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Effects of SNS use on Online/Offline Subjective Well-being via Self-disclosure and Social Capital

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***Abstract*—This study examined the effect of SNS use on online and offline well-being through self-disclosure and social capital by separating online from offline variables. Using data from a survey of 1,200 participants, the overall relationships between the variables were explored by analyzing a path model including both online and offline variables (i.e., self-disclosure, social capital, and subjective well-being). Results showed that there are distinctive patterns in their associations between online and offline variables. Although SNS use affected both online and offline self-disclosure, offline self-disclosure influenced only offline social capital, while online self-disclosure affected online social capital. The strongest predictor for online well-being was online bridging social capital, while offline well-being was predicted only by offline bonding social capital. People seem to strongly value emotional support in offline environments whereas weak ties are valued much highly in online space. Implications and suggestions for future research are discussed.**

***Keywords*— SNS, Subjective Well-being, self-disclosure, social capital**

I. Introduction

With the pervasion of social network sites (SNSs) such as Facebook and Twitter, it has become a cultural phenomenon for people to present themselves and develop new social networks in such sites. Through personal profiles in the sites, people disclose their personal information, enhance their social network, and perceive satisfaction with their life. Thus, important issues related to SNSs involve self-disclosure, social capital, and subjective well-being in online environments.

Previous studies have shown that these variables are closely related. SNSs comprise a social network space with users' active disclosure of personal information [1] [2]. Such self-disclosure increases both strong and weak ties [3], and social capital enhance the degree of subjective well-being [4].

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However, little research has done to investigate such relationships by separating online from offline variables (e.g., online/offline self-disclosure). Many studies in computer-mediated-communication (hereafter, CMC) have suggested that there may be different aspects in user behavior in online sites from offline space since online environments provide users with anonymous and incorporeal milieus [5][6]. Particularly with regard to self-disclosure and social capital, such discrepancy seems evident. According to the Social Information Processing Theory (SIP), online self-disclosure is different from offline self-disclosure in degree because of non-verbal cues (i.e., gestures, face expressions, etc.) [5]. Likewise, in relation to social capital, Williams [7] pointed out the different aspects of online experience from offline experience.

In addition, a user's subjective well-being in online space could be perceived differently from those in offline environments. A user's online social relationships with other people could have different patterns in terms of their effects on the user's perceived well-being from offline relationships. However, there has yet to be a study that examined such seemingly different effects between online and offline variables.

This study, therefore, investigated whether SNS use affects subjective well-being through self-disclosure and social capital by differentiating online from offline variable. We tested a path model (see Figure 2) to see the overall effects of SNS use. Specifically, the current study examined (1) if SNS use is moderated by online extraversion on the degree of online self-disclosure, (2) if online/offline self-disclosure affects the degree of online/offline social capital (i.e., bonding and bridging), and (3) the relationship between social capital and online/offline subjective well-being.

II. Literature Review

A. *Online and Offline Discrepancy in User Behavior*

The discrepancy in user behavior between online and offline environments has been a controversial issue in CMC studies. In offline (i.e. face-to-face) communications, people can use both verbal and non-verbal cues, while online users are limited to non-verbal cues. However, online environments provide users with various tools for controlling self-presentation and creating idealized self-images [8]. Online users can communicate with other people without restraints such as shyness and physical problems [6]. Thus, users who have difficulties in face-to-face communication can take

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advantage of online tools so that they may show significantly different behavior in online environments.

With regard to self-disclosure, which refers to the degree to which people open up and reveal personal information or feelings [9], most theories of CMC posit that online self-disclosure is different from offline self-disclosure in terms of depth, breadth, and/or frequency [5]. The Social Information Processing Theory (SIP) explains that the degree of online self-disclosure is different from that of offline disclosure since online users need more expressions to translate the non-verbal into verbal cues [10]. In line with this, hyper-personal CMC theory accentuates controllable functions in online communication environments. Online users can handle the degree of self-presentations and create idealized self-perceptions, resulting in great intimacy toward communication partners. Thus, online functions could result in great difference in quality and degree of self-disclosure between online and offline environments.

