The Study on the Flow Experience of Mobile Facebook Use Effects on the Post-hoc Interpersonal Relationships

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Abstract

This study empirically investigates the flow experiences of different feeling levels when using SNS and how this has impact on the interpersonal communication. Using a survey of Facebook users, this study examines how the flow factors of intrinsic motivation impacts the self-disclosure of SNS and the post-hoc interpersonal relation change when people use SNS. Also, we study how the self-disclosure of SNS has an impact on the post-hoc interpersonal relation change. As a result, enjoyment and curiosity of the flow experience has an impact on the self-disclosure of SNS and telepresence has an impact on the post-hoc interpersonal relation change. In addition, the results show the positive effect between the self-disclosure of SNS and the post-hoc interpersonal relation change. This result demonstrates the relationship between the flow experience and the self-disclosure of SNS and supports the logic that self-disclosure on the SNS has impact on the interpersonal relation.

Keywords: Social Network Service, SNS, Facebook, Self -disclosure, Telepresence, Flow

1. Introduction

The number of Facebook users has been increasing steadily since 2007. As the number of Facebook users is increasing rapidly and interest in Facebook is rising, the SNS(Social Network Service) has become an important academic subject in the communication field. Studies on the SNS were mainly related to self-disclosure, privacy violations, or service trust relations [1, 2, 3], motives and satisfaction for using the SNS [4], and social capital formation in the SNS [5, 6]. However, those studies did not fully discuss which factors increased the use of SNS sites like Facebook, and whether these factors actually contributed to the changes in personal relations(hereafter "post-hoc relation change"). People depend on Facebook more for their CMC(computer-mediated communication) activities such as chatting, messaging, and blogging, which has been performed by other web services, which implies that people are more satisfied with the SNS and other existing CMC channels.

The "flow" concept has been discussed as a factor that affects CMC activities on the Internet positively. The flow refers to the optimal experience in which people are pleased with themselves when they are doing something. The flow described in CMC studies is an important concept in explaining the interaction between the computer environment and human

beings, and has been recognized as an intrinsic motivation factor that affects Internet use. It was understood that users don't access the Internet with extrinsic motivation to obtain the specific behavioral results [7]. From this standpoint, it can be assumed that people depend and concentrate on Facebook due to the flow experienced from using Facebook. The flow experience in using Facebook can affect the social network based on Facebook.

The critical mind for this study starts from this viewpoint. This study attempts to empirically verify how the flow experience in using Facebook can contribute to user's self-disclosure behavior in the SNS environment and the post-hoc relation change after using the SNS. If we accept that the flow is the optimal experience in certain behavior and intrinsic motivation that causes the self-disclosure behavior and continuous use, both self-disclosure(concrete action of using the SNS) and its results(post-hoc relation change) would be affected by the flow experience.

2. Theoretical Background and Related Works

2.1 SNS Interaction, Personal Relations and Self-disclosure

The SNS is a web-based service that provides the social relation network formation and sharing function. Boyd & Ellison [8] explained the social relation network functions that are provided by the SNS from three aspects. 1) Users can introduce their profile to others and share their opinions within this limited system. 2) Users can add or combine their contact list with the user to form or retain relationships by using the connection network. 3) Users can interact with others in a connection network, or they can view the interaction between other users. Therefore, the SNS is a new type of personal communication channel that can communicate with others, or form, develop, and retain the personal relationship, by using the social relation network based on the web service.

Studies on the existing CMC and personal relation development agree that CMC activities promote online interaction. However, it doesn't provide a consistent answer to the question of whether CMC activities actually affect personal relationships, rather than used as simple online interaction. Some studies found that CMC activities are helpful in meeting a new or unfamiliar person, and online interaction exercises a positive effect on the formation, development, and retention of actual personal relationships, if offline interaction is also performed at the same time [9]. On the contrary, other studies pointed out that CMC activity could reduce the scope of social exchange, or actual personal relationships, such as the lack of communication at home or loneliness [10].

As described above, there are different opinions about whether CMC activities can actually develop online interaction into actual personal relationships or not. However, it is very likely that interaction on the SNS can influence actual personal relationships positively due to the fact that the SNS has a high similarity between an offline social relation network and online social relation network, unlike the existing CMC, which is based on anonymity. It was found that the SNS is actually helpful in retaining offline relationships via the online network [11]. SNS users spend more time in finding the person they already knew offline, or adding the person to their friends list, rather than searching for an unfamiliar person who has similar interests or hobbies [5].

