Gratifications & Loneliness as Predictors of Campus-SNS Websites Addiction & Usage Pattern among Chinese College Students

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A Graduation Project

Presented to the Faculty of the Graduate Scholl of
The Chinese University of Hong Kong
in Partial Fulfillment of the requirements
for the Degree of

Master of Science
In
New Media

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School of Journalism & Communication
The Chinese University of Hong Kong
May 2009

Executive Summary

Based on the case study of Xiaonei.com, the most popular campus social network service website in China, this study investigated the relationship between perceived gratifications, loneliness and the addictive usage of campus-SNS websites. A focus group was conducted to examine the perceived gratifications of the campus-SNS website uses. The revised Young's (1996) Internet Addiction Test (IAT) and the UCLA Loneliness Scale (Version III) were applied to measure a random sampling of 335 Chinese college students. The results show that the utmost perceived gratifications of the students' uses of campus-SNS websites are to know what's new about their classmates and friends, and to communicate with others. Campus-SNS website addicts tend to be female, young and have used the campus-SNS websites for relatively a long time and frequently visit the homepages of others. More importantly, loneliness was found to be a significant predictor for the campus-SNS website addiction.

Introduction

Social Network Service (SNS), with an interactive platform for people who have similar interest, facilitates the communication by email or instant messages and the common sharing of photos, videos, files, blogs and application services.

The first SNS-based website of "UU Zone" in China was brought into being in late 2004. Till now, there has been hundreds of SNS websites in China. Considering the user scale and operation status, Campus-SNS attracts most social focus for its audience orientation and active user resource. Descriptive survey data released by the National Development and Reform Commission showed that the total number of college students in China was about 18,493,000 in 2007, with 17,388,000 undergraduates and 1,105,000 graduates respectively. And till now, the total number has reached 230,000,000, which ranks first all over the world. Correspondingly, the target market they build up is believed to increase in scale and potential power. This also predicts the big potential market and favorable development foundation of the campus-SNS.

The amount of users is the golden ruler for measure whether a SNS website is successful or not. The SNS community is the online version of the real-life personal network. When one is thinking about which SNS website to use, he/she not only refers to personal preference but also put more consideration in that which SNS website attracts most friends in his/her real life. Word-of-mouth communication among college students is one of the best promotions. Compared with its rivals, Xioanei.com takes up a quite favorable place in market.

Xiaonei.com, a campus social network service (campus-SNS) website developed by some college students from Tsinghua University and Tianjin University, has played a dominant role in the congener websites designed for Chinese students. Xiaonei.com holds around 75% of the Campus-SNS market share, covering up to 3,000 domestic universities, 8,000 high schools, 7,000 companies, as well as 1,000 schools in 12 foreign countries. The amount of its real-name registered accounts is more than 15,000,000 including over 8,800,000 active accounts. According to the report statistics of Alexa (provided on Feb. 22, 2008), the IP visits and PV (page view) of Xiaonei.com accounted around 456,000 and 10,168,800 per day respectively.

In Xiaonei.com, the rule of "close registering" is strictly implemented, which is greatly different from Facebook. Because of the real-name registration system, the biggest distinction between Xiaonei.com and other SNS websites is "eliminating virtuality and establishing reality". Under this condition, users of Xiaonei.com make acquaintance with other undergraduates or graduates. They together build up "compeer groups" with similar background information which is propitious to the birth of their own "subculture". With common communication context and high trust degree, members of the compeer groups are correspondingly inclined to have mental consensus towards each other. Moreover, the individual roles under real-name registration system are replanted from the corresponding roles in real life, which lays a negative impact on the online unethical behaviors.

With the growing popularity of Internet, "internet addiction" among the young becomes a hot research topic and an alarming social problem. According to the report

from China Internet Network Information Center (CNNIC), the total number of Chinese netizens in 2004 reached 90,000,000, of which 37.3% belonged to the young group (between the age of 18 and 24) and 17.6% were teenagers (under the age of 18). Besides, 76% of the student netizens got addicted to online chatting; 46% of them were engaged in online pornography at least once and 35% of them had much impulsion for online games. Internet addiction, a new research area with no more than 10-year history, attracts most research to focus on its definition and how to cope with it but little research efforts on the relationship between personal psychosocial traits and addictive usage. The broad existence of Internet addiction gave supports to the necessity and importance of a particular research on SNS website addiction.

Thus, based on the case study of Xiaonei.com, this exploratory research is to examine: (1) the gratifications of the Chinese college students involved in usage of campus-SNS websites; (2) to what degree the Chinese college students get addicted to campus-SNS websites; (3) the correlations among perceived gratifications, loneliness, campus-SNS websites addiction and campus-SNS websites usage pattern.