Social relationships could be created differently in online from offline space. In studies about social networks, the difference was highlighted in relation to the effects of weak ties on the social network among Internet users. Haythornthwaite [11] first indicated that social interactions transpire differently between online and offline space. She speculated the strong role of weak ties in online environments, and stressed the critical effects of online weak ties on social networks online. Developing the topic into measuring of social capital (i.e., summed resources through social relationships [12]), Williams [7] pointed out that the critical problem of previous scales is "not to make distinctions between online and offline life experiences" (p. 599). By conducting various factor analyses, he reported that online social capital and offline social capital are different concepts for the Internet users. He suggested a new measurement scale of social capital that differentiates online from offline social capital

B. *Self-disclosure and Extraversion on SNS: Online and Offline*

SNSs allow users to construct their own profile with personal information, to make their own lists of friends, and to extend personal networks by using other users' lists [13]. One of the fundamental features of SNS is revealing personal information among users, since self-disclosure is a key factor in the formation and development of social relationships [14]. SNS users must reveal personal information to heighten social connections with other users [2]. As such, SNS has been regarded as a space of social connections with the active self-disclosure of users [1]. Actually, most of SNS users manifest a high degree of self-disclosure online [15]. Thus, it seems natural to assume that the more people use SNS, the more chances they will have to reveal their personal information or feelings to communication partners.

Some studies found the important role of personality in online space in terms of the relationship between SNS use and self-disclosure. Among all personality characteristics, extraversion has received much attention because of its effect on online social interaction. Liu and Larose [16] showed that extroverts make more successful interactions online than introverts. Related to extraversion, Stritzke, Nguyen, and Durkin [17] found a relationship between the degree of shyness and CMC (online) self-disclosure. Extraverts broadcasted their personal events more often on SNS [18], and they finally felt higher degrees of life satisfaction than introverts [19]. Taken together, extraverts feel higher degrees of subjective well-being since they actively disclose personal information more than introverts. Reflecting on the positive association between SNS use and self-disclosure, extraversion seems to moderate the effect.

In particular, when we consider the discrepancy between online and offline user behavior, it seems that online self-disclosure will be affected mainly by online extraversion rather than offline extraversion. Therefore, this study tests if there is an interaction effect between SNS use and user personality (i.e., extraversion) on the degree of self-disclosure by differentiating online extraversion from offline extraversion.

H1: Extraversion will moderate the effect of SNS use on self-disclosure, such that SNS use will have an interaction effect with online extraversion on online self-disclosure.

RQ1: Is there any interaction effect between SNS use and offline extraversion on the degree of offline self-disclosure?.

C. *Social Capital and Subjective Well-being: Online and Offline*

Social capital has been highlighted in social media studies since it deals with resources (or benefits) from social network [20][21]. The difference in terms of social network or relationships between individuals can induce different types of resources. Putnam [22] classified social capital into two categories: bridging and bonding. Bridging social capital refers to resources from loose connections (i.e., weak ties) between individuals; while bonding social capital refers to resources from close relationships inclusive of emotional support.

Previous studies showed that self-disclosure is associated with the degree of social capital [4]. Self-disclosure stimulates friendships such that stronger self-disclosure induces closer relationships [23] [24]. Since self-disclosure on SNS is not just for existing friends but also for strangers, self-disclosure increases both strong ties with old friends and weak ties with other members in the site [3]. Actually, self-disclosure activities on Facebook increased the degree of social capital among college students [20]. Therefore, the current study examines the effects of self-disclosure on both online and offline social capital.

H2(a/b): Online self-disclosure will affect both (a) the degree of online bridging social capital and (b) online bonding social capital.

RQ2: Is there any difference in the effects of self-disclosure on the four categories of social capital (online/offline X bridging/bonding) between online and offline self-disclosure?

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Existing literature indicates that social capital is closely associated with subjective well-being. Subjective well-being refers to people's evaluations of their lives in both cognitive and affective side [25]. Kahneman and Krueger [26] reported that life satisfaction is affected by social ties with other people. Explaining the social context of well-being, Helliwell and Putnam [27] also explicated that social capital affects people's well-being either directly or indirectly. By analyzing Facebook user data among college students, Ellison and her colleagues [20] showed a positive relationship between social capital and subjective well-being. Likewise, Ko and Kuo [4] proved that social capital (i.e., both bridging and bonding) had a strong positive effect on subjective well-being among Internet blogging users.