It is necessary to have notice of self-disclosure as a communication behavior in SNS usage. Because it is an important basis for forming, developing, and retaining intimate personal relations by increasing the predictability on oneself and the other party, and the level of mutual trust [12]. It was found that self disclosure during CMC also shows these characteristics and effects. People tend to expose themselves to strangers more during CMC than during face-to-

face communication [13]. Sometimes, people carefully edit their message and exaggerate their values for ideal self-expression in the CMC environment [14]. However, these existing studies only identified the reason why people disclose or exaggerate themselves more during CMC. The studies didn't check whether the degree of self-disclosure online actually affects the formation, development, or retention of actual personal relations.

The self-disclosing act and level also play an important role in the interpersonal communication using the SNS, because all SNSs disclose personal information and to others who share the connection network, and they perform interpersonal interaction based on this self-disclosure. In particular, the "openness" or "visibility" function of Facebook, such as "invite friends," "open to everyone," or "open to friends only" enables users to control how much information and what kind of information will be disclosed about themselves. In addition, Facebook can check interaction with others, because SNS users disclose their social relation network.

However, no empirical study has been made yet regarding how the self-disclosing act and level using the SNS affects the changes in personal relations after using the SNS. The connection network in the SNS is formed by self-disclosure (users open their profiles), and users perform interpersonal interaction based on self-disclosure. Therefore, this study assumes that self-disclosure on Facebook represents interpersonal interaction on the SNS, and will check how self-disclosure affects the post-hoc relation change after using the SNS.

2.2 SNS use and the Flow

Usually, users use the media according to some special motivation or purpose. However, some users use the media repetitively like a habit, when fun and interest in using the media are accumulated for a long time [15]. As a result, the flow theory has recently drawn attention as it emphasizes intrinsic motivation (psychological attribute) as an antecedent variable that determines the media use. In particular, several studies indicated that the Internet is used for the pleasure of interacting with the computer environment, rather than to achieve a particular purpose or task [7, 16].

Csikzentmihalyi [17] explained that an "intrinsically motivated act" is the act that is continued because the act itself is fun and pleasant, even though there is no special compensation from the outside. Therefore, the act itself is the compensation for intrinsic motivation, and the optimal experience obtained from this act is defined as the "flow." The flow theory was mainly applied from the study on the interaction between web services (computer media environment) and human beings, because the web service is affected by the act itself, rather than by the particular purpose and task. Most studies are carried out in the management field. Those studies attempted to verify how the flow, as intrinsic motivation, affects the continuous use of the web service, or re-visits or loyalty [18, 19, 20]. It was also empirically proved that the use of the web service or online service itself provides pleasure and the experience of concentration, and that these emotions act as motivation.

However, almost no research has discussed the CMC in the computer mediation environment in association with the flow. The SNS has the clear use purpose to build up the social relation network for interpersonal interaction. However, intrinsic motivation can affect its use, in that the SNS is also provided in the web-based computer mediation environment. The flow experienced while using the SNS acts as the compensation for that act, and makes users spend more time and to disclose the self in SNS usage more actively. In addition, the user's flow experience in the SNS can affect the post-hoc relation change directly after using the SNS.
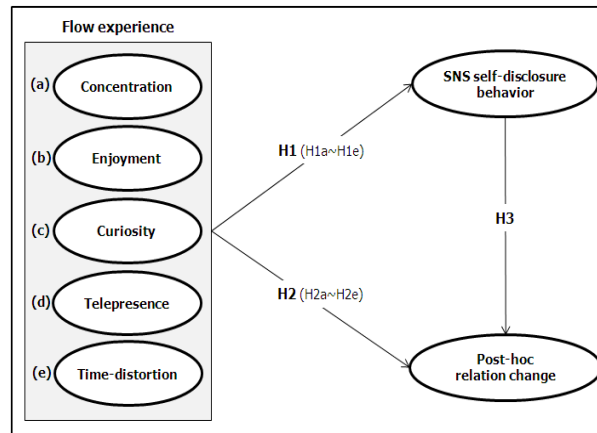
3. Research Model and Hypotheses

Figure1. Research Model

Hypothesis 1(H1a-H1e): The flow experience in using the SNS (concentration, enjoyment, curiosity, tele-presence, time-distortion) will affect self-disclosure behavior.

Hypothesis 2(H2a-H2e): The flow experience in using the SNS (concentration, enjoyment, curiosity, tele-presence, time-distortion) will affect post-hoc relation change.

Hypothesis 3(H3): The self-disclosure behavior while using the SNS will affect post-hoc relation change.

