Social networking friendships: A cross-cultural comparison of network structure between MySpace and Wretch

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ABSTRACT

A cross-cultural comparison of social networking friendship between MySpace (in USA) and Wretch (in Taiwan) was conducted utilizing the high- and low-context framework proposed by Edward T. Hall (1976). Three network indicators were used to describe the network structure of both social network sites: size, density, and heterogeneity. Data were drawn from the forum "Jobs, Work, Careers" on MySpace and "Job-Related" on Wretch over a 2-month period from mid-October to mid-December in 2007. For each of the 2 sites, 6 users (3 men and 3 women) were randomly selected as sources or "seeds" from which to crawl the friendship networks. From the 6 seed users, a snowball sample was constructed by crawling 2 degrees out along the networks. The results indicated that Wretch, although it followed the expected direction predicted by Hall's model, did not have significantly larger and denser networks than MySpace. Finally, no differences in same-sex and cross-sex friendships were found between the 2 sites either. The overall findings are discussed with implications for future studies.

The explosive growth of social network sites (SNSs) such as MySpace, Facebook, Cyworld, and Wretch in recent years marked a turning point for a new form of friendship formation on the Internet. SNSs allow a participant to "create a self-descriptive profile and make links to other members" (Donath & boyd, 2004, p. 71). Accordingly, the most salient feature of SNSs is the public display of connections. Participants use the visible network of connections to make new friends, business partners, even intimate romantic relationships (boyd & Ellison, 2007). When an individual participates in an SNS, he or she joins and builds upon a web of friendships constructed via links exchanged among participants. This web of friendship often does not correspond to the offline friendship which "evolves through voluntary interaction between two people overtime" (Chan & Cheng, 2004, p. 306). Instead, online friendship often reflects that individual users have some form of acquaintance that can be added or dropped easily by a simple click in social networks (Thelwall, 2008). This difference between online and offline friendships has an effect on the attributes of the online friend networks (Tong, Van Der Heide, Langwell, & Walther, 2008). The goal of the present study is to examine the network structures of the visible network of social networking friendships (Thelwall, 2008).

A network approach is used to determine network structures formed in the context of SNS. Network analysis can "obtain from low-level or raw relational data higher level descriptions of the structure of a system" (Rice & Richards, 1985, p. 106). This type of analysis has been used by almost every social science to study specific problems, including online interpersonal networks in general (Chang, 2009; Herring et al., 2005) and social networking friendships in particular (Lewis, Kaufman, Gonzalez, Wimmer, & Christakis, 2008). Accordingly, the present study attempts to employ social network analysis to detect and interpret patterns of friendship connections among SNS participants (Nooy, Mrvar, & Batageli, 2005). In addition, since network structure may vary from culture to culture (Wellman & Gulia, 1999), the present study examines it in the context of cross-cultural comparisons to achieve a more comprehensive understanding of SNSs.

Using Hall's (1976) high- and low-context model of culture as a conceptual framework, this study compares the networking patterns of two countries, Taiwan and the USA—one from the East and one from the West. Taiwan is a country characterized by a collectivistic culture and high-context communication, while the USA is characterized by an individualistic culture and low-context communication (Hall, 1976; Hofstede, 2001; Wurtz, 2005). Although Hall's high- and low-context model has received much criticism, particularly for the asserted distinctive communication differences between cultural groups (e.g., Hermeking, 2006), his model has been the most commonly used theoretical framework (e.g., Fanitini & Smith, 1997), and has successfully explained cultural variances found in various kinds of Web sites (e.g., Kim, Coyle, & Gould, 2009; Wurtz, 2005), and individuals' online behavior (e.g., Park & Jun, 2003). Therefore, Hall's model will be used for the present study.

Three network indicators, which have been considered important attributes of interpersonal networks in the past (e.g., Chang, 2009; Marsden, 1987; McPherson, Smith-Lovin, & Brashears, 2006) are utilized: size, density, and heterogeneity. For the third indicator, different types of heterogeneity of personal networks have been examined in the past, such as age, education, race, and gender (Marsden, 1987). This study examines only gender because it serves as a valid and reliable indicator from each participant's

profile, and also because gender has long been a focus in the area of interpersonal relationships (Chan & Cheng, 2004). MySpace and Wretch, two of the popular SNSs in the USA and Taiwan respectively, were selected as the research sites for the present study. These two sites were chosen because they were the most popular SNSs at the time when data were collected in 2007(boyd & Ellison, 2007; Lu, 2008). For each of the two sites, six "seed" users were randomly selected to "crawl" two degrees out along the friendship networks (Herring et al., 2005).

