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What's on the other side of the great firewall? Chinese Web users' motivations for bypassing the Internet censorship

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ABSTRACT

Firewall bypassing is referred to as the behaviors of Internet users who resort to any software or proxy to get access to the websites or online resources that are blocked by the Great Firewall (GFW). Under the uses and gratification framework, a web-based survey ($N = 319$) was conducted to explore Chinese Internet users' motivations of bypassing firewall in and outside Mainland China. The findings showed that Chinese Web users bypassed the firewall in China mainly for information and socializing, and bypassed outside China primarily for entertainment. Comparison between the motivations for bypassing GFW in and outside China was conducted among the participants who had experience in both cases. Theoretical and practical implications were discussed.

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1. Introduction

The past decade witnessed an exponential growth of worldwide Internet use. Statistics by Internet and Telecommunication Union or ITU (2011) showed that the number of Internet users has doubled between 2005 and 2010, the number in which year surpassed the two billion mark and reached 2.4 billion globally in 2012, accounting for 34.3% of the world population (Internet World Stats., 2012). Internet, particularly with the proliferation of social media, enables users to overcome the geographic limitation, and be connected with other users from all over the world. Consequently, united Internet users become an influential emerging power, and play an critical role in shaping the landscape of online participatory collaboration, online freedom of expression popular culture, social movements, etc. (Kahn & Kellner, 2004; MacKinnon, 2009, 2012; Shirky, 2011).

Among many functions that Internet empowers users to perform, a unique one is online content sharing (Kaplan & Haenlein, 2010), which has attracted a large number of Web users from all over the world who use Internet as a platform to share content. During this process, video-sharing based social media, such as YouTube, have played an essential role in setting trends of popular culture online, creating celebrities, and providing a globally networked stage for individuals and organizations. Due to its globally available platform and the features of visual language, video messages from non-English speaking countries also enjoy the opportunity to attract the worldwide attention. For example, the music video Gangnam Style, from a South Korean signer PSY, has been viewed more than 1.48 billion times as of March 2012 (see Gangnam Style's YouTube page, 2012) and become the most viewed video online. For another example, one Taiwanese pop song, Bobee, also got wider global reach due to its popularity on YouTube (CNN, 2011). Overcoming the language barriers and geographic limitation, these pop songs come to be a global cultural phenomenon. Not only the pop culture products, the regional user-generated content also received international interests. For example, the Bus Uncle, a six-minute Cantonese video clip of a heated quarrel between two men aboard a bus, was the most viewed video in May 2006 and caused a cultural sensation in East Asia (Guardian., 2006). However, none of these viral videos that later became the global web or cultural phenomena was from Mainland China, where reside 538 million Internet users (Internet World Stats, 2012).

Why is that? One possible reason would be the fact that such worldwide popular video-sharing based social media, like YouTube, and other social networking sites (SNSs), such as Facebook and Twitter, are not available to Chinese users, due to the Internet censorship, which blocked more than 18,000 websites in Mainland China (Zittrain & Edelman, 2003). Much research have devoted to Internet censorship as a global issue as well as Internet censorship in China (Bamman, O'Connor, & Smith, 2012; MacKinnon, 2009, 2012). Bamman, O'Connor, and Smith (2012) noticed that previous work suggested four dimensions of Internet censorship in China: network filtering, search filtering, chat censorship, and blog censorship. Among these four dimensions, network filtering based

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on IP and DNS filtering are usually referred to as the Great Firewall (GFW) that prevents Internet users in Mainland China from connecting to certain websites. Therefore, even though one Chinese TV singing competition show could easily receive more than 5 million views within one day online (see I Am a Singer's Youku page, 2013), due to inaccessibility of YouTube, video clips from China usually do not reach out globally, let alone receive international attention.

Internet censorship, particularly the GFW, has long been a controversial issue in the application of Information and Communication Technology (ICT). Individuals upholding the policy maintain that it helps to unify ideology and stabilize the society (Krochmal, 1998), while users against it assert that censorship deprives them of the freedom of expression and the right to acquire online information (Zhou, 2008). To cope with the Internet block and obtain the online resources needed, there are a great number of Web users who resort to various types of software and applications to bypass China's GFW (Interactive Intelligence., 2008; Mathieson, 2006; Shi, 2010) so as to be exposed again to a great deal of knowledge and information from the blocked foreign websites, and benefit from the latest ICT.

