

Does Instagram Have More Negative Impact on Psychological Well-Being? The Case of Korean College Students

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Abstract

Previous research has empirically demonstrated the negative effects of social media use on young people's psychological well-being. Unlike most previous studies that focused on either Facebook or Instagram, this study comparatively examined the differences in upward comparison and its effects on self-esteem, life satisfaction, and depression between Facebook and Instagram. An analysis of survey data from 641 Korean college students, who reportedly use these two social media more actively than any other age group, found that college students experience more upward comparisons on Instagram than on Facebook. Upward comparisons on both Facebook and Instagram increased by college students' age and weekly usage time. Upward comparisons on Instagram increased by the additional factors of gender (females more than males) and number of "followings." Subsequently, the effects of upward comparison on psychological well-being were found to differ by social media platform. Upward comparisons were found to negatively impact all determinants of psychological well-being only on Instagram, but not on Facebook. The differences in upward comparison and its impact on young users' psychological well-being found in this study were discussed in terms of the different functional characteristics of the two social media platforms, which provides direction for further research needed to establish guidelines for healthy social media use by young people.

Keywords: Facebook, Instagram, upward comparison, psychological well-being, self-esteem, life satisfaction, depression, negative effect of social media, South Korea

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With the increasing use of social media, not only have social concerns been raised, but findings have been repeatedly presented about the negative impact on users' psychological well-being. One serious concern is that children, teens, and young adults, who are relatively active users of social media compared to other age groups, are reportedly more vulnerable to the negative effects of social media.

As of April 2022, the social media usage rate in Korea was 91.6% (ratio of active users to total population), about 1.6 times higher than the global average (58.7%: Kemp, 2022). Reportedly, Korean users between the ages of 10 and 30 use Instagram and Facebook the most among various kinds of social media (DMC Media, 2022). Social media use by Korean college students has increased sharply since the COVID-19 pandemic began (Son & Heo, 2020).

Many previous studies have explained and examined the mechanism of the negative effects of social media on psychological well-being using the social comparison theory proposed by Festinger (1954). In short, most of the information posted by social media users is for their image management, and therefore the content tends to be self-positive. Exposure to other people's embellished information leads to upward comparison with others who are perceived as superior (Jordan et al, 2011), which in turn negatively affects users' psychological well-being, including self-esteem, life satisfaction, and depression through negative self-evaluation (Faelens et al, 2021; Frison & Eggermont, 2017; Marlene & Sahrini, 2021; Verduyn et al., 2020; Vogel et al., 2014; Wang et al., 2017).

However, most of the previous studies have focused on either Facebook or Instagram. A study that comparatively analyzes the differences in the effects of upward comparison between Facebook and Instagram has not yet been conducted. Understanding which social media platform (Facebook or Instagram) is more influential and, further, what functional or technological features of social media influence young users' upward comparison and its association with psychological well-being will help us understand the effects of social media.

Based on these limitations of previous research, this study aims to examine the differences in upward comparison between Facebook and Instagram among college

students who are relatively active users of these two social media, and to comparatively explore the usage-behavior characteristics that may influence college students' upward comparison on Facebook and Instagram, respectively. Then, this study will comparatively analyze how upward comparisons on Facebook and Instagram affect college students' psychological well-being (self-esteem, life satisfaction, and depression).

Literature Review

Upward Comparison on Facebook and Instagram

Social media facilitates "strategic self-expression," defined as the intentional process of packaging and editing oneself to leave a positive impression on others (Goffman, 1959). Indeed, social media users tend to express themselves in an overly positive manner, posting positive events on Facebook (Kross et al., 2013) and Instagram (Yun & Lee, 2017) more often than negative ones. Social media has also expanded the opportunities for users to gain insights into other people's daily lives. With the widespread use of social media, people are more routinely exposed to other people's daily lives, emotions, and opinions than ever before. In particular, Facebook and Instagram offer the opportunity to peer into the lives of almost anyone in the world.

The psychological mechanism triggered by being exposed to other people's self-expressive or self-exaggerated posts on social media has been explained by social comparison theory. According to Festinger (1954), people draw on social comparisons to evaluate themselves in order to reduce uncertainty about their situation through the comparisons. When there is no objective standard for self-assessment, people evaluate themselves through comparisons with others. Social comparison also occurs unconsciously when people are constantly exposed to news and information from others or engage in interpersonal relationships (Goethals, 1986).

Social media provides a wealth of information about others through the wide network of relationships between users. Therefore, social comparisons occur more routinely on social media than offline (Haferkamp & Krämer, 2011). Social media users

interact not only with their offline acquaintances, but also with other users they want and choose to know online. Accordingly, the similarity of comparison standards and the high level of personal intimacy may further promote social comparisons between social media users (Appel et al., 2016). Because they are regularly exposed to the positively packaged lives of others, social media users are likely to evaluate themselves with false standards and experience feelings of envy and jealousy. And these comparative evaluations are likely to have negative consequences for users' psychological well-being (Appel et al., 2016).

