ($M = 4.2$, $STD = 0.18$) and speed ($M = 4.07$, $STD = 0.23$). This result reflects that the technical capability of the system is fundamental to any successful social software or services.
- Following system speed are privacy control ($M = 3.8$, $STD = 0.32$), content quality control ($M = 3.8$, $STD = 0.32$), ease of use ($M = 3.6$, $STD = 0.37$) and composition of existing system members ($M = 3.6$, $STD = 0.35$). It is interesting to note that the composition of members (whether the site is open to students, white collars, other specific groups or general public) is rated a little bit higher than the total number of systems users ($M = 3.4$, $STD = 0.40$) and the number of acquaintance in the system ($M = 3.4$, $STD = 0.46$).
- Customizability of services (rating: 2.58) and entertainment value (rating: 2.59) receive the lowest score. Although both factors are considered important in improving user experience, they seems impose little impact on users' choice of social software.

FUTURE STUDY

The current study provides qualitative data with details for understanding how people use social software and what impact their decisions on choosing social software. The study yields a primary list of possible factors influencing the sociability of software is built upon the results. After pruning overlapping items and obviously too trivia items, we had a list of 34 items. To explore the structure of these items, we then designed a questionnaire based on the list and carried out a survey on the campus. We are now analyzing the result. The aim is to discover the structure of factors influencing the sociability of social software. A second round of validation is planned. Participants will be asked to review several major social software applications selected by the researcher using the questionnaire developed from the first round of analysis. The perceived sociability would also be collected. Multiple regressions will be conducted to assess the validity of these factors. The ultimate goal is to identify and validate those factors significantly influencing sociability of social software.

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