Stimulated by the significance of ICT development in the digital age, Internet censorship and the GFW scaling in China have received a lot of research interests. Prior studies have paid attention to how network filtering prevents access to online information in China (MacKinnon, 2012), how censorship is conducted on blogging platform (MacKinnon, 2009), and how deletion based on key terms filtering is practiced on Chinese social media (Bamman, O'Connor, & Smith, 2012). With previous research mainly focusing on how Chinese Web users' online behaviors were passively affected by the Internet censorship from the censorship mechanism perspective, how Chinese Web users actively manage to bypass the restriction on their Internet access has been insufficiently studied. Given the importance of Internet censorship, some important questions arise: who are they? Why do they bypass the GFW? Do they bypass the GFW for the sake of Internet freedom or some other concerns? And what are their motivations for bypassing the Internet censorship? On the other side, due to copyrights and licensing concerns, most of the movies, TV shows, and video clips involving possible copyrights and license issues on Chinese content-sharing social media are also blocked to international IP addresses. It seemed that the GFW not only prevents Chinese Web users from having free access to online information in China, but also stops Internet users who reside outside China from enjoying an open cyberspace. To copy with such a situation, some Chinese Web users who travel or reside outside China utilize various types of software and online applications to circumvent the network filtering to enjoy the needed resources again as they were in China. The interesting phenomenon leads to some more questions: Why do this group of Chinese Web users put extra efforts to get access to the information and content that are only provided within China? What are their motivations for bypassing the GFW outside China? This study thus aims to advance the existing knowledge on Internet censorship by investigating Chinese Web users' active online behavior of bypassing the GFW on an individual level, as well as underlying motivations driving their online media consumption as it relates to bypassing the censorship.

2. Literature review

2.1. Internet censorship and the great firewall

GFW, technically speaking, operates in part through "inspecting TCP [Transmission Control Protocol] packets for keywords that are to be blocked" (Clayton, Murdoch, & Watson, 2006, p. 20). It is a massive, sophistically national censorship system using a number of techniques—including Internet address and DNS (domain name system) tampering, IP address blocking, Web site blocking, keyword filtering, network sniffer, and encryption forbidding—which automatically control and block the stream of online communication both entering and leaving China (Congressional-Executive Commission on China, 2002; Eko, Kumar, & Yao, 2011). Because of the GFW, a wide range of world-renowned websites that are under the government's restrictions and are not available to Internet users in Mainland China, including YouTube, Facebook, Twitter, Flickr, Blogspot, etc., which the public regard as harmless to government and sources for information (Eko et al., 2011; French, 2008).

Iran, Cuba, and China received the lowest scores on Internet freedom in the analysis by Freedom House (2012). China, home to the world's largest population of Internet users, has the most advanced system of controls, which has become even increasingly restrictive (French, 2008; Li, 2012). Email and Website requests are monitored; any piece with offending words such as "Taiwan independence" and "democracy" could be pulled aside and trashed (Einhorn & Elgin, 2006). According to the OpenNet Initiative (2009), a wide range of web sites containing some political or social sensitive content – such as Tibet, Taiwan independence, and pieces criticizing the authority – are blocked. Topics concerning "freedom" are barred from being posted as well (Einhorn & Elgin, 2006).

2.2. Anti-censorship and firewall bypassing

Chinese online surfers who are in need of the information (Shi, 2010), social network and entertainment, which are blocked by the GFW, gained mounting resentment and initiated an anti-censorship, also referred to as anti-blocking or anti-jamming, in several forms. A primary one is the increasingly user-friendly GFW-scaling tools, which enable millions of Chinese Internet users, who do not need to be technically savvy, to "bypass the firewall" using virtual private network (VPN) which redirects the traffic through an external server. Only in this way can these users get access to the blocked websites and restricted resources (French, 2008; Interactive Intelligence, 2008). The number of firewall-scaling Web users is four times as many as that in last year, with the average daily hits to the anti-censorship system being 194.4 million (Zhou, 2008).

Not only Chinese Internet users, but also foreign Internet users have been bypassing the GFW, especially during the Beijing Olympic Games, when international journalists were annoyed by the restriction on Internet access despite the earlier promises by Chinese officials (Interactive Intelligence, 2008). Such GFW scaling behaviors were justified by Deibert (2010), who maintained that a worldwide movement of citizens and policy-makes is needed to "protect the Internet as an open global source of information" (n.p.).

Since a large proportion of Chinese and foreign Internet users have been scaling the GFW by using various tools and applications, the government fought back by further beefing up its cyberwall and tightening the Internet controls (Freedom House, 2012; French, 2008; Li, 2012). In addition, China's tightening censorship fostered a backlash, since many Internet users who are previously not interested in politics have become more active in resisting the controls and choosing to protest (French, 2008). Therefore, the censorship and anti-censorship became an "arms race" in their tug-of-war for the reason that whenever the one party wants to censor, another party would resort to technology to get around it, then the censoring party would find a more sophisticated GFW to block the technological device, which triggers another bout.

Despite the dynamism between Internet users and authorities, most of the study on GFW and firewall circumvention was conducted from the technological perspective (e.g., Clayton et al., 2006), while scare communication research can be found. Since bypassing the firewall can be time-consuming and laborious (Interactive Intelligence, 2008), which requires extra time and effort, it is worth finding out why there are still a large group of Chinese Internet users who continuously scale the GFW at the expense of time and efforts and at the risk of breaking the regulation.

2.3. Uses and gratifications theory

Uses and gratifications (U&G) is an important theoretical framework to understand individuals' media use and consumption. Prior research on U&G basically focused on how media users actively consume media to satisfy cognitive and affective needs involving personal needs and entertainment needs (Rubin, 2002) and concluded the main categories of media functions include entertainment, social interaction, self-identity, and information seeking (McQuail, Blumler, & Brown, 2000). Contemporary U&G paradigm is grounded in the following assumptions that (a) the audience is active in media use, which is goal-directed and purposive, and (b) people select and use media to satisfy social and psychological needs (Lometti, Reeves, & Bybee, 1977). The purpose and goal are determined by social and psychological needs that audiences are actively trying to select and to satisfy by media.