Literature Review

Hall's High- and Low-Context Model

Culture touches and alters every aspect of human life. It is learned and shared, and defines the boundaries of different groups. Anthropologist Edward T. Hall asserted that one of the functions of culture is to provide "a highly selective screen" to process information and to see the world (1976, p. 85). He proposed a popular conceptual framework in which information, meaning, and context were three interrelated elements to study cultural variability; arguing that "the context that surrounds information is critical to meaning, therefore, relevant information must exist in any interaction to specify meaning" (Korac-Kakabadse, Kouzmin, Korac-Kakabadse, & Savery, 2001, p. 6). Context is "a way of handling information overload" (Hall, 1976, p.86), and different cultures "use a range of information processing systems to provide context" (Korac-Kakabadse et al., 2001, p. 6).

The information processing systems range from low- to high-context. Low-context systems are characterized by the low level of preprogrammed information in both the receiver and in the setting. Thus, a large amount of explicit information must be in the transmitted message in order to specify meaning in the context (the receiver and the setting). High-context systems are the reverse: they are characterized by the high amount of preprogrammed information in the receiver and in the setting, and thus more implicit and understated information is transmitted based on the shared experience and assumptions of the interacting parties. "A high-context communication or message is one in which most of the information is either in the physical context or internalized in the person, while very little is in the coded, explicit, transmitted part of the message" (Hall, 1976, p. 91). Hall proposed that all cultures operate along the low- to high-information continuum. Countries that predominantly use low-context systems are categorized as low-context cultures, such as the USA; countries that predominantly use high-context systems are categorized as high-context cultures, such as Taiwan.

Low-context cultures in which people are less closely involved with each other are more individualized, alienated and fragmented; high-context cultures in which people are deeply involved with each other are more stable and persistent (Hall, 1976). Geert Hofstede (2001), an anthropologist who studies cultural variability, suggested that Hall's high- and low-context model demonstrated aspects of collectivism and individualism, respectively. In a collectivistic society, people are integrated both horizontally and vertically: "They stay in close contact with their parents, grandparents, and other elders as long as these are alive, and they can expect their own offspring and other juniors to maintain close contact with them" (Hofstede, 2001, p. 228). Thus, a collectivistic society predominantly uses high-context communication. The close involvement of people raised in high-context culture leads to the free exchanges of simple messages with deep meaning:

When talking about something that they have on their minds, a high-context individual will expect his interlocutor to know what's bothering him, so that he doesn't have to be specific. The result is that he will talk around and around the point, in effect putting all the pieces in place except the crucial one. (Hall, 1976, p. 113)

Thus, high-context communication tends to be indirect, ambiguous, and understated (Gudykunst & Matusmoto, 1996).

In an individualistic society, people lack both horizontal and vertical integration. "Adolescent children leave the homes of their parents and do not necessarily maintain much contact after that. Grandparents live apart and are supposed to lead lives of their own" (Hofstede, 2001, p. 228). Thus, an individualistic society predominantly uses low-context communication. People raised in low-context cultures have relatively little involvement with each other. They make less distinction between insiders and outsiders and expect less of others than do people in high-context cultures. Accordingly, they do not expect their interlocutors to know their minds, so direct, explicit, open, and precise information is transmitted during the interaction process (Gudykunst & Matusmoto, 1996).

Network Size

Network size is the number of people with whom an individual has a specified social relationship (Lewis et al., 2008). Here, in the present study, the term refers to the number of friends an SNS participant has via direct (first degree) and indirect (second degree) connections with other participants in the same SNS. Network size has traditionally been used to describe the degree of individuals' social integration (Marsden, 1987). Larger networks are generally more supportive because a greater number of network members could provide different kinds of social support (Walker, Wasserman, & Wellman, 1994). Moreover, network size can be interpreted as a measure of social capital. A person with more friends and acquaintances has a better chance to get help or information: thus social resources can be easily mobilized and used for positive advantage (Nooy et al., 2005).