Theoretical frameworks

Uses and Gratification Theory and Internet

In 1974, Blumler, Gurevitch and Katz studied on the U&G theory and focused on the media functions. They outlined five sorts of gratifications gained by audiences through media texts: escape, social interaction, identity, inform and educate, and entertain. In early1980s, the concept of socialization and media consumption were proposed by Palmgreen and Rayburn (1982). Generally speaking, much research attention was drawn to the motivation of audience. In 1984, Bryant and Zillmann examined the relationship between audiences' psychological characteristics and their television selection. They stated that the television viewing "can greatly alter viewers' level of arousal, and hence, influence their affective and emotional behavior" (p.1). Besides, Rubin (1984) furthered the study on audience and the U&G theory. He emphasized on audience motives and examined two types of television viewers: instrumental and ritualized viewers (p.69). Rubin's study (1984) indicated that more tests should be taken in terms of audience activeness.

With the emergence and development of the Internet, the research on U&G theory represented new traits. The Internet provides users with plenty of information and entertainment with no encumbrance of distance and time. Many concepts regarding to U&G theory and the Internet have been taken into deep analysis. According to Ruggiero's research on the U&G theory in 2000, Internet users could gain different levels of interactivity which "offers the means to develop new means of communication" (p.15). There were also some researches conducted on the personal

characteristics of the Internet users. Finn (1997) examined five types of characteristics in his research: neuroticism, extroversion, openness, agreeableness and conscientiousness, but he found it difficult to find "a theoretical link to every type of communication activity" (Finn, 1997, p. 524). Many previous researches gave evidence to that the Internet played a positive role in alleviating loneliness and depression. As Papacharissi and Rubin (2000) stated that the Internet provided "social presence…a sense that others are psychologically present and that communication exchanges are warm, personal, sensitive, and active" (p.177). With its anonymity and multiple arrays of social connection, the Internet has produced new traits to the online identity. This new identity enables the Internet user to remodel himself/herself online and establish a more socially connected self than what he/she actually is in reality. The U&G theory is so practical that researchers continue to apply it to the Internet usage and new media researches. For example, Leung (2001, 2002) studied ICQ-using and John Dimmick (2007) examined personal network and the interactive communication media usage.

The U&G theory tries to explain why people are engaged in particular types of media with initiatives and at the same time actively absorb certain amount of messages to gain some level of gratification. Accordingly, the present study asks:

RQ1: What kinds of gratifications can users gain from campus-SNS websites?

Loneliness

Loneliness can be defined as "the perception of isolation from others that may

be real or imagined and causes feeling of sadness, depression or anxiety[1]". Despite the significant relationship between loneliness and individual life regardless of demographic traits, the subject of "loneliness" hadn't drawn much research attention until 1970s. It was the publication of the UCLA Loneliness Scale (Russell et al., 1978) that motivated researches on loneliness to blossom. Previous researches on psychosocial well-being and communication skills gave support to the claim that the more loneliness an individual suffered from, the lower level of his/her social competence would be (Anderson & Arnoult, 1985; Berg & Peplau, 1982; Chelune, Sultan, & Williams, 1980; Jones, 1982; Jones et al., 1982; Solano, Batten, & Parish, 1982; Prisbell, 1988; Segrin & Flora, 2000; Spitzberg & Hurt, 1987; Vitkus & Horowitz, 1987; Wittenberg & Reis, 1986). For example, Spitzberge & Hurt, (1987) found that the degree of loneliness had negative relationship with interpersonal competence and skills. In another study on loneliness and interpersonal skills regarding dating skills, people with high level of loneliness were found to experience greater difficulty and have less interest in face-to-face social communication activities than those with low level of loneliness (Prisbell, 1988). What's more, Segrin and Flora (2000) indicated that people with weak social competence and skills were more vulnerable to the development of psychosocial problems (i.e., loneliness, depression, and social anxiety).

[1] "loneliness" A Dictionary of Public Health. Ed. John M. Last, Oxford University Press, 2007. Oxford Reference Online. Oxford University Press. Chinese University of Hong Kong. 11 February 2009 <http://www.oxfordreference.com.easyaccess1.lib.cuhk.edu.hk/views/ENTRY.html?subview=Main&entry=t235.e2624>

Concerning the theories of loneliness, Perlman and Peplau (1982) endowed loneliness with eight kinds of different theories: psychodynamic, phenomenological, interactionist, existential, privacy, general systems theory, sociological explanations and the cognitive approach. Cutrona (1982) indicated that certain cognitive processes about precipitating events (i.e., parental problem, medical discomfort, breakup of a romantic relationship, school related difficulties or loss of a friend) may result in some level of loneliness. Generally speaking, the feeling of loneliness is a subjective perception totally depending on how the individual achieve the understanding of social relationship.

