페이스북 유저의 상향 비교와 사회적 지지가 삶의 만족도에 미치는 영향을 중심으로*

이 서 영**

What Makes People use Facebook? Focusing on Effect of Upward Comparison and Social Support on Life Satisfaction Mediated by Self-esteem*

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━━■ Abstract ■━━

This study investigates an association among Facebook users' upward comparison (e.g., envy), social support (e.g., favorable comments and like), and life satisfaction, putting their self-esteem as a mediating variable. For this analysis, 1,332 female and male Facebook users in Seoul and other four cities in South Korea were surveyed. Structural equation modeling including confirmative factor analysis were employed as quantitative analysis methods. Results show that Facebook users' upward comparison with other users and social support significantly impact their satisfaction mediated by their self-esteem. Specifically, when users feel envious of other users, this emotion lowers their self-esteem, and subsequently, the self-esteem reduces their satisfaction. On the other hand, sufficient social support for users positively affects their self-esteem, which leads to the increase of their satisfaction. The present study is differentiated from previous studies in that it focuses on Facebook users' emotional changes in the process of sharing massive amounts of posts and finds a stepwise relationship among their feelings, including self-esteem as a mediating variable. Additionally, this study is the first to verify a situation when Facebook users' envy of other users' posts affects the decline in their satisfaction through the mediation of their self-esteem.

Keyword : Facebook Users, Upward Comparison, Social Support, Life Satisfaction, Self-Esteem

1. Introduction

Communication methods have become more diverse with the spread of social media, and human relationships are expanding to online interactions rapidly. Facebook has had a powerful influence on promoting this phenomenon. According to Statistica Statistics (2021), Facebook has become the world's largest online social network with 2,701 million active users in October 2020, far more extensive than YouTube (2 billion). Globally, the average time a person spends 2 hours 24 minutes per day on social media. if someone signed up at 16 and lived to 70, they would spend 5.7 years of their life on social media. In South Korea, this social medium is also actively used by most genders and age groups from diverse backgrounds. When people post about their everyday activity on Facebook, they are likely to gather many favorable comments or likes from their followers. They usually seek social support from their online friends. However, their Facebook activities sometimes may not meet these expectations and can make them experience a variety of emotional states. The present study conducts an in-depth investigation of Facebook users' feelings, such as envy, self-esteem, and satisfaction, during their Facebook use.

Yang (2012) found that managing self-image is a massive motivator for using Facebook. Research on the use of Facebook in reference to narcissism also has been actively conducted (Carpenter, 2012; Kapidzic, 2013; Panek et al., 2013). A hypothesis proposes that upward comparison in social media is related to social deprivation or other negative emotions; however, the hypothesis is also seen as an overly simplistic assumption, since it ignores the possibility that up-

ward comparison may positively influence users by inspiring them with the hope that they can improve their situations as well (Batenberg and Das, 2015).

Some studies argue that life satisfaction and happiness increase when SNS (Social Network Sites), including Facebook, is used to establish human relations and facilitate communication (Ellison et al., 2007; Gonzales and Hancock, 2011; Lee, 1984). In contrast, other researchers find that SNS users exposed to boastful exaggeration of others can experience negative emotions such as envy, jealousy, and dissatisfaction with their lives.(Yang et al., 2014; Qiu et al., 2012) According to Pew Research Centre, it is estimated that social network sites help users maintain social networks with people and provide them with feelings of strengthened self-esteem when they gain social support from their online friends. On the flip side, there are many reports of depression and feelings of social isolation for Facebook users who do not get favorable responses, especially for adolescents who are considered vulnerable to such feelings.

Although some studies examine whether the usage of Facebook causes the users' happiness or feelings of social deprivation, they did not move on to specific changes in emotions and the connections between them. The present study is the first to explore how upward comparison such as envy toward other users and social support affects the users' satisfaction via mediated their self-esteem in Facebook.