4. Research Methodology

4.1 Instrument Development

Flow experience variables (enjoyment, concentration, curiosity, tele-presence, time distortion) are modified for this study, considering the operational definition used by existing studies [18, 7, 21]. They analyzed Internet usage or online services. First, "concentration" is defined as, "the degree of concentration on Facebook use activities, and efforts made to concentrate on Facebook," whereas "enjoyment" is defined as, "how intrinsically pleasant and interesting using Facebook is." "Curiosity" about SNS use is defined as, "the degree of desire to know about the contents and events on Facebook." "Tele-presence" and "time-distortion" are defined as, "the degree of feeling that Facebook activities are real" and, "the degree of losing a sense of time when using Facebook," respectively. These variables were measured by four items, which were modified from the multi-index criteria used by existing studies to fit into the use of Facebook.

The self-disclosure behavior in the SNS is defined as a "behavior that intentionally reveals the personal information that cannot be easily obtained by others when using Facebook." This is based on the definition used by the existing interpersonal communication theory [12]. Four question items with high factor loading were used for measurement from among question items that measure depth, amount, honesty, and balance (sub-level of self-disclosure) in existing studies [22]. "Personal relations after using the SNS" is defined as the "degree of the changes in personal relation formation, development, and retention after using Facebook." The changes in personal relations have the relation formation aspect (knowing a new and

unfamiliar person), and development and retention aspects (promoting the existing relationship and becoming close). Therefore, the post-hoc relation change after using the SNS were measured by 5 question items including "becoming closer with acquaintances" and "met many new people," so that all of relation formation, development, and retention can be reflected.

4.2 Data Collection

The Mixed (online, mobile) survey of Facebook users was conducted for this. To improve the content validity of measurement, a pre-test cognitive interview and pilot test were carried out on 15 respondents for 3 days. After improving the understandability of questions, the main survey was performed for 12 days (February 20-March 2, 2012). The respondents were recruited randomly by posting on two major online Facebook communities in Korea. The respondents were selected after checking whether they're using both wired and wireless media when using Facebook. The mobile Gifticon (giveaway) was given to the respondents in advance as an incentive to improve the response rate. The questionnaire was collected from 184 Facebook users that are using both wired and wireless Internet answered, and used for final analysis. The structural equation model was used for analysis to test the hypotheses, and due to small sample size (under 200), this study used the SmartPLS 2.0.

5. Analysis and Results

## 5.1 Reliability and Validity of Measurement Tools

To test the reliability of factors used for developed questions and analysis, exploratory factor analysis was performed. A total of 7 factors were found, and it was found that the extracted factors' eigenvalue was over 1.0 (standard value), and had explanatory power that amounts to about 75% of the entire variance. After conducting EFA, validity and reliability of the variables proposed by researchers for confirmatory factor analysis were tested. According to the test of this research model, all standard loading values of measurement items used in this study satisfy the critical value (over 0.7), and also the AVE(Average Variance Extracted) values of the variables were above the standard value (0.5). The Cronbach alpha and composite reliability of the factors were also above the standard value (0.7). Next, the discriminant validity test results of the measurement model show that all coefficients of correlation satisfy the standard value (under 0.6), and the square root of the AVE value is bigger than other coefficients of the correlation of the neighboring horizontal and vertical axis.

5.2 Testing the Research Hypotheses

According to the analysis result, 5 hypotheses (H1b, H1d, H2c, H2d, and H3) were supported, and 6 hypotheses (H1a, H1c, H1e, H2a, H2b, and H2e) were rejected (See Fig. 2)

The test results can be summarized as follows: it was found that the flow experience factor that gives a positive effect on the SNS self-disclosure behavior was the enjoyment for using the SNS(path coefficient=0.30, t=3.86) and tele-presence(path coefficient=0.17, t=2.03). When the influence of the flow experience while using the SNS on the post-hoc relation after actually using the SNS was tested, only curiosity(path coefficient=0.39, t=6.20) and tele-presence(path coefficient= 0.30, t=4.45) have a positive effect. These results prove the influence of tele-presence on self-disclosure behavior in the actual SNS and the changes in personal relations