In the context of SNS, quantity of friends is one of the most important issues for SNS participants. In fact, the number of friends one acquires has become a public competition (boyd, 2006). MySpace has been described as "a hip party where users vie for popularity and attention" (Woyke, 2006, n.p.). The designer and managers of Wretch have made every effort to make Wretch a place where users' friendship networks can converge as much as possible (Lu, 2008).

A few empirical studies have been conducted to examine network sizes of SNS users, yet the average number of friends varied from 102 to 395 across different studies. For example, using a sample of 131 students in the USA, Subrahmanyam, Reichc, Waechterb, and Espinozab (2008) reported an average SNS friendship network size of 137. Also using samples of students in the USA, Steinfied, Ellison and Lampe (2008) reported that Facebook users have an average of 223 to 339 friends, while a study conducted by Tong et al. (2008) reported that the average for Facebook users is 395.02 friends. Lewis et al. (2008) downloaded data directly from Facebook.com and found that their participants had an average of 109 friends. Another study, conducted in China, examined two SNSs, Xiaonet

and Douban, and reported an average network size of 172 and 102 respectively (Zhang & Wang, 2010).

The present study seeks to discover whether there is any cultural variability of network size between MySpace and Wretch. According to Hall's model, MySpace belongs to a low-context culture where explicit messages need to be exchanged because people are less involved with each other. Few shared experiences and assumptions can be formed among people who do not maintain close contacts with their family members. In an individualistic society, people live in nuclear or one-parent families: "Everyone is supposed to take care of him- or herself and his or her immediate family only" (Hofstede, 2001, p. 227) and children learn to think in terms of I rather than we. In a high-context culture, understated and implicit information is exchanged during an interaction because people are more involved with other people: shared experiences and assumptions can be developed because people maintain close contacts and spend more time with their family members. In a collectivistic society, "people are born into extended families or clans, which protect them in exchange for loyalty" (Hofstede, 2001, p. 227). Children learn to think of themselves as part of a we identity. Will these cultural differences be reflected in differences in the network size of social networking friendships in MySpace and Wretch? Is it plausible to assume that people raised in a low-context culture where there is relatively less social integration have fewer friends than people raised in high-context culture where there is more social integration? Accordingly, the following research question is proposed:

Research Question 1: What is the average number of friends of Wretch and MySpace participants respectively? Does network size differ in different cultural contexts?

Network Density

Network density is the "extensiveness or completeness of the relations in the network" (Monge & Contractor, 2003, p. 44). The term denotes the number of links in a network, expressed as a proportion of the maximum possible number of links (Nooy et al., 2005). In the present study, it refers to the mean intensity of link strength among participants in the social networking friendship (McPherson et al., 2006). Network density has been used to describe the concentration of individuals' interpersonal networks: networks with few links are sparsely connected networks; networks with many links are dense networks (Monge & Contractor, 2003). The value ranges from 0, indicating a sparse network, to 1 representing a high-density network. Usually, a denser network facilitates "communication and coordination, enhancing support provision" (Walker et al., 1994, p. 63).

Past studies indicated that in traditional face-to-face support networks, network density ranged between .3 and .5 (Wellman, 1992). The two studies which indicated that Americans' social capital is declining reported a network density of .6 in 1985 and .66 in 2004 (McPherson, et al., 2006). However, when larger groups of friends are found in online settings, are network densities reported lower as a consequences of larger network size (Nooy et al., 2005), or higher as a function of the easily accessible nature of the Internet environment? In fact, Lewis et al. (2008) reported that the average Facebook network density is .22. Chang (2009) found that the densities of most of online support

groups ranged between .01 and .08. Compared to those reported in traditional face-to-face settings, online networks were relatively sparse.

One of the questions this study seeks to answer is this: Is there any cultural variability of network density between Myspace and Wretch? As mentioned previously, individualism and collectivism are aspects of low- and high-context culture respectively. In an individualistic society, links "between people are loose" (Hofstede, 2001, p. 225). People think of themselves primarily in terms of I, and only take care of those who are close to them. In a collectivistic society, "people from birth onwards are integrated into strong, cohesive in-groups" (Hofstede, 2001, p. 225), think of themselves in terms of "we-group" identity, and maintain close contacts with their group members throughout their lifetime in exchange for continued protection. Will these cultural differences also be reflected in the network density of social networking friendships between MySpace and Wretch? Is it plausible to assume that people raised in a high-context culture, where tight links are found between people and their friends and family, have denser connections than people raised in a low-context culture where loose links are found between people? Accordingly, the following research question is proposed:

Research Question 2: What are the densities of Wretch friendship networks and MySpace friendship networks respectively? Does network density differ in different cultural contexts?