Along with the popularization of Internet since 1980s, increasing attention has been paid to applying U&G to research on Internet use and consumption (e.g., Charney & Greenber, 2001; Chou & Hsiao, 2000; Diddi & LaRose, 2006; Ko, Cho, & Roberts, 2005; LaRose, Mastro, & Eastin, 2001; Vermaas & Van, 2004). The U&G framework has been employed to examine Internet use among the sub-groups of adolescents (Garcia, Lopez de Ayala, & Gaona, 2012), college students (Diddi & LaRose, 2006), computer-using employees (Garrett & Danziger, 2008), and Christian Radio audience (Bentley, 2012). Due to the booming social media, many researchers have applied the U&G framework to the social media context (e.g., Chung & Austria, 2010; Lee & Ma, 2012), including emerging gratifications sought (Leung, 2013; Quan-Haase & Young, 2010) and dynamic reciprocal effect of social media use (Wang, Tchernev, & Solloway, 2012).

Due to the various natures of different media and Internet applications, the motivations for media consumption varied among U&G studies. However, the fundamental ones are similar. For instance, gratifications are classified by Mukherji, Mukherji, and Nicovich (1998) as entertainment, interpersonal utility, social interaction, and surveillance, by Svennevig (2000) as diversion, personal relationships, social relationships, personal identity, surveillance, imagination, stimulation, and mood changing, by Korgaonkar and Wolin (1999) as control of information, interactive control, social escapism, social gratification and informational gratification, by Papacharissi and Rubin (2000) as interpersonal utility, leisure, search for information, and convenience and entertainment, and by Stafford, Stafford, and Schkade (2004) as process gratifications, content gratifications, and social gratifications. Despite the diverse categorization, it is consistent that people consume media to facilitate achieving their different goals (Katz, Blumler, & Gurevitch, 1974). Emphasizing a user-level view as opposed to the traditional mass media exposure perspective in understanding media consumption (Klapper, 1963), U&G is regarded as an appropriate framework for the current study, especially considering the Internet users actively choose to make extra efforts to bypass the firewall.

To the authors' best knowledge, little study exists attempting to apply U&G approach to the GFW-scaling behaviors—the solution to restrict of Internet stream (Eko et al., 2011)—from the communication perspective. Because of the different natures of firewalls set by the government in and outside Mainland China, that the former mainly blocks informative foreign media and social media for the governance purpose (Healy, 2007) while the latter denies the access to content-sharing websites which are only available to the Mainland Chinese users, the two groups of firewall-scalers also differ in terms of their needs to fulfill and the gratifications of obtaining the resources used to be inaccessible under firewalls. Therefore, given the diverse categorization of motivation for Internet use and the different functions of firewalls, the current study particularly interested in exploring the motives Chinese Web users had when bypassing the GFW in and outside Mainland China respectively. Therefore, the following research questions were posed:

RQ1: What are Chinese Web users' motivations for bypassing the GFW in and outside Mainland China respectively?
RQ2: Are there difference(s) in Chinese Web users' motivations for bypassing the GFW in and outside Mainland China?

3. Methodology

3.1. Procedure and sampling

Survey was adopted as the major methodology for this study. However, due to the limited articles in examining the online behavior of bypassing Internet censorship, a focus group with 12 Chinese college students was conducted at a major southeastern university to learn their social and psychological needs of scaling the GFW as comprehensively as possible. A focus group was conducted because this method tends to be used for "obtaining general information about a topic of interest" (Stewart & Shamdasani, 1990, p. 15). Being unique from other methodologies such as individual interviews and questionnaires, the focus group "presents a more natural environment than that of the individual interview because participants are influencing and influenced by others – just as they are in real life" (Krueger & Casey, 2000, p.11). Additionally, Stewart and Shamdasani (1990) stated that, "focus groups produce a very rich body of data expressed in the respondents own words and context...there is a minimum of artificiality of response, unlike survey questionnaires that ask for responses expressed on five point rating scales or other constrained categories" (p.17).

Most of the responses indicated that the Chinese Web users bypassed the GFW from China primarily for informative resources and social networking. In addition, an interesting issue was brought up that some participants as well as their friends and acquaintances bypassed the Internet censorship because such behavior made them feel being unique and standing out in their social network. Therefore, another variable was included into the study's framework based on the data gathered from the focus group.

A Web-based survey was employed to explore the research questions. The questionnaire, first developed in English, was translated into simplified Chinese, and back translated by bilingual third parties to improve the meaning equivalency and content validity. The data were collected using a non-probability sampling of Chinese international students who are from Mainland China and currently studying in the United States. Chinese international students were selected as the sample, because this group of Chinese Web users is a good representative of Chinese Internet users who may bypass the GFW both in and outside China. Before they left China for study abroad, they might have circumvented the Internet censorship in China. After they started their study abroad, they might need to bypass the GFW for more Chinese media consumption

online. Participants were recruited through Chinese Student Associations of major universities in the U.S., as well as personal referrals and snowballing. The online questionnaire consists of two parts: the motivations for bypassing the firewall in China and the motivations for bypassing the firewall outside China. Filter questions were set up at the beginning of each part of the questionnaire about whether they bypassed the firewall in and outside China. The respondents finished the survey if they chose "No" for each of the filter questions, and only those who chose "Yes" continued with the following questions.