College students seem to be susceptible to the feeling of loneliness, especially the freshmen who are separated from their parents for the first time. Enlarged need for care and relationships led in high level of loneliness in young adults (Cutrona, 1982). Jackson, J., Sanderlind, A., & Weiss, K.E. (2000) also examined some levels of loneliness during the first several weeks among college students. Therefore, there were a real percentage of college students who could not adjust even after their freshman year (Shaver et al., 1985).

There are many mental variables connected with loneliness including inadequate social skills, emotional arousal and conflict, poor social self-regard and negativistic attitudes (Jones, 1985). In 1986, Wittenberg and Reis made a study on how well the roommates performed in establishing interpersonal relationship in the first college year and found that those college students who felt lonely tended to lack required communication skills to form friendly and close relationship with others.

Moreover, the lonely individuals were reluctant to be engaged in some social occasions and activities mostly because of their lacking confidence in themselves and others (Hansson & Jones, 1981). Even when the lonely individuals participated in some social communication, they seemed to be more easily influenced by others and not to stick on their own opinions. However, Vitkus and Horowitz (1987) affirmed the reason why the lonely individuals performed laggardly in establishing relationship with others lay in their passive role but not lacking social skills.

Hypothesis 1: The lonelier a user is, the more the user will use campus-SNS websites.

Internet Addiction

Computers and Internet are widely used in people's daily lives. According to the 23rd Statistical Report on the Internet Development in China released on 13th Jan. 2009 by CNNIC, by the end of 2008, the Internet penetration of China had reached 22.6%, which for the first time exceeded the average global penetration of 21.9%. With the popularity of computers and Internet, the misuse of them is drawing more and more attention from the research field.

Generally speaking, the concept of addiction has been employed to broad use of Internet. Young, et al. (2000) claimed that "Internet addiction was a broad term that covers a wide variety of behaviors and impulse control problems" and elaborated five common subtypes of internet addiction: cybersexual, cyber-relational, net compulsions, information overload, and computer addiction.

The addiction occurs in almost every region and country all over the world, but most of the cases exist in those places where computer and internet access are easy to achieve. Previous researches have given evidences to the relationship between easy internet accessibility and overuse among university students (Morahan Martin & Schumacher, 2000). When the access becomes easy and free of charge, the possibility for university students to be addicted to Internet gets high (Kandell, 1998). Internet usage has been becoming increasingly popular on college campuses these years. In spite of no consensus on the diagnosis of Internet addiction, some researches on its symptoms had been conducted. Kandell (1998) applied the term of "psychological dependence" and described four characteristics related to Internet addiction as follows: (a) an increasing investment of resources on Internet-related activities, (b) unpleasant feelings (e.g., anxiety, depression, emptiness) when offline, (c) an increasing tolerance to the effects of being online, and (d) denial of the problematic behaviors. He also believed that college students were more vulnerable to "pathological Internet use" because of "the psychological and developmental characteristics of late adolescence". In addition, Young (1998) asked respondents to tell what they were avoiding when they got immersed in online activities on their own initiative and found out "avoidance" as the drug of the Internet. Internet users turned their interest to faceless online communication and were trying to avoid something they didn't want to face head on, e.g., "loneliness, marital discontent, work-related stress, boredom, depression, financial problems, insecurity about physical appearance, anxiety, struggles with recovery from other addictions and limited social life".

Several kinds of instruments have been developed to assess Internet addiction. Egger and Rauterberg (1996) invented a 46-item instrument to assess internet behavior and addiction but without mentioning psychometric measurement. One year later, Brenner created a 32-item questionnaire named the Internet Addictive Behavior Inventory (IRABI). A breakthrough in assessing Internet addiction was brought by Young (1998). Young included a 20-item Internet Addiction Test (IAT) in a self-help book aiming at (1) helping people to use the criteria in self-checking, (2) helping addicts to identifying the areas most impacted by the excessive Net use; (3) helping people to find out whether their family members or friends are suffering from Internet addiction or not. The IAT is widely accepted as valid and reliable. Young later presented another term for Internet addiction, called Problematic Internet Use (PIU). According to this definition, respondents who meet five of eight criteria are considered as addicts. These 8 criteria are: (1) preoccupation with Internet, (2) need for longer amount of time on line, (3) repeated attempts to reduce Internet use, (4) withdrawal when reducing Internet use, (5) time management issues, (6) loss of a significant relationship (job, educational or career opportunity), (7) deception around time spent online, (8) mood modification through Internet use.

In terms of the relationship between loneliness and internet usage, many previous researches reported the correlation between them (Moody, 2001; Morahan-Martin & Schumacher, 2000; Young, 1998). Kraut et al. (1998) conducted a study on the relationship by observing 93 families' using Internet and found that the increases in loneliness went along with the decreases in communication with family

members. Kraut et al. (2002) disaffirmed the link between loneliness and Internet usage and suggest that as the newness and uniqueness wear off day by day, the Internet users would turn interest to other more rewarding activities. Besides, McKenna et al. (2002) found that only 6% of Internet users felt lonely compared with 47% of them who believed that Internet usage helped to reduce the feeling of loneliness.

