

Examining the Posters and Lurkers: Shyness, Sociability, and Community-related Attributes as Predictors of SNS Participation Online Status

By
Vicky Minqi TAN

Graduation Project
Presented to the Faculty of Graduate School of
The Chinese University of Hong Kong
in Partial Fulfillment of Requirements
for the Degree of

Master of Science
in
New Media

Supervisor:
Professor Louis Leung

School of Journalism and Communication
The Chinese University of Hong Kong
May 2011

Examining the Posters and Lurkers: Shyness, Sociability, and Community-related Attributes as Predictors of SNS Participation Online Status

Abstract

The purpose of this study is to examine whether there is an inter-conversion between posters and lurkers, and to further measure the effects of shyness, sociability, and the community-related attributes on the social network sites (SNS) participation status (posting or lurking). Quantitative survey was conducted among 412 Hong Kong college students. Shyness and sociability were respectively measured by the shyness scale and sociability scale developed by Cheek and Buss (1981). Results show that the majority (53.6%) of the respondents change their participation status of posters or lurkers from time to time. Among the overall respondents, hypotheses were partially supported as shyness and online relationship gratification shows significant predictive power on the level of SNS participation. Furthermore, the online relationship gratification shows a significant positive relation with participation status among the “flip-floppers”. To conclude, while shyness has a fundamental effect on the participation status from the outset, online relationship gratification shows bigger influence on the inter-conversion between posters and lurkers.

Word count: 162

Key words: CMC; lurker; poster; shyness; sociability

Introduction

About Lurker and Poster

Lurkers, which are also called non-public participants (NPP) and browsers, are reported to make up the majority (the reported proportion varies from 90%¹ to around 50%²) of the online communities. However, studies on lurkers are still far from enough comparing to other computer-mediated communication (CMC) studies. Without a clear understanding of the lurkers, our knowledge about the online users and online behavior will remain incomplete.

According to previous relevant studies, several questions in terms of lurking behaviors have been answered; such as “why do lurkers lurk?”³, “what is the trigger that makes lurkers become posters?”⁴, “what do lurkers and posters think of each other?”⁵ etc. These researches provide a solid foundation for further studies.

However, after I went through most of the existing lurker studies, I found that to some extent the relationship between lurkers and posters is assumed to be a linear relation. That is, only the conversion from lurkers to posters is considered, and lurkers are supposed to be the pre-stage of posters. Little about the conversion from posters to lurkers has been studied.

¹ JonKatz. Luring the Lurkers, Retrieved from <http://slashdot.org/story/98/12/28/1745252/Luring-the-Lurkers>

² Mason, B. (1999). Issues in virtual ethnography. In K. Buckner (Ed.), *Ethnographic Studies in Real and Virtual Environments Inhabited Information Spaces and Connected Communities* (pp. 61-69). Queen Margaret College.

³ Nonnecke, B., & Preece, J. (2001). Why lurkers lurk. *Americas Conference on Information System 2001*.

⁴ Rafaeli, S., Ravid, G., & Soroka, V. (2004). De-lurking in virtual communities: a social communication network approach to measuring the effects of social and cultural capital, *Proceedings of the 37th Hawaii International Conference on System Sciences 2004*.

⁵ Nonnecke, B., Preece, J., & Andrews, D. (2004). What lurkers and posters think of each other. *Proceedings of the 37th Hawaii International Conference on System Sciences 2004*.

However, to my understanding about the posting and lurking behavior, as well as from the interviews with some friends of mine, I believe that posters and lurkers can inter-convert with each other. For instance, one of my friends used to be an active participant in the BBS of his university, but after he graduated, he became a lurker even though he still browses the BBS every day.

Holding such a doubt, I set up my first research question.

RQ1: Can posters become lurkers? If yes, what are the reasons behind?

By questioning the possibility of inter-conversion between posters and lurkers, I try to work out a more appropriate understanding of the relationship between the two types of online participants, which is different from the previous studies. It may also help provide a better understanding about the motivations of CMC participation.

Social Network Site (SNS) as the Targeted Virtual Community

Rafaeli and Sudweeks (1997) recognized lurkers as an important part of Internet groups, but admit that there is no information on their activity. Whittaker et al. (1998) also acknowledged the fact that while lurking is a prevalent activity, it leaves no public traces, so it cannot be fully studied.

In order to observe lurking behavior more easily, internet communities such as Email-based discussion lists – DLs (Nonnecke and Preece, 2000), public forums (Katz, 1992; Mason, 1999) and community building tools such as ReachOut (Soroka, Jacovi, & Ur, 2003) have been targeted.

In this study, I will choose the Social Network Site (SNS) as the targeted virtual community.

On one hand, previous targeted virtual communities are not either widely adopted or highly influential any more. On the other hand, SNS such as Facebook, Renren.com and Weibo are such hottest online communities nowadays that almost every online user adopts at least one SNS. On the other hand, because of the multi-functions of the SNS, users usually visit the SNS for multi-purpose (including information intention and intimacy intention); while forums and DLs usually just have single topic. Thus users may face more complicated condition when using SNS than forums and DLs. This may help me explore more reasons and motivations that trigger the posting and lurking participation status.