3.2. Measures

To evaluate the Chinese Web users' motivations for using firewall-scaling technology, a 18-item scale with four dimensions was adapted from LaRose and Eastin's scale (2004) measuring Internet U&G and Park, Kee, and Valenzuela's scale (2009) measuring the U&G of SNSs. The four dimensions—entertainment ($\alpha = .82$), information seeking ($\alpha = .86$), socializing ($\alpha = .86$), self-status seeking ($\alpha = .87$)—were measured on 7-point Likert scale and achieved high reliability in the first part. The participants were asked to choose from 1 (strongly disagree) to 7 (strongly agree) to indicate their agreement with the statements that "When I was in China, I bypassed the GFW in order to cheer myself up, find a wealth of information, feel like I belong to a community, etc." The same 18 items were used for the second part where the participants were asked to choose from 1 (strongly disagree) to 7 (strongly agree) to indicate their agreement with the statements that "When I was outside China, I bypassed the GFW in order to cheer myself up, find a wealth of information, feel like I belong to a community, etc." Satisfied reliabilities were got for the four dimensions—entertainment ($\alpha = .77$), information seeking ($\alpha = .88$), socializing ($\alpha = .95$), self-status seeking ($\alpha = .92$)—in the second part. The dimensions to measure the Chinese Web users' motivations for firewall-scaling when residing in and outside China were selected based on the focus group data.

In addition, based on the focus group evidences that there were participants who bypassed the firewall to be unique in their social groups and different from others, the fifth dimension to evaluate Chinese Web users' need for uniqueness when bypassing the GFW was created by adapting Snyder and Fromkin's (1977) established scale. Five items "When I was in/outside China, I bypassed the GFW in order to make myself look cool, enable me to have more perspectives than people around me, get the feeling that I have broken the customs and rules, etc." were all measured on a 7-point Likert scale and the respondents were asked to choose from 1 (strongly disagree) to 7 (strongly agree) to indicate their agreement with the statements. The Cronbach's *alpha* score indicated satisfied reliability for both the part of bypassing the firewall in China ($\alpha = .88$) and the part of bypassing the firewall outside China ($\alpha = .96$).

Another two 7-point semantic differential scale measured the participants' firewall-scaling frequency. The participants were asked to choose from 1 (never) to 7 (always) to indicate on average how frequently did they "bypass the pass the firewall in China to the websites that are not available in Mainland China" and "bypass the firewall outside China to the websites that are not available to the users who are not in Mainland China" respectively.

4. Results

4.1. Sample characteristics

319 participants ($N = 319$) completed the online survey, with the mean age being 23.64 ($SD = 3.36$) and 62.6% being female. All of the respondents were Chinese students currently studying in the United States, who had been, on average, living in the U.S. for 28.11 months ($SD = 20.09$) and using the Internet for 132.49 months ($SD = 32.02$).

4.2. Descriptive statistics

Among all the participants, 185 (58.0%) bypassed firewall in China while 176 (55.2%) did outside China. As presented in Tables 1 and 2, the results of the descriptive analysis showed that the Chinese international students in the United States reported a medium level of frequency in bypassing the firewall in China ($M = 2.64$, $SD = 1.91$) but a higher level of frequency in bypassing the firewall outside China ($M = 3.19$, $SD = 2.33$) on average. They hold slightly negative attitude towards the GFW ($M = 3.12$, $SD = 1.61$), with adequate knowledge of censorship ($M = 3.99$, $SD = 1.93$), but limited number of software usage ($M = 1.24$, $SD = 1.20$).

When scaling the firewall in China, these participants ($N = 185$) were highly motivated in terms of information seeking ($M = 5.08$, $SD = 1.65$) while gained medium gratifications in entertainment ($M = 3.61$, $SD = 1.65$), socializing ($M = 3.29$, $SD = 1.54$), self-status ($M = 3.06$, $SD = 1.41$) and need for uniqueness ($M = 2.86$, $SD = 1.54$). Different from the motives for bypassing the firewall in China, the respondents ($N = 176$) conducted outside China mainly for entertainment ($M = 5.42$, $SD = 1.35$) and then for information seeking ($M = 3.85$, $SD = 1.84$). The other motivations—socializing ($M = 3.20$, $SD = 1.75$), self-status ($M = 2.86$, $SD = 1.52$) and need for uniqueness ($M = 2.61$, $SD = 1.60$)—were more or less at the same level.

4.3. Statistical analysis

To answer the first two research questions, four regression analyses were conducted with demographic variables controlled.

RQ1: What are Chinese Web users' motivations for bypassing the GFW in and outside Mainland China respectively?