However, there are few studies about the effects of social capital on both online and offline subjective well-being. It seems reasonable to assume that people will perceive their experience differently in online from offline environments. This study tests whether there is any difference in the effects on subjective well-being between online and offline social capital. In addition, by adopting the two categories of social capital by Putnam [22] – bonding and bridging – the current study finally examines the effects of four categories of social capital (online/offline x bonding/bridging) on subjective well-being (online/offline).

H3(a/b): (a) Online bridging social capital and (b) online bonding social capital will increase the degree of online subjective well-being.

RQ3: Is there any difference in the effects of four categories of social capital (online/offline X bridging/bonding) on subjective well-being (online/offline)?

III. Method

A total of 1,200 participants in South Korea were surveyed. The participants were randomly selected from a list of local population. All participants received 5,000 KRW (about 5 USD) for their involvement in the survey. In the analysis stage, a total of 916 subject data were finally used for data analysis since we included only SNS users (76.3%): 474 of the participants were males (51.7%). In terms of age groups, there were 76 teens (8.3%); 189 in their 20s (20.6%); 226 in their 30s (24.7%), 231 in their 40s (25.2%), and 194 in their 50s (21.2%).

In order to test the hypotheses and research questions, we investigated the effects in both online and offline space by measuring both online and offline scales of the research variables (e.g., online self-disclosure and offline social capital). Subsequently, we tested an integrated model including both online and offline variables using SEM analysis.

For measuring Self-disclosure, this study used the revised GDS (General Disclosiveness Scale) developed by Wheeless [9]. The scale checks disclosure depth, width, and frequency with 7 points Likert scale. For online self-disclosure, we asked participants to answer their online experience by emphasizing "in online sites" in each question (e.g., "In online sites," I often disclose my feelings to other people, α = .922). For offline self-disclosure, we focused on "in actual life" to lead participants in answering their offline experience (α = .930). This was also applied to other questions about online and offline variables. Extraversion was measured from the Big Five Personality scales [28]. Extraversion implicates energy, positive emotions, and the tendency to seek stimulation in the company of others. Both online extraversion (α = .832) and offline extraversion (α = .823) showed high reliability.

Social Capital was measured using adopted ISCS (Internet Social Capital Scales) by Williams [7]. As he divided social capital into four categories, we used the same questions for bridging social capital (offline, α = .921; online, α = .882) and bonding social capital (offline, α = .872; online, α = .888) with 5 points Likert scale. Subjective well-being was assessed using the Satisfaction with Life Scale by Diener, Emmons, Larson, and Griffin [29]. This was measured by 5-item scale (e.g., "I am satisfied with my life," where 1 = "not at all" and 7 = "strongly agree"). Both online well-being (α = .892) and offline well-being (α = .879) showed high reliability. Finally, SNS use was measured by checking the daily hours of SNS use.

IV. Results

The average time of daily SNS use was about 1 hour (see Table 1). For males, the average time was about 64 minutes, which did not significantly differ from that of females (55 min.). The average degree of offline self-disclosure (M = 4.02) was slightly higher than that of online self-disclosure (M = 3.85). People feel a higher level of subjective well-being offline (M = 3.86) than online (M = 3.43). Correlations showed that SNS use, self-disclosure, social capital, and subjective well-being were closely related. Interestingly, SNS use was neither correlated with offline bridging social capital nor offline subjective well-being, even though it was strongly related with both online social capital (bonding, $r = .16$, $p < .01$; bridging, $r = .15$, $p < .01$) and online subjective well-being ($r = .09$, $p < .05$, see Table 1).