Literature Review

Definitions of lurkers

Besides the term “lurker”, the silent online users had many other different descriptors: such as “browsers” (Salmon, 2002), “legitimate peripheral participant” (McDonald, 2003), Read Only Participants-ROPs (Williams, 2004), non-public participant – NPP (Nonnecke, 2002), and “vicarious learner” (Lee, 1999). Whittaker et al. (1998) defined lurking as peripheral participation, done until a topic of interest is spotted. These alternative descriptors were given for the purpose of eliminating pejorative and suggesting there are other forms of valid participation outside of public posting. But since the term “lurker” is most frequently used and readers are probably more familiar with it than others, I will use “lurker” to describe the group of non-posters.

According to Merriam-Webster Dictionary (2010) , “lurk” as an online jargon was retrieved

from its original definition: “to lie in wait in a place of concealment especially for an evil purpose”, while the description “to read messages on an Internet discussion forum (as a newsgroup or chat room) without contributing” was for its online definition.

This is a pejorative definition, while the Free On-line Dictionary of computing (2010) held a more neutral attitude towards the lurking definition: Lurking is the activity of one of the "silent majority" in an electronic forum such as Usenet; posting occasionally or not at all but reading the group's postings regularly. This term is not pejorative and indeed is casually used reflexively: "Oh, I'm just lurking". The term is often used in "the lurkers", the hypothetical audience for the group's flam age-emitting regulars. Lurking and reading the FAQ are recommended netiquette for beginners who need to learn the history and practices of the group before posting.

When writing the 6th chapter, *Silent Participants: Getting to Know Lurkers Better*, in the book *From Usenet to CoWebs: Interacting With Social Information Spaces* (2002), Nonnecke and Preece (2000) defined “lurk” in a simpler and clearer way: “a lurker is anyone who rarely or never participates publicly in online groups and communities.”

Bowes (2002) offered two descriptions in terms of two different types of lurkers: “active lurker” and “passive lurker”. The “active lurker” is the user who responds privately to messages posted and /or passes information on to others (such as using Email); while the “passive lurker” is who reads but never participates.

In this research, “lurker” is defined as “online user who occasionally or never post publicly but still read the postings regularly”. By this means, the meaning of “lurker” is suggested to

be neutral and not pejorative. Moreover, even though lurkers seldom participate in online public communities, they should be differentiated from the online drop-outers who not only never participate in but also not visit to the Internet communities. Thus, a regular reading is a request to defining “lurker”. Besides, “lurkers” as “non-public participants”, though they rarely participate in the online public, they may still keep in regular touch with others via other online private ways (such as One-to-One Email) and offline ways (such as Face-to-Face communication).

Definition of Posters

Comparing to “lurk”, the online jargon “post” had less debate on its definition. According to Netlingo.com, “post” meant “a noun for a message entered into a network such as a newsgroup, discussion group, blog, social networking site, or online forum. The message is called ‘a post’ or ‘a posting.’ As a verb, it means the same as ‘to put up.’”

The definition in the Free On-Line Dictionary of Computing involved the public participation and netiquette: “to send a message to a mailing list or newsgroup. Usually implies that the message is sent indiscriminately to multiple users, in contrast to ‘mail’ which implies one or more deliberately selected individual recipients. You should only post a message if you think it will be of interest to a significant proportion of the readers of the group or list, otherwise you should use private electronic mail instead.”

By integrating these two definitions, in this research “post” is defined as “to put up a message to online publics (Forums, Email discussion lists, etc.), usually implies that the message is sent indiscriminately to multiple users.”

Reasons for Lurking

The most frequently discussed topic in the lurking studies was “the reasons for lurking”. In one of the earliest reasoning studies, Kraut (1992) suggested that lurking can be a way to learn about a new topic.

Additionally, JonKatz (1998) claimed that lurkers should be lured out. He also pointed out that many of the lurkers “are uncomfortable with the tone and hostility of public forums”, and they will feel comfortable only when there’re mediated discussions, no anonymous postings and no personal insults.

There was another frequent explanation of lurking: free-riding. According to Sweeney (1973), “Free-riding” was defined as a use of common good without contributing to it. Kollock and Smith (1996) even clearly defined lurkers as free riders.

Nonnecke and Preece (2001 & 2002) carried out a study of lurking using in-depth, semi-structured interviews with ten members of online groups. 79 reasons for lurking and seven lurker’s needs were identified from the interview transcripts. The authors revealed four categories of reasons for lurking: member’s character, group characteristics, stage of membership, as well as external constrains. Base on the result, Nonnecke and Preece further developed the gratification model (Figure 1), showing lurkers’ needs and the most mentioned reasons for lurking.

(* Insert Figure 1 about here *)

On the other hand, Rafaeli, Ravid and Soroka (2004) applied the concepts of social capital

and culture capital to explaining lurking and posting. They pointed out that a lack of social capital and culture capital results in the lurking behavior.

The existing explanations shed light on understanding the reasons for lurking, which can be concluded into two respects: Psychological attributes (member's characteristics and intention) and community-related attributes (relationship to the online-community, stage of membership and content quality etc.) The former attributes are assumed to steadily remain in the same level and will not change in short period, while the latter attributes can be accumulated or changed.

This brings me an important point. The steady psychological variables may affect the online users' behavior (whether lurking or posting) from the outset. But they won't activate the inter-conversion between posters and lurkers because of their steady nature. On the other hand, if there're triggers moving lurkers to posters, or posters to lurkers, they're probably community-related attributes.

Studies of De-lurking: Reasons for Posting

When a lurker speaks up for the first time, it is called 'de-lurking'⁶. That is, the reasons for de-lurking are also believed to be the reasons that motivate lurkers to post. As a matter of fact, the reasons and motivations for de-lurking are suggested to be community-related according to the previous de-lurking studies.