2. Literature review

2.1 Upward Comparison and the Related Feeling of Envy

When users compare themselves to others who

look better than themselves, it is referred to as upward comparison. Downward comparison is to compare themselves to those who are not proficient as they are, and both comparisons are included in social comparison. These concepts have been widely used in media research. Several studies show that those who frequently access Facebook (especially passive users) tend to be obsessed with social comparisons (Lee, 2014; Steers et al., 2014; Vogel et al., 2014, 2015). Upward social comparison is the act of comparing oneself to others who seem to be very successful or happier than you (Feinstein et al., 2013; Vogel et al., 2015), which may cause a person to reflect on their own lack of success or happiness, resulting in feelings of inferiority and possible depression (Feinstein et al., 2013; Sloman et al., 2003). Empirical studies show that using SNS for upward social comparison causes depressive symptoms (Feinstein et al., 2013; Liu et al., 2017). It is known that Facebook users make social comparisons more frequently regardless of their will, and this trend is more noticeable in long-term users who view or post on a daily basis. This aspect can be explained in terms of the nature of Facebook posts being organized in a timeline. The users usually post their happy or memorable moments selectively, and through these activities, they try to control the impressions they project to the world (Goffman, 1959). Moreover, it is easier to manage self-images online than in the real world because users can selectively post scenes, thoughts, and feelings while eliminating certain opposite scenes.

Upward social comparisons could lead to uncomfortable feelings, having a negative relationship with the emotions of self-esteem and self-efficacy (Alicke et al., 1997; Lee et al., 2004; Marsh

and Parker, 1984; Morse and Gergen, 1970; Taylor and Shelley, 1993) Significantly, these comparisons are known to make the users experience discomfort, lower self-evaluation, and have a feeling of inferiority (Fiske, 2010; Reis and Gibbons, 1993; Salovey and Rodin, 1984; Smith, 2000; Wheeler et al., 1997). According to the results, it can be assumed that using Facebook to upward compare with others may cause the users' jealousy, a negative emotional state, and dissatisfaction with their life.

The previous research suggests that upward-comparison leads to negative emotions (Yang et al., 2016), it may be also possible that the users experience positive feelings during an upward comparison depending on who they are. If an ordinary user views an excellent image posted by a person who lives a successful life, the user can feel a sense of deprivation. However, others who achieve the same success may feel joy looking at the same images. For instance, Yang (2015) reported that upward comparisons with others can uplift emotions, inspiring users to hope for the same level of success if they try.

Therefore, effects of social comparison can vary depending on the levels of self-esteem that the users have. In this study, upward comparison to other users, satisfaction, and self-esteem are considered as an independent variable, dependent variable, and mediating variable, respectively.

2.2 Social Support

Social support is an asset an individual receives through a social network, including tangible help and intangible assistance (Stefanone and Kwon, 2012), It is material and emotional support from socially connected relationships and appears

mainly as positive comments and likes on social media (Yang, 2012). say that people become immersed in social media due to peer pressure and social motivation, and seek help and advice from others. Social media users communicate with each other to express their desire for social connection or solidarity and gain emotional support and satisfaction (Kim, 2015).

According to Valkenburg et al. (2009), positive responses to users' self-disclosure in SNS can be associated with their high self-esteem. Then, the increased self-esteem significantly generates their life satisfaction. These interactions can be reciprocal or unilateral. Surely, mutual reciprocity, which is mainly explained as giving and taking, can provide the users with self-disclosure benefits (Posey et al., 2010). It also fosters social relationships and intimacy, resulting in perceived satisfaction. These satisfactions are a kind of well-being oriented from a combination of increased social support, social integration, and social capital integration. On the contrary, Facebook users may feel helpless and less satisfied when they see negative comments, apathy, and a small number of likes for their posts.

2.3 Self-Esteem

Self-esteem can be defined as a motivation to improve and maintain a positive understanding of ego and beliefs about oneself such as 'I am worthy' and 'I am unloved' (Aronson et al., 2005; Vignoles et al., 2006). Its formation plays a role in enhancing the value of personal achievement in social structures (Ferraro et al., 2011). Users with low self-esteem are using the internet as a crutch to make up for their self-perceived deficiencies. Self-esteem and life satisfaction may

lead to internet addiction and combined with loneliness would account for 38% of the total variance (Bozoglan et al., 2013). De Cock et al. (2014) found low self-esteem to be related to Facebook addiction.

People with low self-esteem disclose their information to gain confidence or take praise and support from others, while those with high self-esteem publish their stories because they think their personalities and activities are valuable (Lee et al., 2013; Baumeister, 1999). In the modern information society, excessive self-expression by high self-esteem persons has the potential to negatively impact the sociality of the online space (Kim and Davis, 2008). It has also been argued that low self-esteem can positively influence social expansion (Ellison et al., 2007). In any way, self-esteem can be related to the quantity and means of self-expression on social media.