Network Heterogeneity
Network heterogeneity is "the most direct indicator of the diversity of persons an individual can contact within his or her interpersonal environment" (Marsden, 1987, p. 124). A diverse personal network was reported to be associated with important health benefits (Lewis et al., 2008), and with positive access for actions such as gathering information from several spheres of society (Marsden, 1987). As mentioned in the introduction, network heterogeneity can be studied for many attributes of SNSs participants, but the only one examined in the present study is gender. Specifically, the present study explores the gender compositions and the same-sex and cross-sex friendships of MySpace and Wretch participants.

In traditional face-to-face interpersonal relationships, a popular belief is that cross-sex friendships are harder to develop because of the restrictions of both structural factors (such as the lack of opportunities for both sexes to meet and to interact continuously) and normal factors (such as the social disapproval if married people cultivate cross-sex relationships) (Chan & Cheng, 2004). After reviewing relevant literature, which indicated that both structural and normal factors were limited in online settings, Chan, Cheng and their associates (Chan & Cheng, 2004; Cheng, Chang, &Tong, 2006) conducted two waves of studies on associations between online and offline friendship qualities and gender compositions. They found that in online settings, qualities of cross-sex friendship were generally higher than those of same-sex friendship.

Perceptions of friendship qualities and gender compositions, mediated by cultural norms and traditions, are shared societal expectations that are placed on individuals by gender role socialization (Donaghue & Fallon, 2003). As Hall suggested, "all cultures differentiate between men and women, and usually when a given behaviour pattern becomes

associated with one sex it will be dropped by the other" (1973, p. 43). Men and women often see the world in quite different ways (Hall, 1969). Although Hall did not elaborate gender role differentiation to cultural variability in detail, later studies in the area of cross-cultural communication have discussed it more specifically.

When discussing cross-cultural variability of communication in personal relationships, Gudykunst and Matsumoto (1996) reported that masculinity/femininity, a cultural dimension of the study of gender role socialization, is "useful in understanding cultural differences and similarities in opposite-sex and same-sex relationships" (p. 48). People raised in a masculine culture which emphasizes distinctive gender roles—men are assertive, tough, and focused on material success; women are modest, tender and concerned with the quality of life (Hofstede, 2001)—have more problems with cross-sex relationships than people raised in a feminine culture. Individuals from highly masculine countries such as Japan and Hong Kong demonstrated more problems with building intimate and close cross-sex relationships than those from lower-masculine countries such as the USA, where gender roles overlap—both men and women are modest, tender, and concerned with the quality of life. Will these cultural differences also be reflected in the gender composition of social networking friendships between MySpace and Wretch?

What are the relative positions of Taiwan and the USA along the masculinity-femininity continuum? A recent study (Chang & Tseng, 2009), which examined cultural similarities and differences in the design of social network sites between Wretch and MySpace, found that Wretch demonstrated higher masculinity than MySpace. Thus, is it plausible to assume that people raised in a higher masculine culture where cross-sex relationships are harder to develop have more same-sex friends than people raised in a lower-masculine culture where cross-sex relationships are less prohibited? Accordingly, the following research question is proposed,

Research Question 3: What is the gender composition of Wretch friendship networks and MySpace friendship networks respectively? Does gender composition differ in different cultural contexts?

Method

Research Sites

Two of the most popular social network sites, Wretch in Taiwan and MySpace in the USA, were chosen for the present study. Founded in 1999, Wretch (http://co.wretch.com) has the highest number of registered users and is the most popular social network site in Taiwan. Wretch users can find and connect with other Wretch users without mutual agreement to become friends, and all friends with their corresponding photographs are displayed on users' profile pages (Lu, 2008). Founded in 2003, MySpace (http://www.myspace.com) is one of the most popular social network sites in the USA among adults: half of adult SNSs participants in the USA age 18 and older are on MySpace, according to the Pew Internet data reported in 2009. Unlike Wretch, MySpace users need to obtain a mutual agreement to become friends. Furthermore, they can categorize their friends into top friends and others (Thelwall, 2008).