As shown in Table 3, the logistic regression analysis results showed that among 319 respondents, 185 reported they bypassed the GFW in China while 134 did not. It was found that age was positively associated with Chinese Internet users' bypassing behavior ($B = .17$, $SE = .05$, *odds ratio* = 1.18, $p < .01$), which means that, for each one-year increase in the age, the Chinese Web users were about 1.18 times more likely to bypass the Internet censorship, with other variables in the model being controlled. Also, there was a negative association between attitudes towards Internet censorship and Chinese Internet users' bypassing behavior ($B = -.20$, $SE = .09$, *odds ratio* = 0.82, $p < .05$), which indicates that, for each one-unit increase in the favorable attitudes towards Internet censorship, there was approximately four-fifths (0.82) of a chance that the Chinese Web users would bypass the GFW, after controlling other variables in the model. Moreover, the use of bypassing software was positively associated with Chinese Internet users' bypassing behavior ($B = 3.56$, $SE = .40$, *odds ratio* = 35.03, $p < .001$), which shows that, for each one-unit increase in the use of scaling software and applications, the Chinese Web users were about 35.03 times more likely to bypass the Internet censorship, when other variables were controlled in the model. In other words, compared to Chinese Internet users who did not bypass the GFW in China, those who bypassed were older, held more negative attitudes towards the Internet censorship, and enjoyed a higher level use of scaling software/applications. Surprisingly, knowledge of Internet censorship was not a significant factor predicting whether Chinese Internet users would bypass the GFW in China or not.

Table 1
Zero-order correlations between the variables included and scale-relevant information of GFW bypassing in China.

	α	Mean	*SD*	1	2	3	4	5	6
1. Bypass frequency in China		2.64	1.91	1.00					
2. Entertainment	.82	3.61	1.65	.35***	1.00				
3. Info seek	.86	5.08	1.65	.33***	.38***	1.00			
4. Socializing	.86	3.29	1.54	.44***	.58***	.40***	1.00		
5. Self-status	.87	3.06	1.41	.34***	.63***	.46***	.77***	1.00	
6. Seek for uniqueness	.88	2.86	1.54	.24**	.52***	.45***	.61***	.70***	1.00

* $p < .05$.
** $p < .01$.
*** $p < .001$.

Table 2
Zero-order correlations between the variables included and scale-relevant information of GFW bypassing outside China.

	α	Mean	*SD*	1	2	3	4	5	6
1. Bypass frequency outside China		3.19	2.33	1.00					
2. Entertainment	.77	5.42	1.35	.35***	1.00				
3. Info seek	.88	3.85	1.84	.25**	.32***	1.00			
4. Socializing	.95	3.20	1.75	.17*	.37***	.77***	1.00		
5. Self-status	.92	2.86	1.52	.03	.31***	.74***	.85***	1.00	
6. Seek for uniqueness	.96	2.61	1.60	.11	.29**	.60***	.74***	.85***	1.00

* $p < .05$.
** $p < .01$.
*** $p < .001$.

Table 3
Summary of logistic regression analyses ($N = 319$).

	DV_1: Bypassing behavior in China			DV_2: Bypassing behavior outside China		
	B	*SE B*	*Odds ratio*	*B*	*SE B*	*Odds ratio*
Model 1						
Age	.08	.04	1.08*	−.02	.04	.98
Gender	−.04	.24	.96	.04	.24	1.04
Time in US				−.01	.01	.99
Model 2						
Age	.17	.05	1.18**	−.02	.04	.98
Gender	−.11	.31	.90	.02	.26	1.03
Time in US				−.00	.01	1.00
Attitude towards Internet censorship	−.20	.09	.82*	.05	.08	1.05
Knowledge about censorship	−.10	.08	.90	−.05	.07	.95
Bypassing software use	3.56	.40	35.03***	1.91	.28	6.78***

Note. DV: Dependent variable.
* $p < .05$.
** $p < .01$.
*** $p < .001$.

With regard to the frequency of bypassing Internet censorship behavior among the 185 respondents who bypassed the GFW in China before, the hierarchical analysis showed that, as shown in Table 4, a linear combination of age and gender jointly explained 8% of the variance in the participants' frequency of bypassing the firewall in China [(F change $(3,173) = 4.88$, $p < .01$, $\Delta R^2 = .08$)]. It was found that male Internet users conducted significantly more firewall-scaling behaviors in China than female counterparts ($t = 2.36$, $p < .05$, $\beta = .15$), and age was not a significant predictor of bypassing firewall behaviors in China. After controlling the demographic variables, it is found that the five motivations jointly explained 25% of the variance of Chinese Internet users' behaviors of bypassing the firewall at home [(F change $(5,168) = 12.18$, $p < .001$, $\Delta R^2 = .25$)]. Particularly speaking, information seeking ($t = 2.57$, $p < .05$, $\beta = .20$) and socializing ($t = 3.32$, $p < .01$, $\beta = .37$) were found to be significant predictors of Chinese Web users' firewall-scaling behaviors in China, with socializing explaining more variance in the dependent variable than information seeking. In contrast, entertainment, self-status and need for uniqueness turned out to be non-significant in predicting the Chinese Web users' firewall-scaling frequency in China.