Differences in Upward Comparison Between Facebook and Instagram

However, as the functional characteristics and networking algorithms of different types of social media differ from each other, the formats and content of posts and the usage patterns of users inevitably vary as well, which in turn may lead to different effects on users' social comparisons. Facebook was founded in 2004 and is currently the largest social media platform, used by nearly 3 billion users each month (Dixon, 2022). Instagram, a combination of "instant camera" and "telegram," was founded in 2010 and acquired by Facebook Inc. in 2012 and now has approximately 1.5 billion monthly active users (Dixon, 2022).

The most striking functional difference between the two social media is that Instagram is more focused on visual images than Facebook (Pittman & Reich, 2016). Facebook users can post images or videos based on text, while Instagram users cannot post content without a visual element such as an image or video. Compared to text-based Facebook, Instagram is an image-based social media platform that focuses on photos and videos.

Another difference between Facebook and Instagram lies in their network functions. On Facebook, users' networks tend to form around a closed community of people who know each other. Facebook users can form groups with school friends, work colleagues, and family members. Therefore, Facebook users are likely to see only the content posted by people they actually know. On the other hand, Instagram users are likely to see posts from strangers they have never met (Lup et al., 2015). Unlike friendship on Facebook, the relationship between "following" and "follower" on

Instagram does not have to be mutual. It is possible to see another user's profile and posts simply by following them, and thus it is common for many regular Instagram users to follow celebrities unilaterally (Lup et al., 2015). Non-interactive and public sharing of images on Instagram is more likely to lead to upward comparisons than on Facebook, as it is easier for users to be exposed to positively biased images posted by others (Choi, 2022), which in turn is more likely to have negative consequences for users' psychological well-being than on Facebook.

Many young users use both Facebook and Instagram together. The differences in upward comparison experienced by young users of Facebook and Instagram, as well as the combined and differential effects of upward comparison on these two social media on users' psychological well-being, have not been previously identified. With this in mind, this study poses the following research question and hypothesis to examine how upward comparison of college students differs on the two social media platforms.

RQ1: What are the differences in the level of upward comparisons between Facebook and Instagram?

H1: There is a higher level of upward comparisons on Instagram than on Facebook.

The Effects of Upward Comparison on Psychological Well-Being

Consistent with the findings of previous research on social comparison, most studies on social media have found that upward comparison has a negative impact on users' psychological well-being. The main findings of previous studies examining each of these factors are briefly summarized below.

Self-Esteem

Self-esteem is an overall assessment of one's self and includes a positive or negative attitude toward one's identity. Self-esteem is influenced by comparing oneself to others and evaluating oneself positively or negatively in various social relationships (Rosenberg, 1979). Social comparisons can help college-aged young adults maintain desired beliefs, preferences, and attitudes, but comparing oneself to others on social

media for the purpose of self-assessment can be detrimental to their self-esteem (Nayenggita & Adishesa, 2021). In short, viewing other people's lives on social media indirectly affects self-esteem through social comparison. Compared to unattractive profiles, social media profiles that contain highly attractive criteria negatively affect self-esteem by causing users to lower their mood and be dissatisfied with their appearance (Haferkamp & Krämer, 2011). A number of recent studies have found that the negative relationship between Instagram use and self-esteem is mediated by social comparison, particularly upward comparison (Nayenggita & Adishesa, 2021; Stapleton et al., 2017; Wang et al., 2017). Low self-esteem is known to have negative effects on the other dimensions of psychological well-being (Schmuck et al., 2019; Wang et al., 2017).

Life Satisfaction

Life satisfaction is a cognitive judgment of how satisfied people are with their current lives (Diener et al., 1985). Many of the previous studies based on social comparison theory have examined the effects of social comparison on life satisfaction. It has been reported that users exposed to the narcissistic information of others may experience negative psychological states such as jealousy, envy, and even dissatisfaction with their lives as a result of upward comparison with others (Appel et al., 2016; Frison & Eggermont, 2017). A study conducted with Chinese college students found that passive social media use lowers self-esteem, which in turn negatively impacts life satisfaction (Chen et al., 2016). In another study about Facebook, it was found that users' life satisfaction decreased immediately after viewing news feeds posted by others (Kross et al., 2013). Ding et al. (2017) also found that envy experienced by a user acted as a mediator in the relationship between viewing others on social media and life satisfaction. These findings suggest that upward comparison acts as a mediator in the relationship between social media use and users' life satisfaction.

Depression

Some of the previous studies on the effects of social media comparisons on psychological well-being have focused on user depression. For example, in a study

conducted with a group of high school students (Nesi & Prinstein, 2015), researchers were able to predict students' level of depression after one year by analyzing their tendency to compare themselves to others on social media. Similarly, Feinstein et al. (2013) found that Facebook users' tendency to rate themselves pessimistically predicted respondents' depression after three weeks. These negative effects are more pronounced among users who frequently compare themselves to others (Cha & Lee, 2015) and especially among users who habitually make upward comparisons (Buunk & Brenninkmeijer, 2000).