Both MySpace and Wretch host a variety of discussion forums. Due to the limited resources of this study, only one discussion forum was chosen from each site. After reviewing the topics of discussion forums of both sites, data were drawn from the forum "Jobs, Work, Careers" on MySpace and "Job-Related" on Wretch over a two-month period from mid-October to mid-December 2007. These two forums were chosen because they hosted the most similar discussion topic for comparison purposes. A snowball sampling method was used to select participants of these two discussion forums. This method was originated by Goodman (1961) and can be used to trace links through a network from a source to an end (Wasserman & Faust, 1994, p. 34). It begins with selected individuals and those who are connected to the selected individuals (first-order zone of the network). All the other individuals connected to the first-order zone of the network who are not among the original individuals constitute the second-order zone of the network. And so on.

For the present study, the original individuals who participated in the discussion forums were selected randomly. For each of the two sites, six users (three men and three women) from each country were randomly selected as sources or "seeds" from which to crawl the friendship networks. From the six seed users, a snowball sample was constructed by crawling two degrees out along the networks. This method of data collection was also used by previous studies (e.g., Herring et al., 2005). Since this paper is a cross-cultural study of Taiwanese and U.S. users of SNSs, the non-Taiwanese/U.S. users appeared during the creation of the sample were removed. As a result, the Myspace sample consists of 1,256 users and the Wretch consists of 1,747 users. Data were collected on the profile page of each participant. Two types of information were collected: URL address (as id identification) and gender (gender of the person in the photograph).

Network Analysis

The measurement of network analysis focuses on who speaks to whom about what using which communication mode (Johnson, Berkowitz, Ethington, & Meyer, 1994). The "who, whom, what and which" are easily identified by examining the content and links of each profile on the sites. Thus, 1,747 and 1,256 (who, whom) users exchanged friendship links (what) by publicly displaying the links via the discussion forums of "Job-Related" on Wretch and "Jobs, Work, Careers" on MySpace respectively.

Three indicators were used to analyze Wretch and Myspace friendship networks, as follows:

Size. This refers to the number of SNS participants that are involved in exchange links in a friendship network.

Density. This is the ratio of the number of actual friendship links to the number of possible friendship links in the network. The formula for density is $2L/g(g-1)$, where L stands for the number of actual friendship links and g stands for the number of participants in a network (Wasserman & Faust, 1994).

Heterogeneity. This is the ratio of the number of male-female, male-male, and female-female links to the number of actual friendship links in the network. The genders of the SNSs participants were detected by the combination of cues displayed by participants'

photos available in online albums and self-descriptions from profiles. If neither cue was available, the participant is coded as indeterminable.

Analysis

UCINET 6.96, a network analysis software program (Borgatti, Everett, & Freeman, 2002), was used to calculate the network indicators and to display graphical representations of the friendship networks.

Results

For the first research question, about network size, the results indicated that Wretch participants have an average of 2.3 friends, ranging from 1 to 91 friends. Nearly 90% of Wretch participants have only one friend (87.2 percent), and only 3.7% of them have more than 6 friends. MySpace participants also have an average of 2.3 friends, ranging from 1 to 41 friends. Most Myspace participants have only 1 friend (85.4 percent), and 6.6 percent of them have more than 6 friends. No significant differences of network size were found between the two sites (t = .01, p > .05). Thus, for research question 1 about network size, Wretch participants did not have more friends than MySpace participants (Please see Table 1 for detailed information).

For the second research question, about network density, the results indicated that both Wretch and MySpace were relatively sparse, as indicated by the communigrams of Wretch and MySpace in Figures 1 and 2. The mean Wretch network density was .05. More than 90% of Wretch participants have 0 connections (91.2), and 3.5 percent of them had dense connection with their friends. MySpace has a mean density of .04. More than 90% of MySpace participants also have 0 connection (90.5 percent), and only 2.5 percent have dense connection with their friends. No significant difference of network density was found between the two sites (t = 1.45, p > .05). Thus, for research question 2 about network density, Wretch participants did not have more sparse connections than MySpace participants (please see Table 1 for detailed information).