Several studies argue that self-esteem can mediate the relationship between upward comparison and negative emotions (Buunk et al., 1990). pointed out that there is a third variable involved in using Facebook, which contributes to causing negative emotions, suggesting the need to explore it. Some suggest that higher self-esteem is related to positive aspects such as personal happiness and life satisfaction, while lower self-esteem evokes depression and antisocial behavior. (Baumeister et al., 2003; Buunk et al., 1990; Donnellan et al., 2005). In general, people with high self-esteem are more confident about their true selves and perceive themselves as more socially attractive than people with low self-esteem (Brown, Dutton, and Cook, 2001). Upward comparison and social support can affect life satisfaction, being mediated by self-esteem.

2.4. Life Satisfaction

Life satisfaction is a cognitive and judgmental process, and it refers to a holistic evaluation of the quality of one's life according to individual selection criteria. This concept has been used interchangeably in various terms such as quality of life, well-being, and happiness (Jung and Sung, 2012).

Due to information communication technology development, modern people's lives are changing more conveniently than in the past, however, physical comfort and ease of use of information systems do not necessarily lead to life satisfaction. As society gradually shifts to a computer-based communication society, the communication environment also moves from face-to-face communication to computer-mediated communication.

Previous studies have suggested the fact that activity in cyberspace is related to life satisfaction. It is considered that the Internet positively or negatively exerts influence on the user's self-esteem and overall, their life satisfaction (Jun et al., 2012; Liu and LaRose, 2008; Turkle, 2011) Accordingly, the present study attempts to put life satisfaction in the dependent variable position in the research of Facebook users' feelings.

3. Hypotheses

Based on literature review on Facebook users' upward comparison, social support, self-esteem, and life satisfaction. Referring to previous research, the present study uses upward comparison and social support as independent variables, placing self-esteem and life satisfaction as mediating and dependent variables, respectively.

A concept of envy toward other users was ex-

tracted as a specific pattern of upward comparison. Therefore, I established the following hypotheses:

Hypothesis 1: Upward comparison with others has a negative direct effect on life satisfaction.

Hypothesis 2: Social support has a positive direct effect on life satisfaction.

Hypothesis 3: Upward comparison with others on Facebook mediated self-esteem will affect life satisfaction

Hypothesis 4: Social support mediated by self-esteem will affect life satisfaction.

As a theoretical framework, a model for Facebook users' emotions in [Figure 1] visually present the relationships among the main variables, reflecting the findings and discussions in literature.
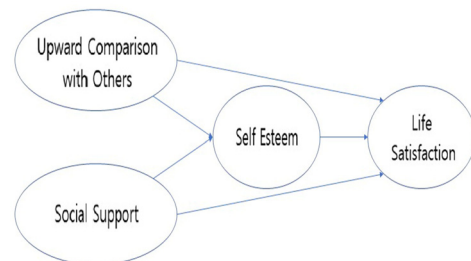
[Figure 1] Research Model

4. Research Methodology

4.1 Data Collection

The present study has collected data with three coders who are employees of a South Korean Internet research company, EMBRAIN (https://embrain.com/eng/), from April 1st to May 31st in 2020. The questionnaire includes dozens of

<Table 1> Profile of the Survey Respondents

Age Group	(%, n)	Seoul		Pusan		Daegu		Daejeon		Gwangju	
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
20'	21.8%	80	81	24	26	19	16	11	11	12	10
30'	23.5%	85	91	25	26	21	16	12	11	13	13
40'	27.3%	95	94	28	33	26	24	15	18	15	16
50'	27.4%	89	97	33	37	26	28	14	14	12	15
sum	1,332	349	363	110	122	92	84	52	54	52	54

questions of Facebook use patterns, upward comparison with others, social support, self-esteem, life satisfaction, and demographic backgrounds. The survey was conducted by the coders sending the questionnaires to Facebook users via e-mail and receiving responses. The samples were generally evenly distributed by gender, age, and region (Seoul and non-Seoul regions). The method, and demographic properties of the survey were suitable for analysis of Facebook users. 1,332 male and female Facebook users, who were aging between twenties to fifties and lived in five metropolitan cities, Seoul, Busan, Daegu, Gwangju, and Daejeon in South Korea are summarized in <Table 1>.