As shown in Table 3, the logistic regression analysis results showed that among 319 respondents, 176 reported they bypassed the GFW outside China before while 143 did not. It was found that the use of bypassing software and applications was positively associated with Chinese Internet users' bypassing behavior outside China ($B = 1.91$, $SE = .28$, *odds ratio* $= 6.78$, $p < .001$), which means that, for a one-unit increase in the use of scaling software and applications, the Chinese Web users were 6.78 times more likely to bypass the Internet censorship when they were outside China, with other variables being controlled. In other words, compared to Chinese Internet users who did not bypass the GFW outside China, the group who did bypass the Internet censorship outside China enjoyed a higher level of use of scaling software/applications. Age, attitudes towards Internet censorship, and knowledge about Internet censorship all turned out to be non-significant factors influencing whether Chinese Internet users would bypass the Internet censorship outside China or not.

Table 4
Summary of hierarchical regression analyses.

	DV_1: Bypassing frequency in China				DV_2: Bypassing frequency in the US			
	ΔR^2	*B*	*SE B*	β	ΔR^2	*B*	*SE B*	β
Model 1	.08**				.02			
Age		−.06	.05	−.09		−.02	.05	−.03
Male		.43	.29	.11		−.41	.32	−.10
Time in US						−.00	.01	−.04
Model 2	.25***				.24***			
Age		−.03	.05	−.04		.02	.05	.04
Male		.60	.26	.15*		.16	.30	.04
Time in US						−.01	.01	−.10
Entertainment		.15	.10	.13		.48	.11	.32***
Info seek		.23	.09	.20*		.40	.13	.37**
Socializing		.45	.14	.37**		.29	.17	.25
Self-status		−.07	.16	−.05		−1.07	.23	−.80***
Uniqueness		−.06	.11	−.05		.38	.17	.30*

Note. N_{IN} = 185. N_{OUT} = 176. DV: Dependent variable.
* $p < .05$.
** $p < .01$.
*** $p < .001$.

With regard to the frequency of bypassing Internet censorship behavior among the 176 respondents who bypassed the GFW outside China, the hierarchical analysis showed that a linear combination of the demographic variables—age, gender, and time studied abroad—controlled in the regression analysis jointly explained only 2% of the participants' behaviors of bypassing the GFW outside China since none of the control variable is statistically significant [(F change $(3,166) = .82$, $p > .05$, $\Delta R^2 = .02$)]. However, the motivations explained 24% of the total variance [(F change $(5,161) = 10.35$, $p < .001$, $\Delta R^2 = .24$)], with entertainment ($t = 4.31$, $p < .001$, $\beta = .32$), information seeking ($t = 3.22$, $p < .01$, $\beta = .37$), self-status ($t = -4.75$, $p < .001$, $\beta = -.80$) and seek for uniqueness ($t = 2.32$, $p < .05$, $\beta = .30$) being significant predictors of the firewall bypassing behaviors outside China. Only socializing turned out to be non-significant in predicting the dependent variable.

RQ2: Are there difference in Chinese Web users' motivations for bypassing the GFW in and outside China?

Five paired sample t-tests (2-tailed) were implemented as shown in Table 5 to test the third research question. In the paired sample t-test, only the cases ($N = 122$) of bypassing the GFW both in and outside Mainland China were analyzed. It was found that the Chinese Web users enjoyed a higher level of motivations including information seeking ($M_{IN} = 5.36$, $M_{OUT} = 3.43$, $t(121) = 11.21$, $p < .001$), socializing ($M_{IN} = 3.50$, $M_{OUT} = 2.80$, $t(121) = 4.90$, $p < .001$), self-status ($M_{IN} = 3.24$, $M_{OUT} = 2.54$, $t(121) = 6.16$, $p < .001$), and uniqueness ($M_{IN} = 3.18$, $M_{OUT} = 2.28$, $t(121) = 5.88$, $p < .001$) when bypassing the firewall in China than when bypassing outside China. The Chinese Web users when bypassing the firewall in China only enjoyed significantly a lower level of entertainment seeking ($M_{IN} = 3.83$, $M_{OUT} = 5.27$, $t(121) = -9.61$, $p < .001$) than when bypassing outside China.[1]

Table 5
Summary of paired t-test results.

U&G	Bypass firewall		t-Value	df	p-Value
	In China	In US			
Entertainment	3.83	5.27	−9.61	121	.000
Info seek	5.36	3.43	11.21	121	.000
Socializing	3.50	2.80	4.90	121	.000
Self-status	3.24	2.54	6.16	121	.000
Uniqueness	3.18	2.28	5.88	121	.000

Note. $N = 122$.