⁶ Datasegment.com, Retrieved from <http://onlinedictionary.datasegment.com/word/lurker>

JonKatz (1998) and Schultz and Beach (2004) suggested developing a friendly online environment can motivate lurkers to post. For example, building welcome areas and moderated areas are recommended. However, since these methods are just recommendations for website design, they are not scientifically proved to be applicable.

Rafaeli, Ravid and Soroka (2004) claimed that the accumulation of culture capital and social capital are the triggers that activate participation. The results of the study show that lurking is a way of getting to know the community and becoming an integral part of it – in other words gaining virtual social and cultural capital. Thus one's community virtual social capital will positively correlate not only with levels of users' activity but also the levels of de-lurking in the community. But on the other hand, the cognitive abilities of people to digest huge amount of information is limited. Then it will result in a decrease in virtual social capital, while participating activity levels remain high. That is, as number of postings increases, participating activity levels will no longer correlate with virtual social capital.

These existing answers for de-lurking provide a solid understanding about the conversion process from lurking to posting. Yet the reasons for a poster lurks in the online community are seldom discussed, neither do the reasons that an SNS user flip-flops between poster and lurker.

The Psychological Attributes: Shyness and Sociability

The psychological variables are believed to have the fundamental effects on the posting and lurking behavior from the outset. These attributes include two main elements:

social-inhibited personality and social intention.

There're many personalities that are claimed to affect the posting and lurking behavior, namely, shyness and sociability^{7,8}, introversion⁹, narcissism¹⁰ as well as confidence¹¹, while shyness, introversion, and lack of confidence can be defined as socially inhibited personalities.

McKenna and Bargh (2000) claimed that people with social inhibition (such as being socially anxious or shy) often turn to the internet to meet their social and intimacy needs. Moreover, Ebeling-Witte, Frank and Lester (2007) found that shyness was significantly associated with conversational preference (online versus face-to-face). That is to say, shy people should have a relatively high level of participation in the virtually community.

However, Nonnecke and Preece (2004) noted that while posters were frequently attracted to extrovert activities, lurkers demonstrate more introvert behaviour – not publicly asking questions but wanting answers, observation rather than contribution. Lurkers are more likely to be shy and lack confidence; feeling incompetent to post. Morris (1996) also pointed out that lack of confidence among lurkers led to them exhibiting "the kind of passivity commonly associated with TV viewers" whereby they were willing to absorb information but not adept at providing feedback and contributing to the online community.

⁷ Cheek, J. M., & Buss, A. H. (1981). Shyness and sociability. *Journal of Personality and Social Psychology* 1981, 41(2), 330-339.

⁸ Chan, M. (2011). Shyness, sociability, and the role of media synchronicity in the use of computer-mediated communication for interpersonal communication. *Asian Journal of Social Psychology*, 14, 84–90.

⁹ Amichai-Hamburger, Y. (2002). On the internet no one knows I'm an introvert: extroversion, neuroticism, and internet interaction. *Cyberpsychology & Behavior*, 5(2), 2002

¹⁰ Ong, E. Y. L., Ang, R. P., Ho, J. C. M., Lima, C. Y. J., Goh, D. H., Lee, C. S., Chua. A. Y. K., (2011). Narcissism, extraversion and adolescents' self-presentation on Facebook. *Personality and Individual Differences*, 50, 180–185.

¹¹ Nonnecke, B., Preece, J., & Andrews, D. (2004). What lurkers and posters think of each other. *Proceedings of the 37th Hawaii International Conference on System Sciences* 2004.

As a typical socially inhibited personality, shyness is selected to represent the socially inhibited personalities in the present study. Buss (1980) defined shyness in terms of one's reaction to being with strangers or casual acquaintances: tension, concern, feelings of awkwardness and discomfort, and both gaze aversion and inhibition of normally expected social behavior.

The two viewpoints to some extent give an interesting picture of the correlation between socially inhibited personalities and online communication behavior. The former viewpoint believed that socially inhibited personalities will turn people to more internet participation, while the latter one claimed that shy people may still not to post anything and lurk in the online community.

Thus, my second research question is set as follow.

RQ2: Do shy people tend to lurk online, or do they like to participate in the online community?

But in terms of the inter-convert between posters and lurkers, it comes to a very important point that while people may flip-flop between posters and lurkers, their personality should not change from time to time. Therefore, one's stable personality should not define their inter-conversion of the online participation status.

Here I set up my first hypothesis.

H1: For people who flip-flop between posters and lurkers, there's no significant correlation between shyness and their level of SNS participation (posting and lurking).

The intention attributes are relatively simple: users who do not find specific needs to participate in the communication are not motivated and try to reduce involvement and commitment to the community. According to Cheek and Buss (1981), sociability was defined as a tendency to affiliate with others and to prefer being with others to remaining alone. While people with high sociability may have more participating intention, my second hypothesis is set as follow.

H2: People with higher sociability will tend to post more online.

But similar to shyness, the intention attributes (sociability) are also relatively stable, so they are believed to have no significant relationship with the inter-conversion between posters and lurkers.

Accordingly, the third hypothesis is set as follow.

H3: For people who flip-flop between posters and lurkers, there's no significant correlation between people's sociability and their level of SNS participation.