Table 1: Descriptive Results of Wretch and MySpace Friendship Networks

	Wretch (N = 1748)			MySpace (N = 1256)		
	Frequency(%)	Mean (SD*)	Range	Frequency(%)	Mean (SD)	Range
Network size		2.3 (6.9)	1 to 91		2.3 (4.9)	1 to 41
1	1525(87.2)			1073 (85.4)		
2	106(6.1)			70 (5.6)		
3	30(1.7)			16 (1.3)		
4	13(.7)			8 (.6)		
5	10(.6)			6 (.5)		
6+	64(3.7)			83 (6.6)		
Network density		.05 (.2)	0 to 1		.04 (.2)	0 to 1
0	1594(91.2)			1137(90.5)		
.001-.8	93(5.3)			87(7)		

1	61(3.5)	32(2.5)
Network heterogeneity		
male	553(31.6)	688(54.8)
female	1132(64.3)	533(42.4)
indeterminable	63(3.6)	35(2.8)

*SD indicates Standard deviation

For the third question, about network heterogeneity, the results indicated that Wretch has twice as many female participants (64.3 percent) than male participants (31.6 percent), while more than half of MySpace participants are males (54.8 percent). Chi-square tests indicated significant differences of gender compositions between Wretch and MySpace ($X2=161.2$, df= 2, p< .05). Paired t-tests were conducted to compare gender compositions between Wretch and MySpace. As a result, only two significant differences were found: density between female-male networks of Wretch and male-male networks of MySpace ($t = -2.21$, p< .05), and density of male-male networks between two sites ($t = 2.3$, p< .05). In other words, Wretch participants have more dense connections with their cross-sex friends (female-male, .05) than MySpace participants with their same-sex friends (male-male only, .03), and male Wretch participants have denser connections (.05) with their same-sex friends than male MySpace participants with their same-sex friends (.03). Thus, overall, Wretch participants do not have more same-sex friends than those of MySpace participants and MySpace participants do not have more cross-sex friends than those of Wretch participants (Please see Table 2 for detailed information).

Table 2: Gender compositions of Wretch and Myspace Friendship Networks

	Wretch		MySpace	
	N	Mean (SD*)	N	Mean (SD)
Network size				
male-male	553	1.96 (5.08)	688	2.16 (4.90)
female-female	1132	2.44 (7.86)	533	2.38 (4.86)
female-male	1685	2.29 (7.07)	1221	2.25 (4.88)
Network density				
male-male	553	.05 (.21)b**	688	.03 (.15)ab
female-female	1132	.04 (.19)	533	.05 (.20)
female-male	1685	.05 (.20)a	1221	.04 (.18)

*SD indicates Standard deviation

**Paired letters indicate significant differences between the two variables

Discussion

The purpose of this paper is to describe the network structure of social networking friendship using Wretch from Taiwan and MySpace from the USA, the most popular SNSs from two culturally distinctive countries. Three network indicators were used to describe the network structure of both social network sites: size, density, and heterogeneity. The

results indicated that Wretch participants did not have more friends than those of MySpace participants, as predicted by Hall's high/low context model. More than 80% of participants from both sites still bowl along in the context of SNSs. Although disappointing, as mentioned in Thelwall's study (2008), "many people sign up to MySpace perhaps out of curiosity and then do not become active users" (p. 1329).

The values for network density found in the present study ranged from .03 to .05, which is relatively smaller than those reported in the study of the face-to-face setting (McPherson et al., 2006), probably due to larger network size (Nooy et al., 2005). However, the range of density falls between .01 and .08, which is consistent with findings reported in previous studies of online social support groups (Chang, 2009). Yet although network density followed the expected direction as predicted by Hall's model (Wretch at .05 was larger than MySpace at .04), it did not differ significantly between the two SNSs. Finally, in terms of same-sex and cross-sex friendships, no differences were found between the two sites either. The overall findings are discussed below, with implications for future studies.

Hall's model predicted that Wretch would have larger and denser networks. However, the results indicated that Wretch, an SNS in a high-context culture, did not have larger and denser networks than MySpace, an SNS in a low-context culture. One plausible explanation is that the low/high context framework no longer applies to the cultural distinctions between Taiwan and USA, especially for SNSs. With multiple cues of texts, photos, animations, video, and audio displayed in SNSs, participants try to make the best use of the SNSs environment to draw the public's attention (Lu, 2008; Woyke, 2006). It seems that all information is transmitted in a direct and explicit way via the use of profiles, photos, messages, and other decorations within each participant's physical space on the social network sites. When SNS participants provide context and process information, they probably just try to make as many friends as possible, regardless of cultural background. Thus, the results of the current study seem to suggest that a uniform culture has been developed for making friends in SNSs. Future studies can explore whether national variations or a uniform SNS culture prevails for social networking with friends online.