As summarized above, the various psychological effects of using Facebook or Instagram have been actively researched, and most findings suggest that the negative effects of social media use on users' psychological well-being are mediated by upward comparison. This study poses the following research question and hypothesis to examine whether there are differences between Facebook and Instagram in terms of the effects of upward comparisons on college students' psychological well-being.

RQ2: Does the upward comparison on Instagram have greater effect on psychological well-being (self-esteem, life satisfaction, and depression) than that on Facebook?

H2: Upward comparisons on Instagram have more negative effects on college students' psychological well-being (self-esteem, life satisfaction, and depression) than upward comparisons on Facebook.

Effects of Usage Behaviors on Upward Comparison

In addition to testing the hypotheses, this study also sought to examine how usage behaviors affect upward comparison on social media, as the experience of upward comparison on social media depends on how the user uses social media (Verduyn et al., 2020). In this study, the amount of time spent using social media, total duration of social media use, and number of friends or "followings" are considered as usage-behavior characteristics that may influence the experience of upward comparison among college students.

Many previous studies have reported that the amount of time or frequency of social media use positively correlates with the degree of social comparison (Chae,

2018; Faelens et al., 2021; Fatt et al., 2019; Stapleton et al., 2017). In the case of Instagram, however, some studies have found no significant relationship between usage time and social comparison (Lup et al., 2015; Nayenggita & Adishesha, 2021), suggesting that the relationship may be moderated by other variables, such as the number of strangers one follows (Lup et al., 2015) or differentiated by cultural differences (individualistic vs. collectivistic culture) among research participants (Nayenggita & Adishesha, 2021). These inconsistent findings suggest that the present study should investigate the relationship between social media use and upward comparison among Korean college students.

The total duration of social media use has not been examined in previous research, but is included in this study for exploratory analysis in the consideration that it may affect the size and quality of the interpersonal network a user forms on social media, as well as the user's preferences and the reliability of information posted by others on social media. Finally, the degree of upward comparison on Instagram has been found to be related to the number of other users the user follows, but not to the number of others who follow the user (Sherlock & Wagstaff, 2019). Another study found that the number of strangers who do not have an actual offline relationship with the user moderates the relationship between Instagram use and social comparison (Lup et al., 2015). These results suggest that there may be a relationship between users' propensity or experience to compare themselves to others and the number of other users they follow to gain insight into their daily lives.

Method

Participants

To test and answer the above research hypotheses and a research question, this study conducted an in-class paper-and-pencil survey for three weeks, from April 27 to May 17, 2022, among college students, who reportedly belong to the age group that uses social media more actively but are more susceptible to the negative effects. College students were informed of the objectives of this study and asked to participate in the survey after class. Given the objectives of this study, voluntary participation in

the survey was limited to those who were using at least one of Facebook and Instagram at the time of participation. Participants were rewarded with gifts after completing the questionnaire. Although this was a non-probability (voluntary) sample, several universities across the country were included given the different sociocultural contexts related to social media use. After excluding some responses due to incomplete information, data from a total of 641 undergraduate students were analyzed.

The sample was composed as follows: 423 females (66.0%) and 218 males (34.0%); 178 freshmen (27.8%), 130 sophomores (20.3%), 178 juniors (27.8%), 130 seniors (20.3%), and 25 unknowns (3.9%) attending various universities across the country, including two universities in Seoul (n = 119, 18.6%), one in Gyunggi-do (n = 174, 27.1%), two in Busan (n = 118, 18.4%), one in Daegu (n = 70, 10.9%), one in Jeollanam-do (n = 66, 10.3%), and one in Gangwon-do (n = 94, 14.7%) in Korea. The average age of participants (years) is 20.74 (SD = 2.04). The average monthly household income is 7.39 million won (SD = 9.41), which is closed to the national average of households with 4 family members (7.09 million won in 2021). Two-hundred-thirty-eight respondents (37.1%) used both Facebook and Instagram, while the majority (n = 393, 61.3%) used only Instagram. There were only 10 Facebook-only users (1.6%). These usage patterns of respondents are consistent with the reported trend of decreasing use of Facebook and increasing multiple use of Instagram with Facebook among young people in Korea, suggesting that this sample provides the analyses needed to test and answer the research hypotheses and questions proposed above.

Measures

Use of Facebook and Instagram

Regarding Facebook and Instagram use, the time (minutes) spent per day, the number of days per week, duration (months) since first using, and number of friends or followings on Facebook and Instagram were recorded with open-ended questions. Time (minutes) spent on Facebook and Instagram in a week was calculated by multiplying the time spent per day by the number of days the social media was used in a week to include in the following statistical analyses (see Table 1).

