HOW DO DIFFERENT INTERNET USE FUNCTIONS AFFECT BRIDGING AND BONDING SOCIAL CAPITAL? AN EMPIRICAL STUDY OF THE CHINESE INTERNATIONAL STUDENTS IN JAPAN

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ABSTRACT

This study examines the relationship between Internet use and social capital in an intercultural context and investigates how different Internet use functions are related to social capital. Data were collected from the survey among 155 Chinese international students studying in Japan's universities. The results showed that Internet use intensity negatively influenced individuals' bonding social capital. It was also found that the use of the Internet for staying informed would have positive effects on bridging social capital. However, no significant relationship was found between using the Internet for interacting with others and the two types of social capital. These findings fill the gaps in existing studies on Internet effectiveness and help to provide knowledge about the influences of various Internet use functions on establishing and maintaining social ties.

Keywords: Internet Use, Internet Use Functions, Social Capital, Chinese International Students

INTRODUCTION

With the rapid development of information communication technology (ICT), new media research has occupied an important position in the area of computer mediated communication (CMC) (Miyata & Kobayashi, 2008; Steinfield, Ellison, & Lampe, 2008). Researchers are focusing on the consequences of Internet use, which makes the topics concerning its influence on individuals, communities, and the society more popular. Discussions about such consequences are hotly debated by cyber-pessimists and cyber-optimists. According to early studies, the influence of Internet use cannot be easily summarized with positive or negative results, but may depend on individuals' different Internet use behaviors (Miyata & Kobayashi, 2008; Steinfield et al., 2008; Williams, 2007), or the specific social environments and life situations they are facing (Ye, 2006). In this study, we focus on Internet use effectiveness and consider social capital, which has been commonly applied in related works, as the dependent variable. Although there is a considerable number of studies on Internet use and its influences on social capital using local or domestic college students as objects, little attention has been paid to international students. As sojourners in a host country, international students may encounter numerous difficulties in adjustment due to language barriers and cultural differences. Japan has

become a popular destination among Chinese students since the 1970s (Nyíri & Savelev, 2002). However, the geographical and cultural proximity of China to Japan did not lessen the anxiety of Chinese international students during their acculturation. With such easy access, the Internet breaks down the geographical restrictions and connects people with different social and cultural backgrounds. Using the Internet may help Chinese international students in Japan to create more social ties and support in the intercultural context. Therefore, the Internet may function in a particular way among international students. Considering this, Chinese international students in Japan become candidates for answering the research question regarding how Internet use influences the social capital of Chinese international students during their cross-cultural adaptation in Japan.

LITERATURE REVIEW

Defining Social Capital

Social capital is considered as an important resource in a social system (L. Zhao, Lu, Wang, Chau, & Zhang, 2012). Nowadays, social capital theory has been widely employed in social science studies. The multidimensional concept of social capital has been used to explain a broadening range of topics such as civic participation (Shklovski, Kraut, & Rainie, 2004), public health (Norstrand & Xu, 2011; Sum, Mathews, Pourghasem, & Hughes, 2008), and youth behavior problems (Valenzuela, Park, & Kee, 2009).

Coleman (1988) described social capital as the accumulation of interpersonal relationships and a concept paralleling financial capital, physical capital, and human capital. Unlike the financial capital emphasizing material goods and benefits, social capital has been construed as some psychological outcomes (Bargh, McKenna, & Fitzsimons, 2002; Bhattacharya, 2011), like emotional support, mutual trust, and the ability to mobilize others. Therefore, social capital provides a broadened view towards social life, which becomes one of the reasons for its popularity (Thompson, 2009). Similar to Coleman's (1988) statement underlying the social capital was inherent in the structure of relations and "not lodged either in the actors themselves or in physical implements of production", Bourdieu (1986) saw social capital as "the aggregate of the actual or potential resources which are linked to a durable network or a member group" (p.21) by focusing on the vertical social relationships among social classes.

Putnam (2000) agreed with the connotation of social capital as the relations within a social structure. He also pointed out that social network, reciprocity norms, and trust were three major components of social capital, and from an individual's perspective, based on the different types of relations, social capital could be categorized into bridging social capital and bonding social capital (Putnam, 2000).