There is still no common agreement on the definition or distinction of Internet addition as well as the relationship between psychological traits and various aspects of Internet usage. Based on these theoretical frameworks, this exploratory study also poses the following hypothesis and research questions:

Hypothesis 2: There is a positive relationship between loneliness and their campus-SNS website addiction degree.

RQ2: In what way do campus-SNS website addicts differ from non-addicts in terms of demographics, loneliness, and usage pattern?

RQ3: To what extent can gratifications, loneliness and demographics predict their campus-SNS website addiction?

RQ4: How do the campus-SNS website addiction, gratifications, loneliness and demographics influence their use of campus-SNS websites?

Materials and Methods

Sample and data collection

Data for this study was collected from a sample of 335 Chinese college students mainly ranging in age from 19 to 28 who had registered and used Xiaonei.com, in which 56% were female (n=188) and 44% were male (n=147). The sampling process lasted for 2 weeks from 30th March to 12th April 2009. An independently-developed software was used to randomly send invitations with the online questionnaire link to Xiaonei.com users. About 1000 invitations were sent and the response rate was 25.9% with 259 responses. Another 143 responses were gathered by offline snowball sampling way. Totally the number of responses was 402, including 67 invalid ones. In terms of education level, 8.7% of the respondents were Year-1 students, 4.8% were Year-2 students, 12.2% were Year-3 students, 30.1% were Year-4 students, and 44.2% were postgraduate or above. The mode monthly family income was in the range of 2001-5000RMB. Among all the respondents, 54.6% lived in school dormitories, 27.2% rented houses for accommodation, 17.3% lived at home, and the remaining 0.9% chose other forms of residence.

Measurements

SNS website addiction. SNS website addiction was measured basically by Young's Internet Addiction Test (IAT) with some necessary modifications. Eight questions were asked to test their possible internet addiction. A five-point Likert scale was applied in rating 18-item scale, namely "1" means "rarely" and "5" means

"always". Eight items were chosen from the 18 according to Young's screening instrument for addictive Internet use. Responses were recoded "1, 2" to "no" to the responses of "3, 4, 5" to "yes". Respondents who gave five "yes" or more were considered as "addicts". The 8 questions included: (1) Do you feel preoccupied with Xiaonei.com when being log-off, or fantasize about being log-on? (2) Do you find yourself saying "just a few more minutes" when on Xiaonei.com? (3) Do you try to cut down the amount of time you spend on Xiaonei.com but fail? (4) Do you feel depressed, moody or nervous when you are off Xiaonei.com, which goes away when you log on it? (5) Do you find that you stay on Xiaonei.com longer than you intended? (6) Do you snap, yell, or act annoyed if someone bothers you while you are on Xiaonei.com? (7) Do you try to hide how long you've been on Xiaonei.com? (8) Do you block out disturbing thoughts about your life with soothing thoughts of Xiaonei.com?

User and Gratifications: In the early stage, a focus group was conducted among 15 Chinese students who have registered Xiaonei.com to gather information on major purposes of their use of Xiaonei.com. Ambiguous and repetitive answers were eliminated. Thus, there were eight foremost gratification/purpose statements: (1) to know what's new about my classmates and friends, (2) to communicate with my classmates and friends, (3) to know what the hot topics are, (4) to participate in entertainment activities, i.e. testing, voting, and games, (5) to make new friends, (6) to show myself in blog and photo album, (7) to share posts and videos, and (8) to organize activities. A five-point Likert scale was used in rating these eight

gratification items, namely "1" represented "strongly disagree" and "5" meant "strongly agree".

Usage attributes of SNS websites. In order to find out possible relationship between internet usage and their Xiaonei.com usage, respondents are firstly asked to report: (1) the place in which they usually get access to Internet, (2) the broadband access they use, (3) how often they go on Internet, (4) how long they stay online in a single day. They were further asked to report their ideas about the seductive properties of Xiaonei.com by following questions: (1) the roles Xiaonei.com plays in their lives, (2) the frequency of their visits to different sections (blog, photo album, groups, gifts, flea market, and movie) on Xiaonei.com (five-point Likert scale), (3) how many people in their buddy list on Xiaonei.com are their friends in real lives, (4) how many friends they have on their Xiaonei.com, (5) what do they often use as personal image on Xiaonei.com.

Usage pattern of SNS website. SNS website usage pattern was measured by asking respondents the following questions: (1) how long they have used Xiaonei.com, (2) how many times per week they use Xiaonei.com, (3) how long they use Xiaonei.com in each session, (4) how often they update the content of their own Xiaonei, (5) whether they often go to visit others' Xiaonei or not? and (6) how often they send gifts on Xiaonei.com.