Table 1

Means and Standard Deviations of Uses of Facebook and Instagram

| Uses | Facebook | | | Instagram | | |
|-------------------------------|----------|----------|-----------|-----------|----------|-----------|
| | <i>n</i> | <i>M</i> | <i>SD</i> | <i>n</i> | <i>M</i> | <i>SD</i> |
| Time Spent Per Day (Minutes) | 247 | 64.10 | 72.90 | 629 | 118.92 | 116.62 |
| No. of Days per Week | 248 | 5.06 | 2.24 | 628 | 6.19 | 1.53 |
| Time Spent Per Week (Minutes) | 247 | 392.01 | 514.20 | 626 | 797.22 | 827.49 |
| Duration of Use (Months) | 246 | 85.58 | 26.27 | 626 | 47.45 | 24.28 |
| Number of Friends/Followings | 247 | 434.61 | 430.36 | 630 | 207.41 | 182.45 |

Upward Comparison on Facebook and Instagram

Upward comparison tendency in Facebook and Instagram use was assessed using a scale adapted from the Social Comparison Discrepancy Scale (Solberg et al., 2002) by Yang et al. (2014). This scale includes 8 items reflecting various dimensions of social comparison that users may experience on social media (other people’s wonderful lifestyles, good things, good appearances or physical conditions, hard-working lives, achievements or successes, extended interpersonal relationships, popularities, and happy daily lives). Participants were asked to indicate the extent to which they agreed with each item on a 7-point Likert scale ranging from 1 = strongly disagree to 7 = strongly agree. The 8 items related to upward comparison on Facebook and Instagram, respectively, were factor analyzed using principal component analysis with Varimax (orthogonal) rotation. The analyses yielded single factors explaining a total of 72.35% and 68.01% of the variances for upward comparisons on Facebook and Instagram, respectively. Based on these results, responses to the 8 items were averaged to determine the degree of upward comparison on Facebook ($n = 247$, $M = 1.90$, $SD = 1.17$) and Instagram ($n = 631$, $M = 2.66$, $SD = 1.41$) for each participant. The inter-item reliabilities of the scale for Facebook (Cronbach’s $\alpha = .94$) and Instagram (Cronbach’s $\alpha = .93$) were all acceptable.

Table 2

Factor Analyses Table for Upward Comparison on Facebook and Instagram

| Items | Facebook (n = 247) | | Instagram (n = 631) | |
|--|--------------------|----------|---------------------|----------|
| | M (SD) | Loadings | M (SD) | Loadings |
| When I look at other people's wonderful lifestyles, I compare them to my relatively poor situation. | 1.85 (1.34) | .863 | 2.84 (1.75) | .859 |
| When I look at good things that other people have, I compare them to my relatively poor situation. | 1.69 (1.23) | .861 | 2.35 (1.59) | .828 |
| When I look at other people's good appearances or physical conditions, I compare them to my relatively poor situation. | 2.02 (1.42) | .877 | 2.88 (1.79) | .841 |
| When I look at other people's hard-working lives, I compare them to my relatively poor situation. | 2.07 (1.49) | .848 | 3.10 (1.87) | .826 |
| When I look at other people's achievements or successes, I compare them to my relatively poor situation. | 2.15 (1.52) | .845 | 3.07 (1.84) | .824 |
| When I look at other people's extended interpersonal relationships, I compare them to my relatively poor situation. | 1.87 (1.35) | .782 | 2.49 (1.69) | .798 |
| When I look at other people's popularities, I compare them to my relatively poor situation. | 1.80 (1.33) | .852 | 2.27 (1.55) | .799 |
| When I look at other people's happy daily lives, I compare them to my relatively poor situation. | 1.76 (1.32) | .874 | 2.27 (1.55) | .821 |
| Eigenvalue | | 5.788 | | 5.440 |
| % of Total Variance | | 72.347 | | 68.005 |
| Cronbach's α | | .94 | | .93 |

Note. Items were rated on 7-point Likert scale ranging from 1 = *strongly disagree* to 7 = *strongly agree*

Self-Esteem

Respondents' self-esteem was measured using Rosenberg's (1965) self-esteem scale, which consists of 10 items. Participants indicated the extent to which they agreed with each item on a 7-point Likert scale ranging from 1 = strongly disagree to 7 = strongly agree. Responses to the 10 items were averaged to determine each participant's level of self-esteem ($M = 5.03$, $SD = .99$). The inter-item reliability of the scale (Cronbach's $\alpha = .87$) was acceptable.

Life Satisfaction

The level of life satisfaction was measured using Diener et al.'s (1985) satisfaction with life scale. This scale includes 5 items. Respondents were asked to indicate the extent to which they agreed with each item on a 7-point Likert scale ranging from 1 = strongly disagree to 7 = strongly agree. Responses to the 5 items were averaged ($M = 4.15$, $SD = 1.08$) and the inter-item reliability of the scale was acceptable (Cronbach's $\alpha = .79$).