4.2 Measurement Variables

In the present study, the independent variables are upward comparison with others and social support, the mediating variable is self-esteem, and the dependent variable is life satisfaction. The variable of upward comparison with others consists of eight items (e.g., When I see someone else's wonderful lifestyle on Facebook, I compare it to my situation when I have not experienced it), referring to the scale commonly used in the previous research (Yang et al., 2014) The variable of social support is measured by adapting five items (e.g., My Facebook friends helps me a lot) from the scale used in Kim's (2015) study and Zimet et al. (1988) study which was initially developed. The variable of self-esteem is measured by seven (e.g., Sometimes, I think I am a very useless person while using Facebook) out of eleven items in the scale that Kim (1988) have used. The variable of life satisfaction is composed of five items (e.g., The situation in my life is very good after using Facebook) from the scale employed in the study of Cho et al. (2014) The mean and standard deviation of the independent, mediating, and dependent variables categorized by gender and age are shown in <Table 2>.

<Table 2> Mean and Standard Deviation of Measurement Items by Gender and Age

Measurement Items	Gender			
	Male (n=655)		Female (n=677)	
	Mean	Standard Dev	Mean	Standard Dev
Self Esteem	4.02	.79	4.11	.79
Social Support	4.80	.97	4.90	1.05
Upward Comparison with Others	3.82	1.21	3.90	1.30
Life Satisfaction	3.86	1.17	3.76	1.19

4.3 Research Method

In the present study, SPSS 19 and AMOS were used for statistical analysis of collected data. To determine measurement variables, exploratory factor analysis and confirmatory factor analysis were performed. Structural model equation analysis and hypothesis testing were employed to identify the effects of independent variables and mediating variables.

4.4 Reliability and Validity of Measurement Variables

Exploratory factor analysis and a reliability test were conducted for the independent variable, up-

〈Table 3〉 Measurement items' Exploratory Factor Analysis and Cronbach α Coefficients.

Items	Upward Comparison with Others	Self Esteem	Life Satisfaction	Social Support
1. As I see others accomplish something, I compare it to my relatively miserable situation	.802	−.229	−.078	.015
2. When I see someone else's wonderful lifestyle on Facebook, I compare it to my situation when I haven't experienced it	.801	−.180	.047	.038
3. I compare myself to other people working so hard, but I am not	.801	−.213	−.042	.024
4. I often see other people's superior appearance or physical condition and compare it with my unattractive appearance	.799	−.245	.080	−.013
5. I compare myself to others owning luxury items, but I don't have them	.793	−.201	.130	−.025
6. I see other people having many good human relationships and compare that to my lack of good relationships	.777	−.234	.022	−.054
7. I see other people having happy daily lives and compare that to my not so happy daily life	.771	−.272	.004	−.074
8. I compare myself to other people who are very popular, but I am not	.762	−.208	.077	−.067
1. Sometimes I think I'm a very useless person	−.202	.812	−.019	.184
2. Overall, I seem to be a social failure	−.192	.812	−.009	.207
3. I do not have much to boast about	−.183	.772	−.003	.121
4. Sometimes I feel unhappy	−.257	.760	.141	.129
5. Sometimes I think I'm incompetent	−.242	.732	.143	−.058
6. Sometimes I want to be someone else	−.199	.684	.131	−.070
7. I don't have anyone understands me fully	−.174	.550	−.192	.083
1. The situation in my life is very good (after using Facebook)	.041	.052	.858	.235
2. (After using Facebook) I've accomplished the important things I want in my life	.018	.051	.853	.239
3. (After using Facebook) I'm happy with my life	−.001	.109	.846	.241
4. (After using Facebook) Overall my life is close to ideal	.078	−.012	.826	.156
5. If I can live my life again (after using Facebook) I will hardly change anything	.039	−.031	.813	.050
1. My friends help me a lot	−.023	.107	.171	.864
2. I can talk about my worries with my friends	.006	.111	.137	.855
3. I have someone to talk to when I am happy or sad	.010	.082	.214	.803
4. My family helps me	−.066	.083	.090	.771
5. Someone helps me when I need it	.013	.068	.231	.756
Eigenvalue	6.177	4.475	3.900	3.664
% Variance	19.925	14.435	12.581	11.819
Cumulative variance	19.925	34.360	46.941	58.760
Reliability	.951	.892	.918	.892

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ward comparison with others, social support, the dependent variable, life satisfaction and the mediating variable self-esteem. Factor analysis was based on principal component extraction method (Principal Component Extraction) and orthogonal rotation (Varimax). In the analysis, the optimal factor structure was extracted by determining the number of factors with an eigen value greater than 1. As shown in <Table 3>, four factors were extracted. Upward comparison with eight items, self-esteem with seven items, life satisfaction with five items, and social support with five items.