Loneliness. Loneliness was measured by using UCLA Loneliness Scale (Version III). Respondents were asked to report how they feel in the given 20 scenes concerning interpersonal communication and relationship in the questionnaire. A

four-point scale was applied, namely “1” represented “never”, “2” represented “rarely”, “3” represented “sometimes”, and “4” represented “often”. The mean of the respondents’ loneliness score was 55 (SD=7.24) with alpha equal to 0.78. Russell (1996) suggested that high scores indicated greater degrees of loneliness. Thus, in this study respondents who scored one standard deviation above the mean were more likely to be chronically lonely, the situationally lonely group scored above the mean and below one standard deviation adding the mean, and nonlonely people scored below the mean. Therefore, 10.1% of the respondents were defined as chronically lonely, and another 49% were classified as situationally lonely, and the remaining 40.9% were the nonlonely people.

Demographics. Demographic variables were measured in this study as control variables, including: gender (female=1), age, year in school, residence, and family income.

Findings

Hypotheses Testing

H1 predicted that the lonelier a campus-SNS website user is, the more he/she uses the campus-SNS website. Table 5 shows that loneliness was significantly related to the frequency of using campus-SNS website ($r=0.20$, $p<0.01$) and the length of using for each time ($r=0.34$, $p<0.01$). H2 hypothesized that there was a positive relationship between loneliness and the campus-SNS website addiction degree. Campus-SNS addiction test include 18 items; the higher the score, the higher tendency to have addictive symptoms. As shown in Table 4, a significant link was found between these two elements ($r=0.39$, $p<0.01$). As a result, both H1 and H2 were supported.

Gratifications of Campus-SNS Websites Uses

Three major gratifications of Xiaonei.com using were found based on the eight motives obtained in the focus group: (1) “Relationship maintenance gratifications” include “to know what’s new about their classmates and friends”, “to know hot topics” and “to show him/herself”. This category explains the gratifications the users gained from maintaining and reinforcing their established interpersonal relationship on campus-SNS websites (Cronbach’s alpha=0.81). (2) “Social activity gratifications” include “to participate in entertainment activities”, “to share posts and videos” and “to organize activities”. This category indicates the enjoyment, relaxation, fun, and good time the users gained from social activities (Cronbach’s alpha=0.78). (3) “Relationship building gratifications” include “to communicate with their classmates and friends” and “to make new friends”. This category refers to the gratifications the users gained from enlarging their personal networks on campus-SNS websites

(Cronbach's alpha=0.48).

<Insert Table 1 about here>

Profiles of Campus-SNS Website-Addicted College Students

As shown in Table 2, 42.1% of the total 335 respondents get Internet access in dormitories, followed by 38.5% at home, 11.3% in school (IT center or library), and 1.8% in netbar. ADSL took the significantly largest portion in terms of broadband access. Most of college students went online every day (M=3.89, SD=0.36) and stayed online for more than five hours (M=3.24, SD=0.89). The role of Xiaonei.com of being a tool to communicate with others represented as a most important element. College students often went to the sections of photo album (M=3.64, SD=1.21) and blog (M=3.21, SD=1.40). The number of their buddy list was more than 150 (M=3.17, SD=1.04) with most being their friends in real lives (M=3.12, SD=0.66). As for their personal images on Xiaonei.com, snapshots in daily life took the largest proportion of 69.3%, modified photos took 25.4%, pictures or others took 4.8%, and photos of someone else took 0.6%.

<Insert Table 2 about here>

According to Young's definition on Internet addiction, respondents giving five or more "yes" to eight "yes" or "no" questions were classified as addicts. In this sample, 34.3% of the total 335 college students (N=115) were defined as SNS website addicts (M=3.23, SD=3.15). A canonical discriminant analysis was conducted to examine the differences between SNS website addicts and non-addicts with three variables of demographics, loneliness, and usage pattern of SNS websites. As shown in Table 3, the total analysis was significant ($p<0.001$, Wilk's Lambda=0.71) with 71.9% of the cross-validated grouped cases correctly classified. Statistics in the table revealed great importance of loneliness and usage pattern and little importance of

demographics in predicting the discriminant function. Results suggest that campus-SNS website addicts were characterized by being lonely, having more experience on the websites, frequently using the websites, spending much more time on the websites for each session, and often visiting others' homepages and sending gifts.