Putnam (2000) described bridging social capital as the weak ties among network members. Although the weak-tie relationships may not provide as much emotional support as the strong-tie relationships do, because of the diverse backgrounds network members have, individuals may have more opportunities to broaden their horizons and receive informational help (Granovetter, 1973). By contrast, bonding social capital has been described as the strong ties among network members with high personal connectivity and trust (Putnam, 2000). Individuals with bonding social capital are likely to demonstrate similarities in their demographic backgrounds. By sharing interests and experiences, they will easily get not only informational help but also emotional support, which is also pointed out by Ye (2006) that the strong ties can satisfy individuals' emotional needs effectively.

Although the definition of social capital differs from researcher to researcher, the general opinion focuses on interpersonal relationships in a social structure and on utilizing these relationships for specific purposes. Moreover, the propositions about the category of social capital types provide a useful framework for measuring social capital at the individual level. Therefore, this study is based on previous works and explores how different types of social capital are influenced by individuals' diverse online behaviors. The measurement of social capital is adopted from William's (2006) study which has been frequently used in the analysis of the online era's social capital (Ellison, Steinfield, & Lampe, 2007; Steinfield et al., 2008; Trepte & Reinecke, 2013; Williams, 2007).

Internet Use and Social Capital

In media effect studies, the relationships between social capital and the traditional media (e.g. television) are hotly debated. Putnam (1995) proposed that television watching would diminish social capital because each hour spent watching television was associated with less social trust and lower group membership. Following Putnam's study, Kraut et al. (1998) investigated similar relationships concerning Internet use and found that Internet use not only decreased the degrees of social participation in communities, but also lead to the decrease of trust and the increase of loneliness. The above conclusions are

mostly developed from the time displacement hypothesis suggesting that the use of television or the Internet is more likely to decrease people's time with family and friends.

However, instead of approving the previous results, Kraut et al.'s (2002) study suggested that individuals using the Internet for heavy communication would benefit greatly in social involvement as well as well-being. This can be explained by the current situation that more and more people are involved in Internet use because of the advanced information technology, and online communications among friends and family members become the usual events. Meanwhile, the innovation of information technologies provides a cyber platform (e.g. SNSs) for people sharing similar interests to engage into social participations (Quan-Haase & Wellman, 2004). Therefore, it becomes more convenient for people to use the Internet to establish or maintain interpersonal relationships. Considering this, we propose the first research question as follows:

RQ1: Is individuals' perceived social capital influenced by their Internet use?

Recent findings show that, although the hours spent online may decrease interaction with people offline, it does not mean that social capital will simultaneously decline, because some old ties may be more easily maintained through online interaction, and latent social ties may be activated as well. Ellison et al. (2007) conducted a survey among Facebook users in the United States and examined the relationships between social media use and social capital. The results indicated that Facebook use was strongly associated with individuals' social capital and increased their bridging social capital. Therefore, we propose the following hypothesis:

H1: Internet use intensity will increase Chinese international students' perceived social capital.

Internet Use Functions and Social Capital

The existing relationships between Internet use and social capital cannot be limited to a linear model, because it may be more complicated than what we have imagined. Internet use is not one dimensional; for instance, an individual using the Internet for information seeking and another individual using it for entertainment may lead to different consequences.

According to the uses and gratifications theory, the audience does not passively accept media contents but use the media for many different purposes (Severin & Tankard, 1997). The theory suggests that the social and psychological outcomes of media use depend on a person's reasons and goals for using it. It is implied that the media plays a

functional role that can fulfill the audience's particular needs. Katz et al. (1973) identified 35 functions of the media and put them into five categories: cognitive needs, affective needs, personal integrative needs, social integrative needs, and tension release needs. In the current study, we consider the different functions of Internet use as mediators and ask the second research question as follows:

RQ2: Does the relationship between Internet use and perceived social capital vary according to different Internet use functions?