Depression

The Center for Epidemiological Studies-Depression (CES-D) scale was used to measure the degree of depression. The CES-D scale, originally published by Radloff (1977), is a 20-item questionnaire that asks participants to indicate how often in the past week they have experienced symptoms associated with depression, such as restless sleep, loss of appetite, and loneliness. Response options range from 0 to 3 for each item (0 = rarely or none of the time, 1 = some or little of the time, 2 = moderately or much of the time, 3 = most or almost all the time). Responses to the 20 items were summed for each participant's depression score between 0 and 60, with high scores indicating more severe depressive symptoms ($M = 11.87$, $SD = 10.03$, Cronbach's $\alpha = .92$).

Results

To answer RQ1 and test H1, which states that Instagram leads to a higher level of upward comparisons than Facebook, two one-sample t-tests were conducted for the level of upward comparisons on Facebook and Instagram with a test value of 1.00 (the

lowest value indicating there are no upward comparisons at all). The results showed that the level of upward comparisons was higher for Instagram users [$M = 2.66$, $SD = 1.41$, $t(630) = 29.64$, $p < .000$, Cohen's $d = 1.18$ (a large effect size)] than for Facebook users [$M = 1.90$, $SD = 1.17$, $t(246) = 12.11$, $p < .000$, Cohen's $d = .77$ (close to a large effect size)]. In addition, a paired-samples t-test conducted with the sample of those who use both Facebook and Instagram revealed that users who used both Facebook and Instagram experienced more upward comparisons on Instagram ($M = 2.73$, $SD = 1.44$) than on Facebook ($M = 1.87$, $SD = 1.12$), which was statistically significant, $t(236) = 11.35$, $p < .000$, Cohen's $d = .74$ (close to a large effect size). These results show that both Facebook and Instagram triggered upward comparisons, but there was a significantly higher level of upward comparisons on Instagram than on Facebook, as hypothesized in H1.

To answer RQ2 and test H2, which states that upward comparisons on Instagram have a more negative impact on college students' psychological well-being than those on Facebook, a series of hierarchical regression analyses were conducted with the sample of those who used both Facebook and Instagram ($n = 194$ after excluding cases listwise from $n = 238$) for each of the dependent variables including self-esteem, life satisfaction, and depression. In the first and second models of hierarchical regression, demographic factors (gender, age, and monthly household income) and usage-behavior factors of Facebook and Instagram (time spent weekly, duration of use, and number of friends or followings) were included as control variables. The upward comparison factors on Facebook and Instagram were included in the 3-stage model of hierarchical regression analyses.

Table 3

Effects of Upward Comparisons on Facebook and Instagram on Psychological Well-Being (n = 194): β

| Factors | | Psychological Well-Being | | |
|-------------------------------|--------------------------------|--------------------------|-------------------|------------|
| | | Self-Esteem | Life Satisfaction | Depression |
| Demographics | Gender | -.101 | -.009 | .041 |
| | Age | -.117 | -.202** | .136 |
| | Household Income | .066 | -.040 | .058 |
| | ΔR^2 | .022 | .044* | .023 |
| Usage of Facebook & Instagram | Weekly Time on Facebook | -.099 | -.031 | .097 |
| | Usage Duration of Facebook | -.011 | -.169* | .020 |
| | No. of Friends on Facebook | -.005 | .020 | -.024 |
| | Weekly Time on Instagram | -.121 | -.064 | .025 |
| | Usage Duration of Instagram | .127 | .096 | -.076 |
| | No. of Followings on Instagram | .080 | .156 | -.027 |
| | ΔR^2 | .053 | .048 | .019 |
| | R^2 | .264*** | .257*** | .269*** |
| Upward Comparison | On Facebook | -.144 | .141 | .161 |
| | On Instagram | -.360*** | -.505*** | .394*** |
| | ΔR^2 | .188*** | .165*** | .227*** |
| | R^2 | .264*** | .257*** | .269*** |

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

The results of the regression analyses for the determinants of psychological well-being, including self-esteem, life satisfaction, and depression, are summarized in Table 3. Neither the demographic factors in the first model nor the usage-behavior factors in the second model were identified as significant factors affecting participants' self-esteem and depression. After controlling for the demographic and usage-behavior factors, the third model, which included the factors for upward comparison on Facebook and Instagram, explained 26.4% of the total variance in self-esteem [F (11, 182) = 5.92, $p < .001$], 25.7% of the total variance in life satisfaction [F (11, 182) = 5.73, $p < .001$], and 26.9% of the total variance in depression [F (11, 182) = 6.10, $p < .001$]. Upward comparison factors increased 18.8% of the variance in self-esteem [ΔF (2, 182) = 23.26, $p < .001$], 16.5% of the variance in life satisfaction [ΔF (2, 182) = 20.26,

$p < .001$], and 22.7% of the variance in depression [$\Delta F(2, 182) = 28.31, p < .001$], respectively. These findings suggest that upward comparisons on social media may be an important factor in explaining college students' psychological well-being.