<Insert Table 3 about here>

Predicting Campus-SNS Website Addiction

In order to test the relationship between perceived gratifications, loneliness and demographics and the campus-SNS website addiction, a regression analysis was conducted. Results in Table 4 show that the gratifications of "social activities" (β =0.32, $p<0.001$) and "relationship building" (β =0.19, $p<0.001$) were significantly related to campus-SNS website addiction. This result indicates that users getting more involved in social activities and having more intention to enlarging the personal networks by communicating with others and making new friends are more likely to be addicts of campus-SNS websites. Interestingly, "loneliness" was found to be quite a significant predictor to campus-SNS website addiction (β =0.23, $p<0.001$). The statistics again gave supports to the hypotheses, indicating that the lonely Chinese college students had more motivation and thirsty to use campus-SNS website in order to gain connection feeling, entertainment or kill time. Demographic variables were the last ones entering into the equation but found to have little relationship with the campus-SNS website addiction. Table 4 also shows the equation explained 38% of the variance. In sum, the gratification of "social activities" was the most influential predictor, followed by loneliness and the gratification of "relationship building".

<Insert Table 4 about here>

Predicting Campus-SNS Website Using

To access how campus-SNS website addiction, perceived gratifications, loneliness, and demographics influence the campus-SNS website using, simple regression analyses were run. Use of campus-SNS website included frequency of using, length of using, information activities (blog, photo album; Cronbach's alpha=0.81), communication needs (group), and applications (gift, flee market, movie; Cronbach's alpha=0.89). Results in Table 5 show that frequency of Chinese students' use of campus-SNS websites was significantly predicted by campus-SNS website addiction (β =0.23, $p<0.01$), gratifications of "relationship maintenance" (β =0.24, $p<0.01$), and residence (β =-0.13, $p<0.01$) which indicates that frequent users of campus-SNS websites were more likely to be addicts and had more motivations to get new information of their friends and often made themselves visible to maintain interpersonal relationship and usually lived at home. Length of using campus-SNS websites was predicted by the campus-SNS website addiction (β =0.37, $p<0.001$), the gratifications of "social activities" (β =0.28, $p<0.01$), gender (β =0.36, $p<0.01$), and residence (β =0.18, $p<0.01$), which shows that Chinese students who were addicts or would-be addicts to campus-SNS websites, had great interest in social activities on the websites, being female, and lived without family members were more likely to spend much time on campus-SNS websites in each session of their visits.

As expected, information seeking activities were generally predicted by the gratifications of "relationship maintenance" (β =0.40, $p<0.001$), campus-SNS website addiction (β =0.22, $p<0.01$), loneliness (β =0.22, $p<0.01$), and age (β =-0.18, $p<0.01$) . This suggests that the motivation of maintaining and reinforcing the established interpersonal relationship, the loneliness degree, and the addiction of

campus-SNS websites, and being young mainly drove Chinese students to engage in more information activities on campus-SNS websites. Communication needs were significantly predicted by campus-SNS website addiction (β =0.37, $p<0.001$), the gratifications of "relationship maintenance" (β =-0.35, $p<0.001$) and "social activities" (β =0.24, $p<0.01$), loneliness (β =0.33, $p<0.001$), and gender (β =0.13, $p<0.01$). Finally, those who were campus-SNS website addicts (β =0.44, $p<0.001$), being lonely (β =0.26, $p<0.01$), and male students (β =-0.17, $p<0.01$) tended to use applications on campus-SNS websites more often.

To sum up, campus-SNS website addiction, gratifications and loneliness were three important factors to explain the Chinese students' use of campus-SNS websites.

<Insert Table 5 about here>

Conclusion

The purposes of the present study are to clarify the relationship among gratifications, loneliness, usage pattern, and the addiction of campus-SNS websites. Based on the above findings, here are some important conclusions.

First, nearly all of the student users go to campus-SNS websites in order to maintain their interpersonal relationship, enlarge their social circle, as well as get involved in some social activities. Campus-SNS website, with community notification functions and entertainment applications, expresses some more new features than instant messagers to the student users.

Second, most of the Chinese students were heavy Internet users (use Internet every day, at least 5 hours per day), which represented as a precondition for the addictive use of campus-SNS websites. Demographics variables including gender, age, year in school, residence, and family income were found to have little influence on campus-SNS website addiction, which was consistent with the statement in previous result that "accessible and diverse Internet technologies drive any unique demographic characteristics of Internet behavioural disorder to disappear" (Leung, 2004). The gratifications of "social activities" and "relationship building", as the important predictors to campus-SNS website addiction, suggest that the more a student gets involved in social activities and the more new contacts he/she successfully gains on campus-SNS websites, the more possible for him/her to get addicted. All student users on the campus-SNS websites are directly or indirectly connected. The addicted student users of campus-SNS websites are immersed in the feeling of being connected and satisfaction of self-relaxation.

Besides, loneliness is another predictor to campus-SNS website addiction. The fact that many campus-SNS websites implement real-name registration reduces or

eliminates the safety worries of the users. In addition, campus-SNS websites allow lonely students to communicate with their classmates and friends in the virtual system to alleviate their lonely feelings without being involved in face-to-face interactions. Campus-SNS websites provided such an appropriate platform that the lonely students found it easy and comfortable to talk with others and freely reveal their feelings. Compared to those non-lonely people, the lonely ones are likely to find difficulties in face-to-face communication while they are able to perform quite well in the online communication (Morahan 1990; Morahan-Martin & Schumacher, 2003). Students go to campus-SNS websites mainly for the purposes of getting information, communication, and social interaction, which just satisfied the exigent needs of lonely students, and the online experience would in turn generate self-confidence and community belonging for them.