The community-related Attributes

To conclude the existing findings of community-related attributes that affect the SNS participation status, we can come up with 6 categories as shown table 1. They are namely cultural capital, social capital, relationship to group, group characteristics, stage of membership, and external constrains.

(* Insert Table 1 about here *)

These findings give me a solid framework when designing the community-related attribute

part in the questionnaire.

Furthermore, as mentioned previously, the community-related attributes can be accumulated and changed in a relatively short period comparing to psychological attributes. Therefore I believe it's the community-related attributes that trigger the inter-conversion between posters and lurkers. Thus it leads to the following hypothesis.

H4: The community-related attributes will be significantly related to online SNS participation.

Methodology

Data Collection and Sampling

Questionnaires were distributed to the 6 main universities in Hong Kong. Data were gathered using a convenience sampling technique by interrupting students in the public places such as libraries, canteens and public squares. Respondents were all fulltime students. A total of 412 valid questionnaires were collected, reaching a response rate of 98%.

The sampling in each university was controlled based on each university's student population. As a result, the proportion distribution was similar to the student population of the universities. 50.7% of the participants were female, while 49.3% of them were male. Age ranges from 17 to 35 (Mean = 21.5, SD = 2.3), with 30.8% of the participants were year 1 undergraduate students, 27.7% of them were year 2 undergraduates, 18.9% were year 3 undergraduates, 2.7% were year 4 undergraduates, 13.1% were year 1 masters or MPhils,

while 5.3% were year 2 MPhils. Among the 405 valid responses, 371 said that Facebook was their most frequently participated community.

Measurement Scales

Shyness: The shyness scale developed by Cheek and Buss (1981) was used as a measurement.

The scale included 9 statements: (1) I am socially somewhat awkward, (2) I don't find it hard to talk to strangers, (3) I feel tense when I'm with people I don't know well, (4) When conversing, I worry about saying something dumb, (5) I feel nervous when speaking to someone in authority, (6) I am often uncomfortable at parties and other social functions, (7) I feel inhibited in social situations, (8) I have trouble looking someone right in the eye, and (9) I am more shy with members of the opposite sex. A five-point Likert scale was adopted in rating these items, from "strongly disagree" to "strongly agree". Cronbach's alpha of this construct was 0.72.

Sociability: The sociability scale built by Cheek and Buss (1981)³⁰ was selected as an indicator of the social intention. Respondents were asked to rank their agreement with 5 statements: (1) I like to be with people, (2) I welcome the opportunity to mix socially with people, (3) I prefer working with others rather than alone, (4) I prefer working with others rather than alone, and (5) I'd be unhappy if I were prevented from making many social contacts. A five-point Likert scale ranges from "strongly disagree" to "strongly agree" was used to measure the items. Cronbach's alpha of this construct was 0.75.

Community-related attributes: Based on the previous studies (Rafaeli, Ravid, Soroka, 2004; Nonnecke, Preece, 2001), 15 items of the community-related attributes were created in the

early stage: (1) I am getting on very well with friends on the SNS; I feel I'm an integral part of them, (2) I have been in contact with the online-community for a long time; we know each other very well, (3) I think friends in the SNS community are more knowledgeable than me, (4) I'm not familiar to the topics that my friends online talk about, (5) In the online community, friends' queries will be answered, so I don't need to bother to help, (6) The volume of the messages online is too long for me to digest, (7) The content posted by my friends online is quite few, (8) Online communities are very friendly, (9) Content on the SNS is boring; I'm not interested in it, (10) I often see hostile messages in the online communities, (11) My messages posted online often receive no response, (12) I just start to use SNS; I am still learning everything of it; (13) I am leaving / have left friends on the SNS, (14) I don't have much time using SNS, and (15) I often give up to post something because of my sensitive situation. Again, a five-point Likert scale from "strongly disagree" to "strongly agree" was used to rate the items.

A factor analysis was run to reduce the dimensions. As shown in Table 2, three dimensions of the community-related attributes were found, namely online relationship gratification, stage of membership, as well as content-related attributes. The third item, content-related attributes, is newly added and adopted from the attributes previously introduced in Table 1. It's related to how people think about the content created in the SNS, including the quality, volume and the topic of the content posted by others, and whether their message can get response from others.

(* Insert Table 2 about here *)

To guarantee the reliability of each dimension, 4 original items were excluded resulting 3 dimensions. Namely (1) In the online community, friends' queries will be answered, so I don't need to bother to help, (2) I often see hostile messages in the online communities, (3) I don't have much time using SNS, (4) I often give up to post something because of my sensitive situation. These items were not counted in the regression analyze of online participation.

SNS participation: SNS login frequency and login length, as well as posting frequency and volume were under consideration. There were 4 frequency options for SNS login, ranging from 1= "1-3 times a month" to 4= "at least once per day". The 4 length options for login ranged from 1= "less than 1 hour" to 4= "more than 3 hours". In terms of content posting, posting frequency and posting volume were considered as reflections of participation status. The content volume posted online was classified into 4 types: personal statement, reply to others, original creative works, and content forwarded elsewhere. A 5-point scale ranged from 1 (post once every 9 times of login or above) to 5 (post once every 1-2 times of login) was adopted to indicate the posting frequency. Additionally, another 5-point scale ranged from 1 (0 piece) to 5 (more than 10 pieces) was used to indicate the amount of different types of content that the respondents recently posted when they logged in last time. Thus it will indicate the posting volume. Furthermore, respondents were asked to report the participation status. Five options were listed: lurk all the time, used to lurk but active to post now, used to post actively but mostly lurk now, flip-flop between lurking and posting depending on circumstances, and actively post all the time.