TABLE I. Correlations between variables

.	M (SD)	1	2	3	4	5	6	7	8	9
SNS use	1.01 (.53)	1.00								
On_ SD	3.85 (.66)	.09*	1.00							
Off_ SD	4.02 (.67)	.14*	.53**	1.00						
On_ Brid	2.95 (.69)	.15**	.48**	.21**	1.00					
On_ bond	2.78 (.77)	.16**	.45**	.15**	.54**	1.00				
Off_ brid	3.59 (.55)	.06	.12**	.31**	.27**	.20**	1.00			
Off_ bond	3.52 (.60)	.11*	.10*	.24**	.21**	.25**	.53**	1.00		
On_ SWB	3.43 (1.15)	.09*	.37**	.15**	.49**	.45**	.07*	.05	1.00	
Off_ SWB	3.86 (1.40)	.05	.16**	.15**	.17**	.18**	.17**	.25**	.34**	1.00

*p<.05, **p<.01

Note. SNS refers a user's daily hours of using the service; On_SD=(the degree of) online self-disclosure; Off_SD=offline self-disclosure; On_brid=online bridging social capital(SC); Off_bond=offline bonding SC; On_SWB=online subject well-being; Off_SWB= offline subject well-being

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For testing H1 and RQ1, we employed ANOVA tests to identify any interaction effect between SNS use and online/offline extraversion on self-disclosure. An interaction effect on online self-disclosure was found between online extraversion and SNS use, $F(1, 912) = 3.37$, with $p < 0.05$ (see Figure 1). For the online extroverts, there was a significant difference between lower and higher level of SNS use ($t = -.27$, $p < 0.01$), but no difference was found among the online introverts. For the offline users, there was no interaction effect between extraversion and SNS use. Thus, only online extraversion moderated the effect of SNS use on online self-disclosure.

We finally examined the integrated model including both online and offline variables (see Figure 2) for testing H2/H3 and RQ2/RQ3. The model fit tests approved relevant index numbers over the cut-off (RMSEA = .067, CFI = .982; NFI = .980). Based on the results, SNS use affected both online and offline self-disclosure. Online self-disclosure only affected online social capital (bridging, $\beta = .52$, $p < .001$; bonding, $\beta = .50$, $p < .01$) while offline self-disclosure affected offline social capital (bridging, $\beta = .34$, $p < .01$; bonding, $\beta = .27$, $p < .01$). Online social capital exhibited strong effects only on online subjective well-being (from bridging, $\beta = .36$, $p < .01$; from bonding, $\beta = .17$, $p < .01$), while offline subjective well-being was influenced only by offline bonding social capital ($\beta = .24$, $p < .01$).

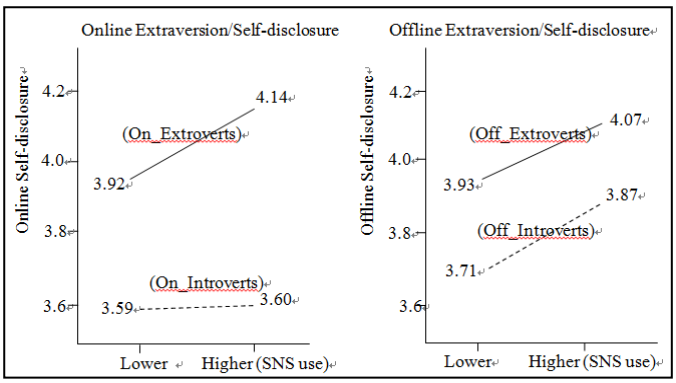

Figure 1. Interaction Effect between Extraversion and SNS use on Self-disclosure(N=916)

Overall, online factors mainly affected online social capital, while offline factors affected offline social capital. Likewise, online social capital did not affect offline well-being just as offline social capital did not affect online well-being. Online bridging was the strongest variable in online well-being, while offline bonding was the only predictor in offline well-being.