Drawing upon the uses and gratifications theory, Weiser (2001) used 19 items to describe Internet use functions and identified two major functions by factor analysis labeled Goods-and-Information Acquisition (GIA) function and Socio-Affective Regulation (SAR) function. The GIA function as a utilitarian or practical orientation indicates that informational or delayed gratification functions of Internet use; for example, the desire to stay informed is an important dimension of GIA function, and Internet use driven by GIA function will be positively associated with a person's social integration and psychological well-being (Weiser, 2001). However, the findings are in conflict with Zhao's (2006) results, showing that the heavy users who use the Internet for informational needs (e.g. web surfing) are likely to have fewer social ties than the light users. In the present study, we adopt Weiser's (2001) scale for measuring Internet use functions and propose the following hypothesis:

H2: Chinese international students' Internet use for GIA function will increase their perceived social capital.

The SAR function mainly reflects the existence of an affiliative or a kind of immediate social gratification underlying Internet use; for example, chatting online and interacting with others can be seen as important dimensions of SAR function. Weiser (2001) found that Internet use for SAR function negatively influenced individuals' psychological well-being by first reducing social integration. This was also supported by Zhang et al. (2006) after they examined the Socio-Affective model among Chinese college students. Data showed that Internet use for the SAR function lead to addiction behaviors and negatively affected users' social and psychological situations. We refer to the results and follow the perspectives of previous works to investigate whether the Internet functions in the similar fashion among international students. Therefore, we proposed the following hypothesis:

H3: Chinese international students' Internet use for SAR function will decrease their perceived social capital.

By reviewing the extant studies, we assume that, although some researchers have realized the necessity to discuss how Internet use affects social capital, some questions still need to be answered. Therefore, the present study attempts to build a comprehensive model and expects to provide an intercultural example for related areas. All the hypothesized relations of this study can be summarized in the model in Figure 1.

Figure 1 Theoretical Model of Relations among Internet Use, Internet Use Functions, and Social Capital

METHOD

Procedures and Participants

A survey was conducted, and data were collected within a 14-day period. Recruiting message with a short description, the confidential declaration, and the questionnaire's online address was posted on 7 online newsgroups developed by Chinese international students in Japan, and the paper questionnaires were also distributed to the Chinese international students at one of Japan's universities. Results showed that all of the participants finishing the paper questionnaires were Internet users. To examine whether there were any differences between the participants who finished the online questionnaire and those who completed a paper one, F-tests were conducted, and no significant difference was found between the two groups on the demographic variables. Lastly, a total of 155 Chinese international students (63 males, 92 females) from around 10 cities

of Japan completed the questionnaire about their daily Internet use and perceived social capital.

Measures

Based on previous studies, Internet use was measured by the total number of hours of Internet use per day (Ellison et al., 2007; Papacharissi & Rubin, 2000; Weiser, 2001; S. Zhao, 2006). The participants were asked to answer an open-ended question: “How many hours per day have you spent on the Internet in the past week?” the results showed that they used the Internet for an average of 3.99 hours each day.

Measurements of Internet functions were adopted and revised from Weiser’s (2001) scale. As reported by Weiser (2001), Internet functions can be divided into two categories and labeled GIA and SAR. We first adopted 7 items from Weiser’s (2001) scale. In addition, according to the study of Papacharissi and Rubin (2000), the item “One of the reasons why I use the Internet is to express myself freely” representing the interpersonal utility was also added to measure Internet functions. Factor analysis was used to achieve two components, explaining cumulatively 53.1% of the variance, which were also labeled SAR function (5 items, $\alpha = .72$) and GIA function (3 items, $\alpha = .60$).

As described by Ellison et al. (2007), social capital was measured by a modified version of the Internet Social Capital Scale (ISCS), which was first proposed by Williams (2006). We adopted 10 items suitable for Chinese international students to report their perceived bridging and bonding social capital. Through factor analysis, two components were obtained which were consistent with the previous study’s results of measuring social capital. The components can explain cumulatively 56.0% of the variance. They were also labeled as bridging social capital (7 items, $\alpha = .85$) and bonding social capital (3 items, $\alpha = .61$).

All the items measuring Internet use functions and social capital were evaluated by a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*) (see Appendix).