However, the effects of upward comparison on all the determinants of psychological well-being were found to be statistically significant only on Instagram, but not on Facebook. Upward comparison on Instagram had a negative effect on self-esteem ($\beta = -.360, p < .001$), life satisfaction ($\beta = -.505, p < .001$), and depression ($\beta = .394, p < .001$), respectively. These results suggest that the psychological well-being of college students who used both Facebook and Instagram was negatively affected by upward comparisons on Instagram, but not by those on Facebook, supporting the research hypothesis (H2).

To determine whether these results apply only to users who use both Facebook and Instagram ($n = 194$ after excluding cases listwise from $n = 238$), the same regression analyses were performed with Instagram-only users ($n = 303$ after excluding cases listwise from $n = 393$). Table 4 shows that after controlling for demographic and usage-behavior factors, upward comparison among Instagram-only users had a significant impact in negative ways on self-esteem ($\beta = -.379, p < .001$), life satisfaction ($\beta = -.298, p < .001$), and depression ($\beta = .296, p < .001$), consistent with the results for users of both social media. In other words, it was demonstrated that upward comparison on Instagram had a negative impact on college students' psychological well-being, regardless of whether they used both Facebook and Instagram or Instagram alone.

Table 4

Effects of Instagram-Only Users' Upward Comparison on Psychological Well-Being (n = 303): β

| Factors | | Psychological Well-Being | | |
|--------------------|--------------------------------|--------------------------|-------------------|------------|
| | | Self-Esteem | Life Satisfaction | Depression |
| Demographics | Gender | -.025 | -.109 | .099 |
| | Age | -.070 | -.121* | .148** |
| | Household Income | .055 | .106 | .058 |
| | ΔR^2 | .007 | .028* | .028* |
| Usage of Instagram | Weekly Time on Instagram | -.012 | .022 | .135* |
| | Usage Duration of Instagram | .031 | -.025 | -.055 |
| | No. of Followings on Instagram | .064 | .023 | -.048 |
| | ΔR^2 | .005 | .001 | .016 |
| Upward Comparison | On Instagram | -.379*** | -.298*** | .296*** |
| | ΔR^2 | .132*** | .081*** | .080*** |
| R^2 | | .144*** | .111*** | .125*** |

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

A series of one-way ANCOVAs were also conducted to determine a statistically significant difference between users who used only Instagram and those who used both Facebook and Instagram on each factor of psychological well-being controlling for upward comparison on Instagram. Table 5 shows that the covariate, upward comparison on Instagram, was significantly related to the respondents' self-esteem [$F(1, 628) = 92.29, p < .001$], life satisfaction [$F(1, 628) = 70.10, p < .001$], and depression [$F(1, 628) = 84.06, p < .001$]. It should be noted, however, that there was no significant effect of type of social media used (i.e., Instagram only or both Facebook and Instagram) on self-esteem [$F(1, 628) = 3.67, p = .056$], life satisfaction [$F(1, 628) = 2.60, p = .107$], and depression [$F(1, 628) = .26, p = .607$] after controlling for upward comparison on Instagram. These findings support the research hypothesis (H2) that upward comparisons on Instagram have a more negative impact on psychological well-being than those on Facebook, and also suggest, in part, that upward comparisons

mediate the relationship between Instagram use and psychological well-being.

Table 5

The ANCOVAs for Psychological Well-Being Factors by Upward Comparison on Instagram and Type of Social Media Used (Instagram Only Users, n = 393 vs. Both Facebook & Instagram Users, n = 238)

| DV | Source | SS | Df | MS | F | p | η^2 |
|-------------------|----------------------------|-----------|-----|---------|-------|------|----------|
| Self-Esteem | Upward Com. on Instagram | 78.38 | 1 | 78.38 | 92.27 | .000 | .128 |
| | Type of Social Media Used | 3.12 | 1 | 3.12 | 3.67 | .056 | .006 |
| | Error | 533.34 | 628 | .85 | | | |
| | Total | 16583.21 | 631 | | | | |
| Life Satisfaction | Upward Com. on Instagram | 73.94 | 1 | 73.94 | 70.10 | .000 | .100 |
| | Types of Social Media Used | 2.75 | 1 | 2.75 | 2.60 | .107 | .004 |
| | Error | 662.42 | 628 | 1.06 | | | |
| | Total | 11673.67 | 631 | | | | |
| Depression | Upward Com. on Instagram | 7491.82 | 1 | 7491.82 | 84.06 | .000 | .118 |
| | Types of Social Media Used | 23.57 | 1 | 23.57 | .26 | .607 | .000 |
| | Error | 55972.38 | 628 | 89.13 | | | |
| | Total | 152278.00 | 631 | | | | |

In addition to hypothesis testing, this study explored the effects of usage behaviors on upward comparisons on Facebook and Instagram, respectively, by conducting two hierarchical regression analyses. Demographic characteristics (gender, age, and monthly household income) were included for statistical control. Table 6 shows that the upward comparison on Facebook was affected by the age of the user and the time spent on Facebook per week. Specifically, respondents' age was found to have a significant positive impact on upward comparison ($\beta = .193, p = .008$). The amount of time respondents spent on Facebook per week had a positive effect on

the upward comparison ($\beta = .158, p = .025$). For the usage-behavior characteristics on Instagram, weekly usage time ($\beta = .092, p = .046$) and number of followings ($\beta = .097, p = .036$) were found to positively influence upward comparison on this platform.