Demographic variables were measured as control variables, including gender (female=0), age, year in higher education, as well as SNS adoption.

Findings

Profiles of SNS Users

Table 3 shows the profiles of SNS users, which includes login frequency and login length, posting participation, self-reported participation status, as well as SNS adoption. As indicated in the table, most respondents logged in SNS at least once per day (Mean = 3.67, SD = .74). And the length of logging in for most respondents were less than one hour (Mean = 1.64, SD = .92). It means that most of the respondents log in SNS frequently, but they don't stay long every time. Most respondents logged in at least 9 times and just post self-statement, original creation works and/or forward others' content for once. While most of them were more active in replying to others, they reply to others every 1-2 times when they logged in the SNS. By the last time when they logged in SNS, most respondents have posted 1-2 pieces of personal statement and/or replied to others, while most of them posted no original creation works and/or forwarded other content.

(* Insert Table 3 about here *)

According to the self-report of the participation status, 53.6% of the respondents said they flip-flop between lurkers and posters depending on circumstances, while 9.9% of the respondents said they used to actively posted in the SNS but knew they mainly lurked when

browsing the SNS. This finding answers the front part of Q1: Can posters become lurkers?

The answer is “yes”. In fact, most of the respondents (53.6%) change their participation status quite frequently. In other words, most of them do not stick to be either lurkers or posters, they will choose whether to post or not case to case. The relationship between posters and lurkers is NOT linear. Additionally, the percentage of respondents who used to lurk but now are active posters was only 2.5%, which is the lowest percentage among the 5 types of status. It means that lurkers are NOT the pre-stage of posters.

In terms of the SNS adoption, among the respondents, 91.6% adopted Facebook as their most frequently used SNS, 69.5% adopted only one SNS, while 21.4% adopted two SNS.

Hypotheses Testing

A linear regression was performed to assess the effect of shyness, sociability, and community-related attributes on SNS participation status. As shown in Table 4, after controlling for age, gender, education years, and adoption of Facebook (1 = “yes”), the results show that shyness was a weak but significant predictor of posting frequency ($\beta = -.07$, $p \leq .1$), posting volume ($\beta = -.06$, $p \leq .05$), as well as overall level of SNS participation ($\beta = -.13$, $p \leq .05$). It shows that shyness has negative correlations with the participation status, which means the shyer the people are, the lower volume and less active do they post. Thus Q2 was answered that shy people will tend to lurk online from the outset. But H2 was rejected that sociability shows no significant correlation with posting frequency ($\beta = .00$, $p = .91$), posting volume ($\beta = .06$, $p = .17$) and the overall level of SNS participation (posting frequency + posting volume, $\beta = .19$, $p = .38$).

On the other hand, H4 hypothesized that community-related attributes have significant correlation with the SNS participation status was also partially supported. As shown in Table 4, online relationship gratification was a strong and significant predictor of posting frequency ($\beta = .60$, $p < .001$), posting volume ($\beta = .28$, $p < .001$), and the overall level of SNS participation ($\beta = p < .001$). As predicted, people with higher online relationship gratification will tend to post more. Furthermore, the results show that stage of membership and the content-related attributes have no significant correlation with posting frequency, posting volume, and the overall level of SNS participation.

(* Insert Table 4 about here *)

Data Analyzing on “Flip-floppers”

In the present study, emphasis is given on the inter-conversion between posters and lurkers. As reported in the profiles of the respondents, the majority (53.6%) of the respondents are “flip-floppers” who frequently change their participation status depending on different circumstances. As a result, another liner regression was run on the respondents group that self-reported to be “flip-floppers”. By analyzing the data of the “flip-floppers”, it may more clearly reveal the prediction effect of shyness, sociability and the community-related attributes on the SNS participation.

As shown in table 5, after controlling the demographics of age, gender, education years, and adoption of Facebook (1 = “yes”), as well as selecting only cases of “flip-floppers”, the results show no significant relationships between the psychological attributes and the SNS participation. That is, shyness was NOT significantly related to posting frequency ($\beta = -.07$, p

= .18), posting volume ($\beta = -.03$, $p = .50$), as well as the overall level of SNS participation ($\beta = -.10$, $p = .21$). In the same way, sociability is NOT a significant predictor of posting frequency ($\beta = -.01$, $p = .91$), posting volume ($\beta = .12$, $p = .11$), as well as the participation status ($\beta = .13$, $p = .36$). Accordingly, psychological variables are NOT significantly related to the SNS participation for flip-floppers. As a result, both H1 and H3 were accepted.

(* Insert Table 5 about here *)

On the other hand, online relationship gratification as a community-related attributes still show strong significant and positive relations with posting frequency ($\beta = .70$, $p < .001$), posting volume ($\beta = .28$, $p < .001$), and the participation status ($\beta = .99$, $p < .001$). Stage of membership was indicated as an approaching predictor of posting frequency, but had no significant relationships with neither posting volume nor overall level of SNS participation. Moreover, content-related attributes shows no significant relations among the 3 types of participation dimensions: posting frequency, posting volume, and the overall level of SNS participation. As a result, only one of the community-related attributes – online relationship gratification – was found as a significant predictor of the SNS participation, while the other two attributes – stage of membership and content-related attributes – were not.