5. Discussion

5.1. Theoretical and practical implications

The current study examined the motivations for and pattern of bypassing the Internet censorship among Chinese Web users by using a sample of Chinese international students studying abroad. Results showed that when bypassing the GFW in China, information seeking and social need are the participants' motives to get access to the foreign websites that are not available in China; when bypassing the GFW from outside China, entertainment, information seeking, and uniqueness seeking are positively associated with their bypassing behavior. The results also indicated that the participants' motives for bypassing the Internet censorship vary by whether they are in or outside China. For those individuals who bypassed the GFW when they were both in and outside China, compared to their bypassing behavior outside China, the participants bypassed the GFW in China more for seeking the information that are not available in China, meeting their social need that cannot be satisfied by Chinese social media, achieving their self-status that are not totally fulfilled via Chinese online media, and seeking personal uniqueness that might not be completed with regular Internet using behavior. However, compared to their bypassing behavior in China, the participants bypassed the GFW outside China more for entertainment seeking.

The findings extended the U&G theory to an underexplored media usage behavior, which is prevalent among over 5 million Chinese Internet users (Internet World Stats, 2012), and confirmed that the motivations of bypassing Internet censorship behavior in general are entertainment need, information seeking, and social need, consistent with the previous studies on motivations for online media consumption within the U&G framework (Hunt, Atkin, & Krishnan, 2012; LaRose & Eastin, 2004; Park et al., 2009). However, with regard to bypassing the GFW in China, only information seeking and social need are the significant predictors. Prior research demonstrated that the websites that are blocked from Chinese Internet users were basically the online sites

[1] M_{IN} represents the average need of the Chinese Web users when they bypassed the firewall in China. M_{OUT} represents the average need of the Chinese Web users when they bypassed the firewall outside China.

involving content that may violate relevant laws, regulations, and policies formulated by the government (see MacKinnon, 2012, for the specific laws, regulations, and policies), particularly the politically sensitive content (MacKinnon, 2012). Politically sensitive content in China does not always mean message calling for collective action. Anything that may exert a negative impact on China's international image could be politically sensitive, for example, air pollution and HIV/AIDs issue, no need to mention corruption or election. With respect to Chinese social media that are influenced by the rule of law, "soft Internet censorship" would usually prevent the Chinese Web users from being accessed to those contents by deleting the content containing politically sensitive terms (Bamman, O'Connor, & Smith, 2012). Therefore, when Chinese Internet users were trying to locate some information that might negatively influenced China's national image, and noticed that the content they were looking for were either blocked or deleted, it is highly possible for them to start being aware of the GFW and learn how to strategically circumvent it to figure out what occurred behind the deletion of the news or terms. In addition, there might be a large proportion of cosmopolitan Chinese scholars and elites, concerned about what happened beyond their home country and rhetorically commenting on political affairs (Liu & Yang, in press), are in great need of information from foreign sources. Therefore, they would bypass the firewall in China to get access to the foreign media (e.g., BBC) and informative websites (e.g., Wikipedia). Well-educated and skillful with new technology, these Chinese elites are an active group of firewall-scaling tools users and developers as well.

Although no official explanation was issued by Chinese authorities, some most popular SNSs, such as Facebook and Twitter, have been blocked since 2009 from Web users who reside in China, presumably due to its free flow of information, open discussion on social and political issues, and politically sensitive content that might bring up awareness, debate, or even organization into further collective action (Bass, 2009; Swartz, 2009). However, with social media featured with socializing functions being blocked, most of Internet users in China may lose the chance to keep in touch with online social network or take full use of SNSs to extend their offline network, even though they may have no interests into any political debate or any form of collective action. Therefore, when Chinese Web users tend to keep up with their friends and acquaintances who use Facebook or Twitter, or are referred to adopt SNSs for future communication, they might notice the fact that these social media sites being blocked due to the Internet censorship. If an individual has a relatively stronger need for socializing via these sites, it is more likely for him/her to bypass the GFW, and even circumvent the networking filtering more frequently than those with lower levels of social need.

With regard to the motives for bypassing the GFW outside China, the findings indicated that Chinese Web users who are residing abroad are in great need of the entertainment from their home country. When not all the entertainment needs would be satisfied through Satellite TV or video sharing social media (e.g., YouTube), Chinese Internet users tend to resort to Chinese video-sharing social media sites (e.g., Youku) for movies, TV shows in Chinese, etc. In this way, their ethnic media consumption will enable them to keep up with their ethnic culture. Previous research have suggested that individuals who are less acculturated to American culture have more home country media consumption (Hwang & He, 1999; Yang, Wu, Zhu, & Southwell, 2004; Zhou & Cai, 2002), it seems that future research should incorporate acculturation as a cultural factor into the framework to better understand Chinese Web users' firewall bypassing behaviors outside China.

Information seeking is another major motive for Chinese Web users who bypassed the firewall from the U.S. to China. There are two possible explanations for this finding. One possible reason might be that this group of Chinese Web users bypassed the GFW for free information that may be very costly or even not be available for them in the U.S. For example, the electronic copies of many popular fictions and textbooks in Chinese are free for the Chinese Web users online. For another example, some online resources (e.g., Japanese Manga with Chinese captions) that are not available in the U.S. are free only for Chinese Web users residing in China. Another possible reason would be that this group of Web users bypasses the GFW to utilize the video-sharing social media to be informed of the latest breaking news as well as social and cultural debates in China, as an increasing number of broadcast networks are uploading their news programs to the video-sharing sites and making it only available to the Internet users in Mainland China due to license issues.