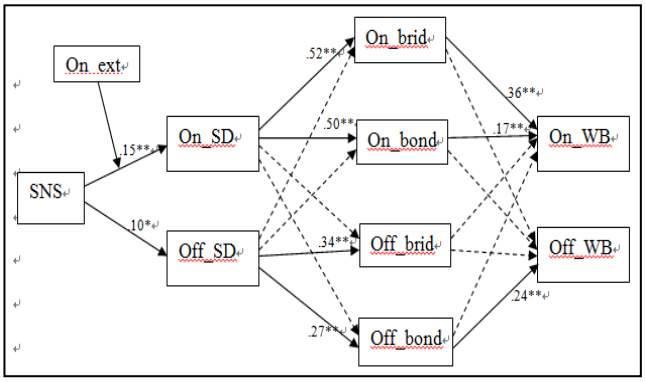

Figure 2. Online-Offline Integrated Model

*p<.05, **p<.01

Note1. Model fit: χ^2=61.18, df=7, p<.05; RMSEA=.067; CFI=.982; NFI=.980,

Note 2. All numbers are standardized. SNS refers a user's daily hours of using the service; On_SD=(the degree of) online self-disclosure; Off_SD=offline self-disclosure; On_brid=online bridging social capital(SC); Off_bond=offline bonding SC; On_SWB=online subject well-being; Off_SWB= offline subject well-being

v. Discussion

The main goal of this research was to determine the effects of SNS use on social capital and well-being with consideration for the online and offline discrepancy in user behavior. Specifically, we adopted extraversion and self-disclosure variables related to social capital and well-being so that such variables were reported to have close associations with SNS use. This study measured both the online and offline scales of such variables (e.g., online well-being and offline social capital), and tested an integrated model to identify different patterns between online and offline environments in terms of personal experience.

The results show that there are distinctive patterns in the effects between online and offline variables. Although SNS use was associated with both online and offline self-disclosure, offline self-disclosure primarily affected offline social capital while online self-disclosure affected online social capital. Specifically, online self-disclosure increased online social capital (both bridging and bonding), while offline self-disclosure enhanced offline social capital.

In line with this, online extraversion moderated the effect of SNS use on online self-disclosure. Offline extraversion did not exhibit any interaction effect with SNS use on either online or offline self-disclosure. Online social capital manifested an impact only on online well-being, while offline social capital (i.e., bonding) influenced just offline well-being. These results support that, as Haythornthwaite [11] reported, social interactions in online environments and in offline environments transpire differently. Furthermore, the results imply that online and offline environments are different in the mechanism of personal experience on relationships and perceptions.

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People seem to strongly value emotional support in offline environments whereas weak ties are valued much highly in online space. The strongest predictor for online well-being was online bridging social capital. Comparatively, offline well-being was primarily predicted by offline bonding social capital: offline bridging did not affect offline well-being. The results, on one hand, implicate the importance of weak ties in online space in relation to users' well-being. On the other hand, mere relationship with other people does not seem to benefit personal perceptions of happiness and satisfaction (i.e., subjective well-being) in actual (offline) life. These results also corroborate the finding that online and offline space differ in the mechanism of personal experience.

However, it should be noted that the results do not mean that the relationships among the variables online cannot be extended to the other (i.e., offline) space. As the results show, SNS use is associated with both online and offline self-disclosure. In addition, most online variables are significantly correlated with offline variables (e.g., online bridging social capital and offline subject well-being). Moderators or mediators can exist between online and offline space. Future studies need to discover such variables and test their roles in the integrated model.

It seems necessary to divide online and offline variables in assessing the effects of online experience on user behavior or perceptions. As Williams [7] indicated, setting no distinction between online and offline experience in measurement is one of the crucial problems in previous studies. Even though any significant association is found between variable (e.g., social capital and subjective well-being), the relation could be spurious without taking into account of the different effect patterns between online and offline variables. Thus, it is strongly suggested to differentiate online factors from offline variables to determine any specific variable's role in future studies.

Finally, there are several limitations to the study that need to be addressed in future work. First, we regarded SNS use as a core antecedent of other variables considering previous studies on the association between the variables. However, other variables could advance the order and affect the degree of SNS use. Long-term research is recommendable to resolve the causality problems. Future research need to identify some critical causal relationships between SNS use and other variables. Second, because the empirical data used for this study was collected in a single country, South Korea, which has a fast growing broadband Internet connection and SNS market, this may have a culturally and technologically different environment when compared to other countries. Therefore, the narrow data focus may limit the generalization of the results. Future research may replicate this study from a global perspective.

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