Each factor's eigenvalues were 6.177, 4.475, 3.900, and 3.664, with a total cumulative explanatory variable of 58.76%. Factor loadings were all greater than 0.6 except for one, which is suitable for factor analysis. The Cronbach's α values, which are the internal consistency reliability coefficients, were greater than .8, a highly reliable test result.

Measurement items' Confirmatory Factor Analysis and Reliability Analysis Results and Correlation and Validity Result are presented in <Table 4> and <Table 5>, respectively.

<Table 4> Confirmatory Factor Analysis and Reliability Analysis Results

Variables		Unstandardized coefficient	Standard Error	C.R.	Standardized coefficient	Squared Multiple Correlation	Construct Reliability	AVE
Upward Comparison with Others	V1	1.000			.812	.664	.903	.538
	V2	1.081	.030	36.356	.836	.579		
	V3	1.104	.030	36.757	.842	.811		
	V4	1.063	.029	36.094	.832	.705		
	V5	1.101	.029	37.562	.854	.773		
	V6	1.091	.029	37.082	.847	.689		
	V7	1.124	.029	38.605	.869	.598		
	V8	1.053	.028	37.362	.851	.622		
Social Support	V9	1.000			.707	.733	.852	.535
	V10	1.360	.044	30.767	.902	.794		
	V11	1.129	.046	24.386	.703	.723		
	V12	1.204	.046	26.399	.763	.755		
	V13	1.376	.046	29.951	.872	699		
Self Esteem	V14	1.000			.703	.744	.784	.424
	V15	.983	.045	21.675	.628	.678		
	V16	1.078	.041	26.232	.765	.703		
	V17	1.398	.048	29.086	.854	737		
	V18	1.418	.048	29.266	.860	.780		
	V19	1.316	.047	27.732	.811	.689		
	V20	1.000			.853	.702		
Life Satisfaction	V21	1.057	.024	44.524	.899	.777	.901	.645
	V22	1.081	.024	44.409	.898	.712		
	V23	1.073	.025	43.595	.889	.780		
	V24	1.043	.028	37.383	.815	.722		

<Table 5> Correlation and Validity Result

Variables	Comparison with others	Social support	Self Esteem	Life Satisfaction
Comparison with Others	.538*			
Social support	−.045	.535*		
Self Esteem	−.557	.268	.424*	
Life Satisfaction	.065	.456	.146	.645*

* Variance extraction index

In order to verify the validity of measurement variables, structural model equation analysis was performed through confirmatory factor analysis and confirming the relationship between the measurement model and the latent variables in which inappropriate measurement variables are eliminated (Lee and Lim, 2011). Structural equations suggest the goodness of fit of models through chi-square (x^2) values and RMR, GFI, IFI, TLI, CFI, and RMSEA (Moon, 2009). In this study, confirmatory factor analysis was conducted to verify the validity of the measurement model. The goodness-of-fit index of the model is x^2 = 3,353.77 (df = 454, p <.01), RMR = .090, IFI = .928, TLI = .919, CFI = .925, RMSEA = 0.061. Therefore, the standard of fitness for the model is acceptable.

In addition, there is concern that the use of a Likert scale for subjectively self-reporting measurement of the variables in this study is prone to common method bias. Confirmatory factor analysis was conducted to confirm whether there were problems with this method. We analyzed the measurement model that estimates one potential patent variable with all the measurement variables, x^2 / df = 60.539 (p <.01), GFI = 387, TLI = .372, CFI = .427, and RMSEA = .212. As a result, the coefficients showed a low standard of fitness, and accordingly, there is no problem with common method bias.

In the research model, the standardized coefficients of factor loadings of each measurement item exceeded 0.50. Therefore, the construct validity of the measurement items was confirmed. One self-esteem item was excluded because the factor loading score was low. To test convergent validity, a construct reliability score is required. Moreover, to test discriminant validity, the average variance extracted (AVE) index is needed. Regarding construct reliability, upward comparison with others is .903, social support is .852, self-esteem is .784, and life satisfaction is .901. In the AVE case, the upward variance is .538, social support is .535, self-esteem is .424, and life satisfaction is .645. All the AVE is greater than R^2, and therefore discriminant validity is confirmed.