Interestingly, the adoption of Facebook was indicated as a significant but negative predictor of both posting frequency ($\beta = -1.82$, $p < .05$) and the overall level of SNS participation ($\beta = -3.37$, $p < .05$). That is to say, flip-floppers who don't use Facebook tend to post more frequently and actively than Facebook users.

Thus the latter part of Q1 was answered. As a significant motivation of the inter-conversion between posters and lurkers, online relationship gratification has bigger effect on the SNS participation level comparing to other tested factors, including shyness, sociability, stage of membership, content-related attributes as well as other demographics factors. Online relationship gratification is positively related to level of SNS participation.

Conclusions

The purpose of this study is to find out whether there is an inter-conversion between posters and lurkers, and to further measure the effects of shyness, sociability, and the community-related attributes on the level of SNS participation.

Generally, both shyness and online relationship gratification are predictors of the level of SNS participation. But shyness is more like a fundamental factor that affects people's online communication attitude from the outset. It means, shy people will more likely tend to be lurkers than extravert people. However, even shy people could become active online posters because of their high online relationship gratification. Comparing to shyness, the relationship between online communities has a bigger effect on people's level of SNS participation. From my point of view, it seems that people's personality is blurred out because of the anonymity of the online community. On the other hand, social-related attributes like online relationship gratification would more significantly affect people's online behavior.

To find out reasons behind the inter-conversion, two hypotheses were tested on the respondents who self-report to be participation “flip-floppers”. The analysis results show that online relationship gratification was the strongest predictor of posting frequency, posting volume, as well as the overall level of SNS participation. It means that high gratification of the online community will motivate people to post more. But on the other hand, if the online relationship gratification is low, it may turn even extrovert people to be lurkers.

To conclude, while shyness has a fundamental effect on the participation status from the outset, online relationship gratification shows bigger effect on the inter-conversion between posters and lurkers.

Online community is a channel that people can communicate and share ideas freely. A good SNS should motivate all their users to post and share information with others. People will most likely to post online when they feel comfortable with their online community. Thus, building a friendly and harmonious environment of the SNS is very important. And the feature of a harmonious online environment includes: people know each other very well, people feel they are integral part of their online community, they think their online community is friendly, and their friends online are knowledgeable than them.

Limitations

Although the present study has come up with some interesting findings, several limitations should be noticed.

First of all, the alpha scores of the three dimensions of community-related attributes are quite low. The low scores should be due to several reasons. First, there's no tested scale of the community-related attributes found in previous studies. All the items were collected and interpreted from the community-related factors of others' rough conclusions. This may lead to an unscientific scale that has ambiguous meanings or low reliable items. Second, all the respondents were conveniently selected in public places. They may not take the questionnaire seriously and rate the items without much thought. Thus, further studies are needed to refine the scale for better reliability.

The second limitation is the sub-sample of the "flip-floppers" was quite small, reaching to only 217 samples. The small scale may affect the reliability of analysis results. For example, the adoption of Facebook was unexpectedly related to the inter-conversion between the two participation statuses. If the sample scale is larger, the effects of each factor on the participation status may be better.

The sampling method is another limitation. Even though the sample scales of each university were strictly controlled based on the university's student population, other demographic factors such as the sex ratio, major and education year were not controlled. In addition, accidental sampling is not as scientific as random sampling. These sampling limitations may lead to bias of the data.

Other limitations include the use of university-student population in Hong Kong, which limits the generalizability of the findings to other student populations and countries. Moreover, the research design and analysis results cannot account for causality among variables.

Therefore, it is not clear whether the SNS participation is derived from online relationship gratification or vice versa. Further experimental or longitudinal studies are required to establish the direction of the relationship.

Figure 1: The gratification model showing lurkers needs and the most mentioned reasons for lurking, built by Nonnecke and Preece (2001)