RESULTS

As shown in Table 1, among the total 155 participants with 63 male (40.6%) and 92 female (59.4%), age was distributed across levels. Most (61.3%) of the participants are newcomers (lived in Japan for less than 1 year), 37.4% of them have lived in Japan for 1 to 4 years, and 1.3% of them lived in Japan for over 4 years. Monthly expenses represented an international student’s economic status, and the results indicated that only

1.9% were in the group of over 150,000 YEN, 41.9% spent 30,000 YEN to 69,999 YEN, and 38.1% reported their monthly expense at the level of 70,000 YEN to 109,999 YEN.

Table 1 Demographic Information

Variable	n	%
Gender		
Male	63	40.6
Female	92	59.4
Age		
Less than 20 years old	4	2.6
20-24 years old	69	44.5
25-29 years old	73	47.1
30-34 years old	8	5.2
35-39 years old	1	0.6
Years of Residence		
Less than 1 year	95	61.3
1-4 years	58	37.4
4 years and more	2	1.3
Month Expense		
Less than 30,000 YEN	7	4.5
30,000 - 69,999 YEN	65	41.9
70,000 - 109,999 YEN	59	38.1
110,000 - 149,999 YEN	21	13.5
150,000 YEN and more	3	1.9
Educational Background		
Doctor course	56	36.1
Master course	38	24.5
Research student	26	16.8
Japanese language & culture student	20	12.9
Others	15	9.7

Note: n = 155.

Regarding Internet use intensity, the daily time spent online ranged from half an hour to 12 hours with an average of 3.99 hours per day. Regarding the frequency of Internet use, over half (53.5%) of the participants used the Internet several times per day, 30.3% reported that they used it once each day. The results suggest that Internet use has already become a routine for Chinese international students in Japan.

Prior to examining the predictive relations among variables, a Pearson correlation test was conducted. As the correlation matrix shows in Table 2, hours of Internet use was found to have a significant positive relationship with the SAR function ($r = .25$, $p < .01$)

and is significantly negatively correlated with the bonding social capital ($r = -.21, p < .01$). However, similar results were not found among hours of Internet use, the GIA function, and bonding social capital. On the other hand, the correlation coefficients showed that only the GIA function was positively correlated with bridging social capital ($r = .23, p < .01$).

Table 2 Intercorrelation among the Hours of Internet Use, Internet Use Functions, and Social Capital

	Hours of Internet use	SAR	GIA	Bridging social capital	Bonding social capital	<i>M</i>	<i>SD</i>
Hours of Internet use		.25**	.02	-.15	-.21**	3.99	2.23
SAR			.25**	.15	.04	3.25	1.11
GIA				.23**	.09	4.61	1.18
Bridging social capital					.39**	4.82	1.06
Bonding social capital						5.59	0.99

Note: $n = 155$; **. Correlation is significant at the 0.01 level (2-tailed); *. Correlation is significant at the 0.05 level (2-tailed).

In order to examine further the predicted effects of Internet use on perceived social capital, we performed regression analysis. First of all, the results supported that the SAR function was a significant predictor of hours of Internet use ($\beta = .25, p < .01$), suggesting that the more individuals use the Internet for SAR function, the more time they will spend online.

Moreover, the results in Table 3 showed that there were negative effects of hours of Internet use on bonding social capital ($\beta = -.21, p < .01$), but no predicated effect on bridging social capital, which rejected H1 and indicated that those who spent more time online would have less bonding social capital. On the other hand, H2 was partially supported by the results showing that using the Internet for the GIA function would increase bridging social capital ($\beta = .23, p < .01$), but had no effect on bonding social capital. However, the analysis failed to support H3, which showed that there was no effect of using the Internet for the SAR function on bridging social capital or bonding social capital. We can tell from the results that the more time individuals spend online, the less bonding social capital they will have, and the more they use the Internet for the GIA function, the more bridging social capital they will have.