between the variables that compose the flow experience. These results also indicate that the enjoyment and curiosity experienced with the SNS are closely related to the self-disclosure behavior in the actual SNS and post-hoc relation change for the relation in the SNS, rather than in a face-to-face communication situation. Next, according to the basic model analysis results the SNS self-disclosure behavior affects the post-hoc relation change after using the SNS(path coefficient=0.26, t=3.83) positively. The results are contrary to existing studies that state that the user's behavior pattern online and in the SNS are not connected to actual interpersonal relations. The results indicate that personal relations in the SNS actually affect actual personal relations.
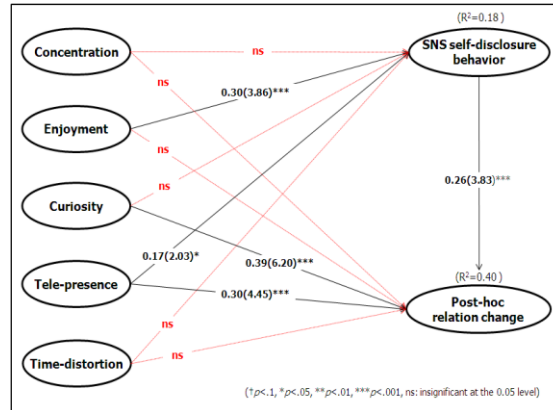
Figure2. Results of Research Hypothesis Testing

On the other hand, the mediated effect of the SNS self-disclosure behavior was also tested by calculating the effect size (f^2) and Pseudo F statistics by using the model explanatory power (R^2) of the full model and the reduced model [23]. According to the test results, the SNS self-disclosure behavior has a partial mediated effect between the flow experience and post-hoc relation change.

6. Discussion and Implications

The analysis results can be summarized and their academic meaning can be described as follows: first, the "tele-presence" flow experience variable had a static effect on the self-disclosure behavior in the SNS and post-hoc relation change. Enjoyment only had a static effect on the self-disclosure behavior in the SNS, whereas curiosity only had a static effect on the post-hoc relation change. Concentration and time distortion, which have been the major variables of the flow experience in Internet use or web service, don't have a direct effect on the self-disclosure behavior in the SNS and post-hoc relation change.

These results indicate that the self-disclosure behavior in the SNS increases if users think interpersonal interaction and personal relations in the SNS environment are the same as they are in the real world, and personal relations after using the SNS can be expanded or intimacy of the relationship can be increased. It can be inferred that the "tele-presence" flow experience factor had an effect because the SNS has a high similarity between the offline social relation network and the online social relation network, unlike the existing CMC. On the contrary, it seems that concentration and time distortion didn't have an effect, due to the characteristics of the SMS use (e.g., acquiring the information and posting a status briefly within a short period of time) and the user interface of the SNS that uses the simple text-based platform. Enjoyment

in using the SNS increases the self-disclosure behavior but doesn't affect the post-hoc relation change. This is because the self-disclosure behavior is directly related to enjoyment in the SNS, but the post-hoc relation change is irrelevant to the enjoyment of using the SNS. Curiosity affects the post-hoc relation change because it is related to other's status updates in the SNS. However, curiosity didn't have any influence relations with the behavior that intentionally discloses personal information.

Second, the SNS self-disclosure behavior had a mediated effect if "tele-presence" in the SNS affected the post-hoc relation change, which implies that the "tele-presence" flow experience in the SNS doesn't directly affect the post-hoc relation change but it does affect self-disclosure behavior. That is, it presents theoretical implications where tele-presence (as intrinsic motivation of the SNS use) increases the self-disclosure behavior as compensation, and finally it affects the post-hoc relation change in a positive manner.

Interpersonal interaction while using the SNS, which provides the social relation network function, can have a positive effect on the post-hoc relation change. Existing studies have been proving this with the increase in social capital like trust in personal relations. However, those studies didn't take the psychological aspect (habitual use) into account. In that regard, this study produced the meaningful result that the flow experience, while using the SNS, can be an important antecedent variable for intrinsic motivation. In addition, it was also found that the flow experience has an effect when using the "self-disclosure behavior" parameter, rather than having a direct effect on the post-hoc relation change.

Even though this study made a theoretical contribution for where the flow experience should be taken seriously in using the SNS and interpersonal interaction, there are several limitations in the research methodology. First, the limitation of the online survey can be pointed at. There is a possibility of a sampling error, because the raw data was collected from only two Facebook communities, with their permission, for the sake of convenience. This was done after distributing the information on the survey and asking community users to introduce the survey to others. This limitation should be overcome by doing follow-up research. Second, there is another limitation in measuring the changes in personal relation after using the SNS; because the self-recognition measurement method was used (respondent's recognition about the post-hoc relation change was measured). Therefore, it cannot be completely confirmed whether the flow experience and the self-disclosure behavior actually affected the post-hoc relation change after using the SNS. A follow-up study is expected to supplement the measurement method.

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