Table 6

Effects of Usage Behaviors on Upward Comparisons on Facebook and Instagram: β

| Factors | | Facebook (n = 204) | Instagram (n = 499) |
|--------------------|---------------------------|-----------------------|------------------------|
| Demographics | Gender (M = 0, F = 1) | -.001 | .161*** |
| | Age | .193** | .208*** |
| | Monthly Household Income | -.010 | .050 |
| | ΔR^2 | .037 | .055*** |
| Usage- Behavior | Weekly Use Time (minutes) | .158* | .092* |
| | Duration of Use (months) | -.063 | .066 |
| | No. of Friends/Followings | .080 | .097* |
| | ΔR^2 | .030 | .032*** |
| R^2 | | .067* | .086*** |

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

Discussion

More Upward Comparisons on Instagram than Facebook

The present study examined and analyzed upward comparison and its effects on psychological well-being on Facebook and Instagram. Results showed that respondents experienced upward comparisons on both Facebook and Instagram, with more on Instagram. There were significant differences in upward comparison, supporting the research hypothesis (H1) that Instagram causes more upward comparisons than Facebook. This could simply be because the college students in this study spend more time on Instagram (daily M = 118.92, SD = 116.62; weekly M = 797.22, SD = 827.49) than on Facebook (daily M = 64.10, SD = 72.90; weekly M = 392.01, SD = 514.20), which is consistent with previous findings of the positive relationship between social media use and social comparison (Chae, 2018; Faelens et al., 2021; Fatt et al., 2019; Stapleton et al., 2017).

Otherwise, this could be due in part to differences in the functional characteristics of Facebook and Instagram, as discussed in the literature review of this study. Facebook and Instagram have many functional similarities, but unlike Facebook, Instagram requires an image or video. Facebook users typically see posts from other users that may or may not include images or video, while Instagram only displays posts that include images or videos. The automatic collection of images is precisely the feature that distinguishes Instagram from Facebook. Therefore, the college students who participated in this study could receive a greater amount of visual stimuli in a short period of time on Instagram than on Facebook. Considering that social media is used as a space where narcissistic self-expression and voyeuristic viewing are prevalent, the visually oriented Instagram could lead to more upward comparisons than the text-based Facebook.

These findings, not found in previous research, suggest that young users' tendency or experience to compare themselves to others on social media may be increasing as social media provides more visual-oriented content from others. Appropriate education and interventions regarding exposure to and perception of visual images of others, especially so-called strangers, must be addressed.

Differences in the Effects of Upward Comparison on Psychological Well-Being Between Facebook and Instagram

In terms of the theoretical and practical implications of the research findings, this study differs the most from the previous studies by comparing the differences in upward comparison and its effects between these most widely used social media. By analyzing the combined effects of upward comparison on Facebook and Instagram together on each of the determinants of psychological well-being (self-esteem, life satisfaction, and depression), this study was able to provide results that may contribute to a better understanding of the relationship between upward comparison and psychological well-being.

This study found that college students experience upward comparisons more on Instagram than on Facebook, and their psychological well-being is negatively affected only by Instagram use, supporting the research hypothesis (H3) that upward

comparisons on Instagram have more negative effects on psychological well-being than on Facebook. Respondents' upward comparison on Facebook did not influence a single factor of psychological well-being, whereas on Instagram it influenced all factors of psychological well-being, which is partially consistent with the findings of previous research. The non-significant relationship between upward comparison and psychological well-being on Facebook may be due to the trend that young users' Facebook uses have been substituted by their Instagram uses. In addition, of note, these results also suggest that the effects of Instagram use on psychological well-being are mediated by upward comparison, consistent with previous research (Ding et al., 2017; Kross et al., 2013; Nayenggita & Adishesha, 2021; Stapleton et al., 2017; Wang et al., 2017). Note that time spent weekly on Instagram had no direct effect on psychological well-being factors in this study (Table 3), but the effect of weekly use time on upward comparison (Table 6) and the effect of upward comparison on psychological well-being were significant (Table 3 & 4).

These results also suggest that the effects of upward comparison on psychological well-being may vary depending on the functional characteristics of the social media and subsequent user behavior, as inferred in this study. This differs from previous studies that have proposed a simple and general mechanism for the negative effects of upward comparison on psychological well-being. In particular, upward comparisons on Facebook were found to have no significant effects on psychological well-being in this study. This could be due to the different characteristics of posts and interpersonal network on Facebook. That is, posts on Facebook that are mainly from acquaintances who know each other in real life, and that are usually accompanied by texts explaining the background or context, may not trigger negative feelings such as envy or jealousy in college students due to upward comparisons.