Table 3 Regressions Predicting Social Capital

Predictor	Bridging social capital	Bonding social capital
	β	β
Hours of Internet use	-.15	-.21**
R^2	.15	.04
<i>Adjusted R²</i>	.01	.04
<i>F</i>	3.34	6.92**
SAR	.15	.04
R^2	.15	.04
<i>Adjusted R²</i>	.02	-.01
<i>F</i>	3.59	0.28
GIA	.23**	.09
R^2	.05	.09
<i>Adjusted R²</i>	.05	.00
<i>F</i>	8.63**	1.29

Note: n = 155; * $p < .05$. ** $p < .01$. *** $p < .001$.

DISCUSSION

Internet Use Intensity and Social Capital

In this study, the negative effect of Internet use intensity on bonding social capital was found showing that Internet use will reduce individuals' bonding social capital and implying that the excessive use of Internet will negatively affect the establishment and maintenance of strong ties in a foreign social environment. Similar results were found in Nie's (2001) study, suggesting that, because of the inelasticity of time, online activities would not make people more sociable, but lead to lower degrees of social connectivity. These findings support the time displacement hypothesis and suggest that interpersonal interaction and communication offline play essential roles for social network building, especially for the establishment of strong ties in a host country.

As described by Putnam (2000), bonding social capital included tight knit and emotionally close relations maintained with family members and friends. In comparison to the weak ties, the strong ties need more time and cost, thus it is necessary to generate enough mutual trust to establish bonding social capital. As the CMC weakened the geographical barriers, the easy access and low-cost characteristics indisputably make the

Internet the most convenient tool for international students not only to maintain existing relationships in the home country but also to build new ones in a host country. This can serve as an explanation for the high Internet penetration rate and long daily surfing hours ($M=3.99$, $SD=2.23$) of Chinese international students. However, the low costs may also mean that, among the online group members, there is less cohesion and social support (Williams, 2007). For the international students striving to overcome the language barriers, ideology differences, and the cultural shock, they need to spend more time than the local people to build enough interpersonal trust, but it is not easy for them to build new social networks in a host country. The newcomers are very likely to seek social support online from their old ties in their home country. The maintenance of old ties may help to reduce the mood disturbance, but may not foster the mastery of challenges they are facing in the new environment (Ye, 2006; Ying & Liese, 1991). Future research should consider international students' social ties both in the host country and their home country and try to pursue a thorough understanding of how new information communication technologies affect international students' social relationships.

In addition, in contrast to the previous study which indicated that Internet use decreased bonding social capital and increased bridging social capital (Williams, 2007), this research did not support the positive effect of Internet use on bridging social capital. The geographic move which makes online behaviors more complex might provide an explanation.

GIA Function and Social Capital

As pointed out by previous studies, discussions should also consider the situation in which the consequences of Internet use may vary according to different reasons and goals for using it (S. Zhao, 2006), because Internet use is not one dimensional. For instance, it is noted that only certain functions of Internet use will help people to accumulate and maintain weak social ties (Ellison et al., 2007). As depicted in Tables 2 and 3, GIA function positively relates to and significantly increases individuals' perceived bridging social capital. This indicates that Chinese international students using the Internet with a practical purpose may get a beneficial effect on maintaining and building their weak ties in a new environment. In other words, students who use the Internet for GIA function are more likely to see the Internet as a tool for acquiring practical benefits. Weiser (2001) explained that the GIA function seemed to characterize a broad class of uses that could be described as informational and practical: the more users comprehended and appreciated

the practical utility of the Internet as a mechanism for the acquisition of goods, informational, and services, the more likely they were to understand the importance of social involvement. As a result, international students, especially newcomers in a host country, will prefer to seek large amounts of acculturation information through online participation; for instance, looking for second-hand sale information from online communities. Internet use driven by the GIA function may also be seen as a positive attitude for staying informed with the world. The online informational exchange may enhance the connectivity of the weak ties among group members and provide them with information and supports for acculturation and adjustment.

SAR Function and Social Capital

The SAR function can be seen as a personal demand for meeting social and interpersonal need. The more people use the Internet for SAR function, the more likely they are to spend time online. Although they may have many-to-many interaction online, it does not mean individuals will interact with each other in the same way offline. Also, the excessive use or the addictive use of the Internet may cause users to indulge in the virtual space and reduce their enthusiasm to engage in real-world interaction. Prior studies have already suggested that Internet use driven by the SAR function does not help to generate social ties or make people sociable, since it reduces the amount of time socializing with people offline (Weiser, 2001; Zhang, Shen, Xu, Zhu, & Zhou, 2006). Weiser's (2001) study pointed out that the SAR function had a negative effect on social integration, which was confirmed by several follow-up studies. Early works also described the SAR function as an indirect role negatively affecting users' social and psychological well-being (Zhang et al., 2006).