This study estimates parameters using maximum likelihood estimation. Regression coefficient values are expressed as estimates in Amos and are divided into non-standardized and standardized estimates (assessment). It can be concluded that the critical ratio (CR), measured by the p value in general regression analysis, is causal at the 5% significance level for two-tailed tests when the absolute value is greater than 1.96. In the final model, the bootstrap procedure of Shrout and Bolger (2002) was performed to confirm the indirect effect of self-esteem. The results are presented in <Table 6> below.

The fitness of the research model was generally acceptable. In this study, χ^2 = 2,356.709 (df = 246, p <.01), RMR = .082, CFI = .930, TLI = .923, IFI = .932, RMSEA = .068. It has been shown to meet requirements generally (Hong, 2000). As a result of parameter estimation based on the structural equation model, upward comparison with others (β = .147, p <.01) and social support (β = .432, p <.01) have a significant effect on life satisfaction.

5. Results

5.1 Hypothesis Test Results Analysis

Hypothesis 1: Upward comparison with others will affect life satisfaction
Hypothesis 2: Social support affect life satisfaction

Therefore, Hypothesis 1 and Hypothesis 2 were adopted. In other words, people who have a lot of upward comparison with others and receive a lot of social support will have greater life satisfaction. To further examine the direct effects of the variables, upward comparison with others (β =-. 546, p <.01) and social support (β = .244,

p <.01) all had a significant effect on self-esteem.

Hypothesis 3: Upward comparison with others on Facebooks mediated self- esteem will affect life satisfaction.

The higher their self-esteem, the greater their life satisfaction. Next, we examine the hypothesis test for the mediation path, that is, whether self-esteem plays a mediating role in influencing life satisfaction with the independent variables' upward comparison with others and social support. For this, we estimate the standard error of indirect effects using bootstrapping. If the confidence interval for indirect values does not contain 0, the indirect effects are considered to exist. The results are shown in <Table 6> above. As calculated, self-esteem mediated between upward comparison with others and life satisfaction (β =-. 061, 95% Bias-corrected CI =-. 095 ~ -.027); and between social support and life satisfaction (β = .027, 95%).

Hypothesis 4: Social support mediated by self-esteem will also affect life satisfaction.

<Table 6> Hypothesis Test Results

	Path	Estimate	Standard Error	C.R.	Standardized coefficient	Hypothesis
Direct Effect	Upward Comparison→life satisfaction	.140	.031	4.459**	.147	H1
	Social support→life satisfaction	.596	.043	13.833**	.432	H2
	Upward comparison→self esteem	−.457	.026	−17.879**	−.546	H3
	Social support→self esteem	.295	.032	9.179**	.244	H4
	Self-esteem→life satisfaction	.127	.040	3.203**	.112	
	Path	Estimate	LCC	UCC	Standardized coefficient	Hypothesis
Indirect Effect	Upward comparison→self-esteem→life satisfaction	−.058	−.095	−.027	−.061	H3
	Social support→self-esteem→life satisfaction	.038	.018	.079	.027	H4

**$p < 0.01$, *$p < 0.05$.

To further examine the direct effects of the variables, up-comparison with others (β =-. 546, p <.01) and social support (β = .244, p <.01) all had a significant effect on self-esteem.

In the relationship between Bias-corrected CI = .018~.079), Both paths (Bias-corrected CI = .018~.079) did not have zero at the confidence interval which implies there were mediating effects. Therefore, both Hypothesis 3 and Hypothesis 4 were adopted. These results indicate that the higher the upward comparison with others, the lower the self-esteem, which leads to lower life satisfaction; and the greater the social support, the higher the self-esteem, which leads to greater life satisfaction.

Hypothesis 1 found that upward comparison with others on Facebook will affect life satisfaction. Taylor and Shelley (1993), Jang and Han (2004), Alicke et al. (1997), Chae (2013), Lee (2014) and Yang (2014) reported that upward comparisons with others can cause negative emotions.

In contrast Yang's (2015) reported that upward comparisons with others can have an uplifting effect on emotions, inspiring them to hope for the same level of success if they try. This conflicting view suggest that the results rather could be mediated or controlled by a third factor rather than being unconditionally related to negative emotions.

Hypothesis 2 was also supported, that is, social support affects life satisfaction. And that greater social support received via Facebook leads to higher life satisfaction. These results are consistent with the research of Kim (2015) and Oh, Ozkaya and LaRose (2014), who reported that social support had a positive effect on the subjective well-being of individuals.