In addition, previous studies suggested that the patterns of high- and low-context are compatible with collectivism and individualism (Hofstede, 2001). Thus, collectivistic Wretch participants were expected to be more deeply involved with each other than individualistic MySpace participants. However, a recent study examining cultural similarities and differences of Wretch and MySpace Web site design found that Wretch featured a higher level of individualism than MySpace (Chang & Tseng, 2009): the authors argued that Taiwan has undergone rapid economic growth and social change over the past 40 years. Most Taiwanese are now living in nuclear or one-parent families, which have affected how children view themselves and society. More individuals have developed the I identity in recent years. Thus, it is also possible that low- high-context frameworks do not apply to the cultural distinctions between Wretch and MySpace: both Wretch and Myspace are of the same cultural continuum. More studies need to be conducted to determine the relative positions of the two countries on the cultural continuum.

In terms of gender heterogeneity and cultural variability, no distinctive patterns were found between same-sex and cross-sex friendships in Wretch and MySpace. It is possible that the blurred distinction between the two countries' cultures mentioned previously can also account for the current findings. However, several implications can be inferred from the results. First, the results indicated that Wretch and MySpace have opposite gender composition: Wretch has more female participants (64.3 percent) and Myspace has more male participants (54.8 percent). This may be because Taiwanese females and American males are more likely to share job-related issues than their counterparts; or because the results also indicated that the density of Wretch cross-sex networks (.05) was greater than those of MySpace male-male networks (.03), it might be interpreted that Taiwanese females feel more liberated making cross-sex friends online, where the structural and normal factors limit these relationships. Future studies can explore the associations between gender composition and discussion topics, and between gender composition and cultural variability.

Second, as indicated by the communigrams of Wretch and MySpace in Figures 1 and 2 respectively, a few major clusters were detected. In a relatively sparse network, who are linking the clusters? What are the genders of the individuals linking the clusters? Will Wretch, from a more masculine culture, have more females linking individuals because they are more concerned with building relationships with people, whereas no distinctive role differentiation of the linking individuals was found on MySpace? Post hoc analysis of betweenness, a measure of centrality in a network, was conducted on all the participants who had at least one connection on both network sites. An individual with a high betweenness score "is often interpreted as deriving power by controlling or brokering the flow of information as well as managing the interpretation of that information" (Monge & Contractor, 2003, p. 38). Although no significant difference was detected between the two genders on Wretch ($t = .88$, $p > .05$), females had higher betweenness scores (mean = .04, standard deviation = .06) than males (mean = .03, standard deviation = .05), which is in the direction predicted for a masculine culture. Also, no significant difference was detected between genders on Myspace ($t = 1.08$, $p > .05$), yet males had higher betweenness scores (mean = .03, standard deviation = .08) than females (mean = .02, standard deviation = .04). Future studies can consider the associations between gender and centrality.

Finally, there is a small-world effect which predicts that any two individuals on the planet will be connected by six degrees of separation (Watts, 1999). Is there a small-world phenomenon operating among SNSs? Since only two degrees of networking were crawled from the original six seeds, it would be interesting to find out whether different degree zones have an impact on network size and network density. The results indicated that for first-degree networks, MySpace participants have more friends than do Wretch participants ($t = 5.11$, $p < .05$); yet no significant differences were found in network density between Wretch and MySpace ($t = .78$, $p > .05$). For the second-degree network, no significant differences were found in network size between Wretch and MySpace ($t = 1.11$, $p > .05$); yet Wretch has denser networks than MySpace ($t = 3.13$, $p > .05$). Thus, obviously, different degrees of separation have an impact on the structure of both network sites. Future studies should consider degree of separation as a factor and examine network structures along each degree of separation.

Limitations

A major limitation of the present study is external validity. The results of the study may be specific to a certain discussion forum in a particular cultural context for a certain period of time only. Future studies should consider exploring other types of forums, and to extend the analysis by examining further degrees out along the networks. Thus, all findings may be suggestive and serve as a reference point for future studies in the area of social networking friendships.

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