It is somewhat surprising that uniqueness is positively associated with this group of Chinese Web users' frequency of bypassing the GFW from U.S. to China. One possible explanation would be that bypassing the GFW might meet their psychological needs of being different from their social groups. Facing the blocked information and ethnic media content that used to be completely available and free to them, they might enjoy the feeling of being different and breaking the rules when they figure out how to bypass the Internet censorship, particularly compared to their Chinese friends and acquaintances, the majority of whom might not know how to tear down the GFW between themselves and free information. This interesting finding suggested that more psychological variables such as personality traits might be included to further investigate the Internet users' behavior of bypassing the censorship.

Another noteworthy finding is that gender is a significant predictor of the firewall-scaling behaviors in China, but not outside China. Male Internet users bypassed GFW significantly more frequently than female users, while no significant difference was found between these two groups in terms of their firewall bypassing behaviors outside China. A possible reason is that along with the government tightened the control over Internet with more advanced anti-bypassing system (Freedom House, 2012), scaling the GFW in Mainland China has become increasingly difficult, which daunted a number of female Internet users who are usually less technology-savvy compared to male users. However, less control was exerted to the users outside China and simple software and applications (e.g., Unlock Youku, Have8) have made firewall bypassing more feasible. With less technological efforts required to bypass firewall in the U.S., female users are similarly handy in conducting the behavior.

The study findings also notes the significant differences between the gratifications of bypassing the GFW from China and to China among the Chinese Web users who had experienced bypassing behavior both in and outside China. For this special group of Internet users who "resisted" to Internet censorship no matter when they were in the U.S. or China, it seemed that they had stronger needs for information, socializing, self-status fulfilling, and uniqueness seeking when they bypassed the GFW in China, while stronger needs for entertainment when they circumvented the GFW when they were outside China. Again, based on previous discussion, acculturation might have played a critical role here. When being far away from home country and feeling not completely acculturated into host country yet, Chinese Internet users might be in high need of ethnic media consumption or any entertainment content in Chinese. While when they cannot locate such content via traditional media (e.g., satellite TV) or social media (e.g., YouTube, to which Chinese Internet users usually have no access as well as cannot upload any content), they would seek these entertainment content via Chinese content-sharing based social media, even though they have to bypass the GFW.

In addition, the findings of this study have an important implication for better understanding the relationship between this

group of young Chinese Web users' attitudes towards Internet censorship and their behavior of bypassing the GFW. Those who bypassed the GFW when they were in China held more negative attitudes towards the censorship, while those who enjoyed more favorable attitudes towards the censorship would less likely to circumvent the GFW. It seemed that attitudes towards censorship is an essential factor influencing Chinese Web users' bypassing behavior. However, multiple reasons determine the shaping of Chinese Web users' attitudes towards censorship. Future studies could employ more variables influencing how the positive or negative attitudes towards censorship develop to deepen the understanding of the social–political dimension of Web users' bypassing Internet censorship behavior.

The present study also contributed to the nascent research on gratifications of and motives for Internet users' behavior of bypassing the Internet censorship. By taking Internet user's active roles into consideration, this study not only extended research on motives for online behavior in the context of uses and gratification theory, but also contributed to the knowledge of Internet censorship from Web users' perspective. In addition, this study has gone some way towards providing a new angle to know about the group of Internet resisters by looking at their motives as well as adding a new perspective to understand Internet censorship and online activism, because the action of circumventing the Internet censorship may involve awareness of and attitudes towards Internet censorship, free exchange of information, and online freedom of expression in the global context, no need to mention the extra efforts this group of Web users would need to put on a behavioral level.

5.2. Limitations and future research

Despite the pioneering efforts to make a modest starting point for taking social–psychological approach to understand individuals' bypassing Internet censorship behavior, certain limitations and future research directions need to be noted. First, the authors do not believe that the social–political issues of censorship should be conflated with individual motivations. More variables related to social–political dimensions of the Internet censorship should be employed in future studies. Second, the limitation of nonprobability sample and the cross-sectional method used in this study should be taken caution when generalizing the study findings. Future research testing Chinese Internet users' motivation of GFW scaling based on random sampling is encouraged. Furthermore, as cultural backgrounds (e.g., individualistic vs. collectivistic, or become acculturated to Western culture vs. stay with Eastern culture) may determine the roles different motivations plays in adopting scaling software/application, cultural variables such as acculturation could be incorporated in future hypothesized model to better understand the behaviors of bypassing Internet censorship among Chinese Web users. Finally, acknowledging that the censorship scaling behaviors differ among individuals, and being enlightened by the motivations behind such behaviors, further research could take personalities into consideration, for deeper understanding of the idiosyncratic reasons of GFW scaling phenomenon.

In conclusion, this study delved into the motivations of Chinese Internet users bypassing the GFW both in and outside China, and made a comparison between their motivations of firewall scaling in these two different circumstances. The findings shed both theoretical and practical light on a significant media usage behavior, which involves millions of Internet users, but has hitherto not been explored, and further extended the U&G theory to this field. The authors hope that this research could inspire more scholars to look into this unique Internet behavior, which is widespread both in and outside the country home to one of the largest groups of Internet users.

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