Finally, as for the usage pattern of campus-SNS websites which include the frequency of use per week, length of use each time, information activities, communication needs, and applications, campus-SNS website addiction is the most significant predictor compared with gratifications, loneliness, and demographics. Wellman (1996) believed that many "dependents" of the Internet actively got immersed in the virtual communication world, i.e. online games, chat rooms, MUDS, ICQ, for seeking pleasure or escape. The strongly positive relationship between campus-SNS website addiction and the usage pattern calls for the directory work designed for students' use of campus-SNS website to prevent the negative impact on their academic performances or work schedule. Importantly, a positive relationship was found between residence and length of use. This indicates that students who live in school dormitory or by renting are more likely to use campus-SNS websites for a longer time. Free from parents' or teachers' supervision, many students living in

school dormitories lack abilities in self-control and time-management. Year in school was tested to have a negative impact on information seeking, namely students in lower class are more in need of newly updated information of their classmates and friends. The results reinforces what the previous researches suggested that junior students were more likely to suffer loneliness and thirsty of sense of belonging (Cutrona, 1982; Jackson et al., 2000; Jones & Moore, 1987). As for application usage on campus-SNS websites, male students use them more than the females.

There were some limitations to be considered in this study. First, Young's IAT and his screening instrument for addictive Internet use were applied in this study. Eighteen items were chosen from the IAT which was consisted of 20 items, five from the 18 were subjected to the screening instrument. This could be a crude measure which needs refinement and further validity. Second, those Chinese student users of Xiaonei.com were the research objects of this study. The results were deducted and explored to explain the overall situation of campus-SNS websites. It was not a careful way and may lack representativeness. Thirdly, the self-reported usage pattern on questionnaire may lack accurateness and difficult to determine. A more in-depth participant observation or diary keeping can be considered. Fourth, the scales used for designing the questionnaire were all in English, but the questionnaire for sampling was in Chinese, which may cause translation inaccuracy and disadvantageous influence on the research finding. Finally, this study is still limited to the bottom up spill over theories. Other variables including personality, consciousness and self-esteem should be taken into account in future studies.

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Appendix

Table 1: Analysis for Perceived Gratifications

I use Xiaonei.com:	Mean	SD	Alpha
Relationship Maintenance			0.81
1. to know what's new	4.07	0.99	
2. to know hot topics	3.81	1.00	
3. to show myself	3.37	1.06	
Social Activities			0.73
1. to participate in entertainment activities	3.23	1.23	
2. to share posts and videos	3.61	1.04	
3. to organize activities	2.89	1.05	
Relationship Building			0.48
1. to communicate	3.95	0.95	
2. to make new friends	2.97	1.22	

Scale used: 1= strongly disagree, 2= disagree, 3= neutral, 4= agree, 5= strongly agree.

Table 2: Usage Attributes of SNS Websites Summary (N=335)

	Mean	SD		
How often go to Internet[a]	3.89	0.36		
How long online every day[b]	3.24	0.89		
Roles[c]	2.25	0.61		
Frequency[d]				
Blog	3.21	1.40		
Photo album	3.64	1.21		
Groups	2.25	1.32		
Gifts	1.85	1.00		
Flea market	1.58	0.97		
Movie	1.86	1.22		
No. of friends in buddy list[e]	3.17	1.04		
No. of friends (in real life too)[f]	3.12	0.66		
Internet access place*(%)*	at home 8.5	in school 11.3	in dorm 2.1	in netbar 1.8
Broadband access *(%)*	ADSL 61.8	VDSL 1.2	LAN 29.3	WIFI 4.2
Personal image *(%)*	modified photo 25.4	daily life snapshot 69.3	photo of someone else 0.6	pictures or others 4.8

a. *How often go to Internet was coded 1=seldom, 2=every week, 3=every two or three days, 4=every day.*

b. *How long online every day was coded 1=less than 1 hour, 2=1-2 hours, 3=3-5 hours, 4=more than 5 hours.*

c. *Roles include a tool to contact previous classmates, a tool to communicate with present classmates, a platform to show themselves, and a place to express feelings. Every choice accounts for one point.*

d. *Frequency of visiting blog, photo album, groups, gifts, flee market and movie was coded 1=rarely, 2=occasionally, 3=frequently, 4=often, 5=always.*

e. *No. of friends in buddy list was coded 1=less than 50, 2=50-100, 3=100-150, 4=more than 150.*

f. *No. of friends (in real life too) was coded 1=almost all of them, 2=many of them, 3=a few of them, 4=nearly none of them.*