However, the results of the current research did not show a significant negative effect of Internet use for SAR on individuals' perceived social capital. Contrary to the expectation, very weak positive correlations between the SAR function and social capital were found. We assume that the SAR function may reduce the degree of uncertainty and negative emotions of international students during their acculturation and adjustment. Therefore, a certain degree of potential negative effects may be offset by its positive effect on cross-cultural adaptation. For example, Ye (2006) found that, by participating in the online ethnic groups, Chinese international students in the United States gained more social support.

CONCLUSION

This study used Chinese international students in Japan as research objects in order to provide an intercultural example and enrich the related studies. How Internet use affects individuals' perceived social capital has been examined. The results show that Internet use intensity reduces individuals' perceived bonding social capital, which indicates that overuse of the Internet negatively affects the establishment and maintenance of strong ties in a host country. However, if an individual uses the Internet to stay informed about the world, it will cause a positive effect on bridging social capital.

This study also had some limitations. First, as mentioned before, many scholars use functions to explain individual behaviors on the Internet; however, the simple binary methods may be not strong enough to tell the whole story about Internet use and Internet effectiveness. Some scholars also try to apply the uses and gratifications theory to examine why and how people use the Internet, but its explanatory power is still low (LaRose & Eastin, 2004). An individual engages in Internet use not only because of his or her desire and needs, but also because of the influence from his or her environment, as well as their characteristics as a human being, such as personality traits. It will be significant to see how personal, environmental, and behavioral factors function synchronously on individuals' Internet use. Therefore, a more comprehensive research model such as the social cognitive approach is needed to explore how personal and social factors influence Internet use behaviors and outcomes.

Second, the Internet is a complex communication system containing various communication formats like textual communication, interpersonal communication, and organizational communication. Every application on the Internet may have unique mechanisms to differently influence users' personal and social conditions. For example, compared to blogs and online shopping websites, social network sites (SNSs) focus more on interpersonal interactivities and recreation, which may have more significant contributions to individuals' social relationships. Therefore, in future research, in order to obtain detailed information and deeper understanding about the effectiveness of new communication technologies, different kinds of Internet-based applications should be taken into consideration.

Third, this study only investigated Internet use and its outcomes regarding Chinese international students in Japan. It will be meaningful to explore how Internet use functions differently influence social relationships of Chinese students in host country and those in home country. Comparative studies should be considered in future studies.

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APPENDIX

Questionnaire Items and Factor Loadings

Variables	Items	Factor Loading
Functions		
SAR	One of the reasons why I use the Internet is to chat on-line.	.57
	One of the reasons why I use the Internet is to express myself freely.	.83
	One of the reasons why I use the Internet is to meet similar others.	.86
	One of the reasons why I use the Internet is to watch entertaining content (e.g., TV series, movies, pornography).	.56
	One of the reasons why I use the Internet is to play interactive games.	.55
GIA	One of the reasons why I use the Internet is to just look around.	.54
	One of the reasons why I use the Internet is to stay informed with world news.	.84
	One of the reasons why I use the Internet is to search for hard to find items.	.80
Social Capital		
Bridging	I am interested in what goes on at my university.	.68
	I feel I am part of the community of my university.	.73
	My university is a good place to be.	.66
	Interacting with people at my university makes me want to try new things.	.72
	I am willing to spend time to support general university activities.	.83
	If I have enough money, I would be willing to contribute money to my university after graduation.	.60
	At my university, I come into contact with new people all the time.	.71
Bonding	If I need an emergency loan of 10,000 YEN, I know someone at my university I can turn to.	.75
	There is someone at my university I can turn to for advice about making very important decisions.	.77
	I know people at my university well enough to get them to do anything important.	.67