Hypotheses 3 and 4 were also supported, i.e.

more upward comparison with others will lower the self-esteem, which leads to lower life satisfaction. And that greater social support will leads to higher life satisfaction. Other researchers suggest that an individual's internal factors such as self-esteem, perceived control over the situation, and dissatisfaction may affect the relationship between the two variables (Buunk et al., 1990) and Mai-Ly et al. (2014) pointed out a third variable in the use of Facebook could induce negative emotions, suggesting the need to explore it. Likewise, Kim and Kim (2012) found that the upward-comparison with others was not directly related to negative emotions but could be mediated or controlled by a third factor. In addition, further analysis of direct effects among the variables show that the lower the upward comparison with others, the higher the self-esteem lead to life satisfaction. In other word, higher self-esteem is related to positive aspects such as personal happiness and life satisfaction, while lower self-esteem is negative such as depression and antisocial behavior (Baumeister et al., 2003; Donnellan et al., 2005).

Mehdizadeh (2010) found that people with low self-esteem and a tendency for grandiose narcissism would express themselves even more on SNS. Ellison et al. (2007) found similar results with low self-esteem people who use SNS more frequently to make up for their lack of offline social relationships.

6. Conclusion

Facebook is a representative communication tool that has led the social media boom, however, changes between various emotions people feel in processes of using it have not been sufficiently

investigated. In this regard, the present study offers meaningful findings and their implications.

Specifically, I investigated an association among Facebook users' upward comparison (e.g. envy) toward others, social support (e.g., favorable comments and like), and satisfaction, putting their self-esteem as a mediating variable. For this analysis, 1,332 female and male Facebook users in Seoul and other four cities in South Korea were surveyed. Structural equation modeling including confirmative factor analysis were employed as quantitative analysis methods.

Results show that Facebook users' upward comparison with other users and social support significantly impact their satisfaction through their self-esteem. The research model was found to be plausible, and the items of each factor had high reliability and validity. The result, which is differentiated from those of some previous studies (Alicke et al., 1997; Chae, 2013; Jang and Han, 2004; Lee, 2014; Taylor and Shelley, 1993; Yang, 2014) that upward comparison entails negative emotions, suggests that the effect of upward comparison could be mediated by a third factor rather than unconditionally cause negative feelings. The finding of the positive correlation between social support and life satisfaction is in line with the results of some previous studies (Kim, 2015; Oh et al., 2014). Second, regarding the issue of mediation, Facebook users' upward comparison with others negatively affected life satisfaction, mediated by self-esteem. It means that the more users' upward comparison, the lower their self-esteem, and the lower their life satisfaction. In other words, when users feel envious of other users, this emotion lowers their self-esteem primarily, and the self-esteem reduces their satisfaction subsequently. Third, suf-

ficient social support for users positively affected their self-esteem, which leads to the increase of their satisfaction. The result indicates that the more social support, the higher the users' self-esteem, and the higher their life satisfaction. It can be said that sufficient social support for users positively affects their self-esteem, which leads to the increase of their satisfaction.

Previous studies have estimated that there will be a third factor affecting Facebook users' life happiness in addition to upward comparison and social support. Mai-Ly et al. (2014) pointed out that a third variable in the use of Facebook could induce negative emotions, suggesting the need to explore it. Likewise, Kim and Kim (2012) contended that upward comparison with others is not causally related to negative emotions but could be mediated or controlled by another factor. The present study suggests an objective result that the third factor that previous studies have assumed may be Facebook users' self-esteem.

The present study is differentiated from previous studies in that it focuses on Facebook users' emotional changes in the process of sharing massive amounts of posts and finds a stepwise relationship among their feelings, including self-esteem as a mediating variable. Additionally, this study is the first to verify a situation when Facebook users' envy of other users' posts affects the decline in their life satisfaction through the mediation of their self-esteem. These findings, culminating in a model for Facebook users' emotions (see [Figure 1]), can help us to better understand the emotional changes due to the usage of Facebook. The analyzed data was collected on a significant scale and evenly by gender, age, and region, and therefore has no representation

bias, which improves the reliability of the results.

However, this study has limitations in universal application to Facebook users outside of South Korea. Since Facebook is a global platform, future studies need to examine the propensity of these users of various nationalities on a global scale. Human emotions arising from activities in social network sites are expected to be critical and continuous issues in the field of communication in the near future.

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