Table 3: Discriminant Analysis of Campus-SNS Website Addiction with Demographics、Loneliness and Usage Pattern of Campus-SNS Websites[a] (N=335)

Predictor	Structure Coefficients
Demographics	
Gender (female=1)	0.07
Age	-0.05
Year in school	-0.02
Residence [b]	0.02
Family income	-0.18
Loneliness	0.54***
Usage pattern of Campus-SNS websites	
Campus-SNS experience (in years)	0.57***
Using frequency (per week) [c]	0.46***
Length (for each time) [d]	0.49***
Frequency of content updating [e]	0.27
Visit others' frequently (yes=1)	0.41***
Frequency of sending gifts [f]	0.31***
Eigenvalue	0.42
Canonical correlation	0.54
Wilks' Lambda	0.71
Significance	p<0.001
Group centroids	
Addicts	0.89
Non-addicts	-0.47
Cases correctly classified	71.9%

a. Campus-SNS website addicts were dummy coded 1, and non-addicts were coded 0.

b. Residence was coded 1=at home, 2=in school dormitory, 3=renting, 4=others.

c. Campus-SNS website using frequency (per week) was coded 1=less than 3 times, 2=3-6 times, 3= more than 6 times, 4=every day.

d. Length for each time was coded 1=less than 15 minutes, 2=15-30 minutes, 3=31-59 minutes, 4=1-2 hours, 5=more than 2 hours.

e. Frequency of content updating was coded 1=seldom, 2=every week, 3=every two or three days, 4=almost every day.

f. Frequency of sending gifts was coded 1=never, 2=seldom, 3=occasionally, 4=often.

Table 4: Regression Testing Gratifications, Loneliness and Demographics as Predictors of Campus-SNS Addiction

Predictors	Campus-SNS website addiction	
	r	β
Gratifications		
Relationship maintenance	0.51***	0.05
Social activities	0.54***	0.32***
Relationship building	0.49***	0.19*
Loneliness	0.39**	0.23**
Demographics		
Gender (female=1)	0.16**	0.06
Age	-0.12*	-0.03
Year in school	-0.01	0.04
Residence*	0.05	0.06
Family income	-0.06	-0.04
R^2		0.40
Adjusted R^2		0.38

Residence was coded 1=at home, 2=in school dormitory, 3=renting, 4=others.

Figures are Pearson coefficients, standardized beta coefficients and significance tests.

#p<=.1; *p<=.05; **p<=.01; ***p<=.001; N=335

Table 5: Regression Testing Campus-SNS Website Addiction, Perceived Gratifications, Loneliness and Demographics as Predictors of Campus-SNS Website Using

Predictor Variables	Frequency (per week)		Length (each time)		Information Activities[a]		Communication Needs[b]		Applications[c]	
	r	β	r	β	r	β	r	β	r	β
Campus-SNS Website Addiction	0.43***	0.23**	0.51***	0.35***	0.42***	0.22**	0.54***	0.37***	0.54***	0.44***
Perceived Gratifications										
Relationship maintenance	0.50***	0.24**	0.34***	-0.09	0.44***	0.40***	0.25**	-0.35***	0.27**	-0.09
Social activities	0.42***	0.07	0.45***	0.28**	0.33***	-0.04	0.39***	0.24**	0.35***	0.12
Relationship building	0.46***	0.08	0.31***	0.02	0.30***	-0.20	0.30***	0.18*	0.30***	0.05
Loneliness	0.20**	0.01	0.24**	0.06	0.37***	0.22**	0.47***	0.33***	0.42***	0.26**
Demographics										
Gender (female=1)	-0.11*	-0.03	-0.24**	0.16**	0.13**	-0.04	-0.04	0.13**	-0.10*	-0.17**
Age	-0.24**	-0.08	-0.05	0.03	-0.30**	-0.18**	-0.08	-0.11*	0.02	0.10
Year in school	-0.13**	-0.04	-0.01	-0.03	-0.13**	-0.10*	0.03	0.04	-0.06	-0.10*
Residence[d]	-0.15**	-0.13**	0.21**	0.18**	-0.01	0.06	0.03	0.04	-0.09*	-0.11*
Family income		0.05	0.04	0.05	-0.11*	-0.07	-0.09*	-0.00	-0.11*	-0.01
R^2		0.33		0.37		0.35		0.43		0.41
Adjusted R^2		0.31		0.35		0.33		0.42		0.39

a. Information activities include "blog" and "photo album". b. Communication needs include "group". c. Applications include "gift", "flee market" and "movie".

d. Residence was coded 1=at home, 2=in school dormitory, 3=renting, 4=others.

Figures are standardized beta coefficients.

#p<=.1; *p<=.05; **p<=.01; ***p<=.001; N=335