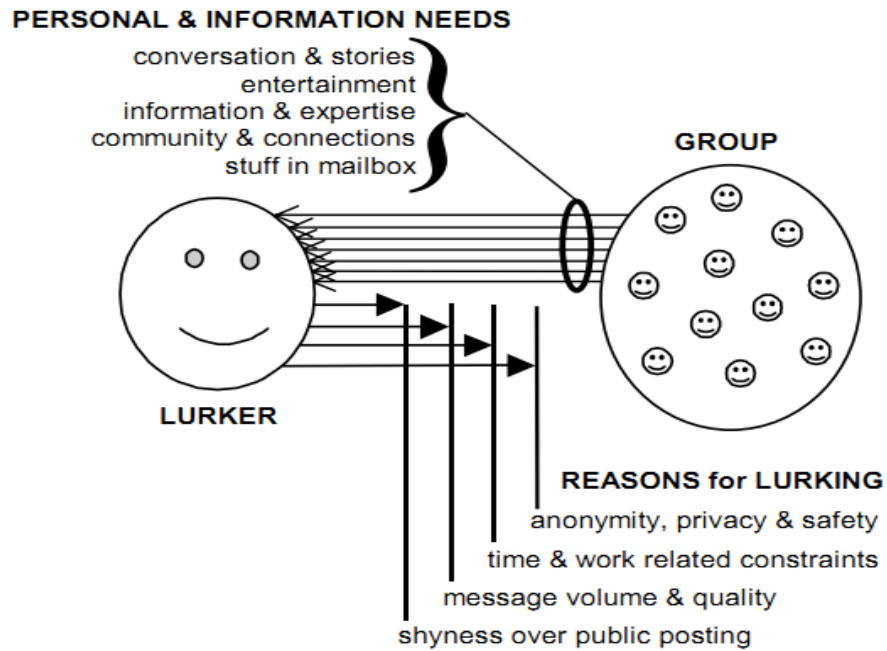


Table 1: Community-related Attributes

Items	Details
Cultural Capital ¹²	Cultural capital was defined by Bourdieu as knowledge that enables an individual to interpret various cultural codes. Bourdieu stated that cultural capital is unevenly distributed among different society classes.
Social Capital ¹²	Social capital can be roughly defined as a value that connection between the people in the community brings both to an individual and a community as a whole.
Relationship to group ¹³	Describes how individuals see themselves in relation to the group, either socially or from an informational perspective. The relationship to group either inhibits their public participation or reduces the need to participate.
Group characteristics ¹³	Describes reasons for lurking related to group characteristics. These characteristics cover a wide range of attributes that affect whether an individual lurks.
Stage of membership ¹³	Interviewees articulated two specific periods in the life of their membership in which lurking were likely to take place. The first is when they are getting to know the group and the second is during the time when they are leaving the group.
External constraints ¹³	External constraints usually relates to the users' external condition, such as time and job.

¹² Rafaeli, S., Ravid, G., & Soroka, V. (2004). De-lurking in virtual communities: a social communication network approach to measuring the effects of social and cultural capital, Proceedings of the 37th Hawaii International Conference on System Sciences 2004.

¹³ Nonnecke, B., & Preece, J. (2001). Why lurkers lurk. Americas Conference on Information System 2001.

Table 2: Dimension Reduction of Community-related Attributes (N = 412)

Items	Mean	SD	Alpha
Online Relationship Gratification			.68
1. I have been in contact with the online-community for a long time; we know each other very well.	2.99	.97	
2. I am getting on very well with friends on the SNS; I feel I'm an integral part of them.	3.22	.88	
3. Online communities are very friendly.	3.34	.79	
4. I think friends in the SNS community are more knowledgeable than me.	2.63	.92	
Stage of Membership			.46
5. I am leaving / have left friends on the SNS.	2.03	.86	
6. I just start to use SNS; I am still learning everything of it.	2.12	1.00	
Content-related Attributes			.51
7. The content posted by my friends online is quite few.	2.26	.86	
8. Content on the SNS is boring; I'm not interested in it.	2.72	.79	
9. I'm not familiar to the topics that my friends online talk about.	2.59	.76	
10. The volume of the messages online is too large for me to digest.	2.86	.99	
11. My messages posted online often receive no response.	2.48	.80	

Notes: Scale used: 1=strongly disagree, 2=disagree, 3=hard to say, 4=agree, 5=strongly agree

Table 3: Profiles of Respondents (N = 412)

	Mean	Mode	S.D.
Log-in			
Frequency	3.67	4.00	.74
Length	1.64	1.00	.92
Posting Frequency			
personal statement	2.24	1.00	1.41
reply to others	3.16	4.00	1.44
original creative works	1.90	1.00	1.32
content forwarded elsewhere	2.28	1.00	1.45
Posting Volume			
personal statement	1.82	2.00	.74
reply to others	2.49	2.00	1.02
original creative works	1.44	1.00	.74
content forwarded elsewhere	1.79	1.00	1.38
Self-reported Participation Status		% of Yes	
flip-flop between lurking and posting depending on circumstances		53.6	
lurk all the time		29.1	
used to post actively but mostly lurk now		9.9	
actively post all the time		4.9	
used to lurk but active to post now		2.5	
SNS Adoption		% of Adoption	
Facebook		91.6	
Renren.com		22.0	
Sina Weibo		18.0	
Foursquare		0.5	
Twitter		6.7	
Myspace		1.7	
		Mean	Mode
Amount of Adopted SNS		1.41	1.00
			S.D.
			.71
		% of Adoption	
1		69.5	
2		21.4	
3		7.6	
4		1.2	
5		0.2	

Notes:

- Log-in frequency was coded 1 = 1-3 times a month, 2 = 1-2 times a week, 3 = 3-5 times a week, 4 = at least once per day
- Log-in length was coded 1 = less than 1 hour, 2 = 1-2 hours, 3 = 2-3 hours, 4 = 3 hours or above
- Posting frequency was coded 1 = post once every 9 times of log-in or above, 2 = post once every 7-8 times of log-in, 3 = post once every 5-6 times of log-in, 4 = post once every 3-4 times of log-in, 5 = post once every 1-2 times of log-in
- Posting frequency was coded 1 = 0 piece, 2 = 1-2 pieces, 3 = 3-5 pieces, 4 = 6-9 pieces, 5 = 10 pieces or more

Table 4: Regression of demographics, shyness, sociability, and community-related attributes on participation status (N = 412)

	Posting Frequency β	Posting Volume β	Overall β
Demographics			
Age	-.05	-.27	-.31
Gender	-.15	-.06	-.19
Higher Education Years	-.07	-.15	-.22
Facebook Adoption	-.94	-.24	-1.19
Psychological Variables			
Shyness	-.07#	-.06*	-.13*
Sociability	.01	.06	.09
Community-related Attributes			
Online Relationship Gratification	.60***	.28***	.88***
Stage of Membership	.27#	-.07	.21
Content-related Attributes	-.07	.01	-.07
R²	.14	.12	.19
Adjusted R²	.12	.10	.17
F	6.97***	5.75***	9.6***

Notes: Figures are standardized beta coefficients.

$p \leq .1$, * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$, N = 412

Overall = Posting Frequency + Posting Volume

Table 5: Regression of demographics, shyness, sociability, and community-related attributes on participation status of “flip-floppers” (N = 217)

	Posting Frequency β	Posting Volume β	Overall β
Demographics			
Age	-.05	-.08	-.08
Gender	-.02	.13	.14
Higher Education Years	.07	-.39#	-.36
Facebook Adoption	-1.52	-1.82*	-3.37*
Psychological Variables			
Shyness	-.07	-.03	-.10
Sociability	-.01	.12	.13
Community-related Attributes			
Online Relationship Gratification	.70***	.28***	.99***
Stage of Membership	.36#	-.15	.20
Content-related Attributes	.04	-.10	-.05
R²	.22	.15	.26
Adjusted R²	.18	.11	.23
F	6.08***	3.86***	7.50***

Notes: Figures are standardized beta coefficients.

$p \leq .1$, * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$, N = 217

Overall = Posting Frequency + Posting Volume

References

- Amichai-Hamburger, Y. (2002). On the internet no one knows I'm an introvert: extroversion, neuroticism, and internet interaction. *Cyberpsychology & Behavior*, 5(2), 1250-128.
- Bowes, J. (2002). *Building online communities for professional networks*. Paper presented at the Global Summit of Online Knowledge Networks, Adelaide, Australia. Retrieved Jan 20, 2010, from <http://www.educationau.edu.au/globalsummit/papers/jbowes.htm>.
- Buss, A. H. (1980). *Self-Consciousness and Social Anxiety*. San Francisco, CA: Freeman.
- Chan, M. (2011). Shyness, sociability, and the role of media synchronicity in the use of computer-mediated communication for interpersonal communication. *Asian Journal of Social Psychology*, 14(1), 84–90.
- Cheek, J. M., & Buss, A. H. (1981). Shyness and sociability. *Journal of Personality and Social Psychology*, 41(2), 330-339.
- Ebeling-Witte, S., Frank, M., & Lester, D. (2007). Shyness, internet use, and personality. *CyberPsychology & Behavior*, 10(5), 713-716.
- Kollock, P., and Smith, M. (1994). Managing the virtual commons: cooperation and conflict in computer communities. *Computer Mediated Communication: Linguistic, Social, and Cross-Cultural Perspectives*. Retrieved on Jan 30, 2010, from <http://www.sscnet.ucla.edu/soc/csoc/papers/virtcomm/Virtcomm.htm>
- Lee, J., & McKendree, J. (1999). Learning vicariously in a distributed environment. *Active Learning*, 10, 4-9.

- Mason, B. (1999). Issues in virtual ethnography. In K. Buckner (Ed.), *Ethnographic Studies in Real and Virtual Environments Inhabited Information Spaces and Connected Communities*, (pp. 61-69). Wellington, New Zealand: Queen Margaret College.
- McKenna, K.Y.A., & Bargh, J.A. (2000). Plan 9 from cyberspace: the implications of the internet for personality and social psychology. *Personality and Social Psychology Review*, 4(1), 57–75.
- Morris, M., & Ogan, C. (1996). The Internet as mass medium. *Journal of Computer-Mediated Communication*, 1(4), 39-50.
- Nonnecke, B., & Preece, J. (2000). *Persistence and lurkers in discussion lists: a pilot study*. Proceedings of the 33rd Hawaii International Conference on System Sciences, Hawaii, USA.
- Nonnecke, B., & Preece, J. (2004). *Online lurkers tell why*. Proceedings of the Tenth Americas Conference on Information Systems, New York, USA.
- Nonnecke, B., Preece, J., & Andrews, D. (2004). *What lurkers and posters think of each other*. Proceedings of the 37th Hawaii International Conference on System Sciences, Hawaii, USA.
- Ong, E.Y.L., Ang, R.P., Ho, J.C.M., Lima, C.Y.J., Goh, D.H., Lee, C.S., & Chua. A.Y.K. (2011). Narcissism, extraversion and adolescents' self-presentation on Facebook. *Personality and Individual Differences*, 50, 180–185.
- Rafaeli, S., & Sudweeks, F. (1997). Networked interactivity. *Journal of Computer Mediated*

Communication, 2(4), 18-30.

Rafaeli, S., Ravid, G., & Soroka, V. (2004). *De-lurking in virtual communities: a social communication network approach to measuring the effects of social and cultural capita*. Proceedings of the 37th Hawaii International Conference on System Sciences, Hawaii, USA.

Salmon, G. (2002). E-tivities the key to active online learning. *Turkish Online Journal of Distance Education*, 4(1). Retrieved on Jan 20, 2011, from <http://tojde.anadolu.edu.tr/tojde8/reviews/etivities.html>.

Soroka, V., Jacovi, M., & Ur, S. (2003). *We can see you: A study of communities' invisible people through reach-out*. In Proceeding of Communities & Technologies 2003, Amsterdam, The Netherlands.

Sweeney, J.W. (1973). An experimental investigation of the free-rider problem. *Social Science Research*, 2(2), 277-292.

Whittaker, S., Terveen, L., Hill, W., & Cherny, L. (1998). *The dynamics of mass interaction*, ACM Conference on Computer Supported Cooperative Work, 11/1998, Seattle, WA.

Williams, B. (2004). Participation in on-line courses – how essential is it? *Educational Technology & Society*, 7(2), 1-8.