In addition, it has been argued that the types of envy are moderated by the way the good things or advantages that others possess are presented. The hubristic pride of others who attribute their material possessions and accomplishments or successes to their talents can lead to malicious envy, whereas authentic pride that attributes the things others brag about to their efforts can promote benign envy (Lange & Crusius, 2015). Thus, further research needs to make efforts to identify such conditions that

lead young people's self-presentation and their perceptions of others' self-presentation through upward comparisons to be authentic and not hubristic.

Effects of Usage-Behaviors on Upward Comparisons on Facebook and Instagram

This study also examined usage-behavior characteristics (weekly time spent, duration of use, and number of friends or followings), which have not been adequately discussed and examined in previous research to fully understand upward comparison of social media users and the resulting consequences. Among the usage-behavior characteristics, this study found that time spent weekly on Facebook and Instagram increased upward comparison. As the amount of time spent using Facebook and Instagram increased, the upward comparison of college students on these social media also increased. On the other hand, total duration of use did not affect upward comparison on both Facebook and Instagram, and the number of friends/followings increased upward comparison on Instagram but not on Facebook.

Limitations and Suggestions

However, a limitation of this study is its exploratory nature. In particular, the differences in the upward comparison between Facebook and Instagram were attributed to the different functional characteristics of the two social media (i.e., text-oriented Facebook vs. image-oriented Instagram), the characteristics of the network between users (i.e., acquaintance-oriented Facebook vs. stranger-oriented Instagram), and the different algorithms used to present others' posts (posts from friends on Facebook vs. posts of interest on Instagram). However, these differences between the two social media were considered to be inherent in respondents' experiences in using each platform. It is expected that follow-up studies will provide more detailed analyses to verify and better understand the upward comparison and its effects by empirically measuring and analyzing the different characteristics between the two social media, such as the ratio of text to images one was exposed to, the number of acquaintances and strangers, the number of posts from friends or of interest, which may have a discriminatory effect on the upward comparison and its relationship to psychological well-being, as discussed in this study.

The generalizability of the results of this study is also limited by the use of a voluntary and convenient nonprobability sample, although the sample size is relatively large enough (N = 641). Also, the causal relationships among variables hypothesized in this study, particularly the relationship between upward comparison and psychological well-being, require special attention in interpretation due to the nature of the cross-sectional study. Therefore, this study suggests that more systematic follow-up studies should be conducted to develop more effective guidelines or interventions for healthy and desirable social media use by young people. It is anticipated that the discussions and findings presented in this study will serve as an implicit foundation for both theory and practice.

References

- Appel, H., Gerlach, A. L., & Crusius, J. (2016). The interplay between Facebook use, social comparison, envy, and depression. *Current Opinion in Psychology*, 9, 44-49. <https://doi.org/10.1016/j.copsyc.2015.10.006>
- Buunk, B. P., & Brenninkmeijer, V. B. (2000). Social comparison processes among depressed individuals: Evidence for the evolutionary perspective on involuntary subordinate strategies. In L. Sloman & P. Gilbert (Eds.), *Subordination, mood disorders and evolution* (pp. 147-164). Erlbaum.
- Cha, K. J., & Lee, E. M. (2015). An empirical study of discontinuous use intention on SNS: From a perspective of society comparison theory. *Journal of Society for e-Business Studies*, 20(3), 59-77. <https://doi.org/10.7838/jsebs.2015.20.3.059>
- Chae, J. (2018). Reexamining the relationship between social media and happiness: The effects of various social media platforms on reconceptualized happiness. *Telematics and Informatics*, 35(6), 1656-1664. <https://doi.org/10.1016/j.tele.2018.04.011>
- Chen, W., Fan, C.-Y., Liu, Q.-X., Zhou, Z.-K., & Xie, X.-C. (2016). Passive social network site use and subjective well-being: A moderated mediation model. *Computers in Human Behavior*, 64, 507-514. <https://doi.org/10.1016/j.chb.2016.04.038>
- Choi, J. (2022). Do Facebook and Instagram differ in their influences on life satisfaction? A study of college men and women in South Korea. *Journal of*

Psychosocial Research on Cyberspace, 16(1), Article 2.

<https://doi.org/10.5817/CP2022-1-2>

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction With Life Scale. *Journal of Personality Assessment*, 49(1), 71-75.

https://doi.org/10.1207/s15327752jpa4901_13

Ding, Q., Zhang, Y. X., Wei, H., Huang, F., & Zhou, Z. K. (2017). Passive social network site use and subjective well-being among Chinese university students: A moderated mediation model of envy and gender. *Personality and Individual Differences*, 113(15), 142-146. <https://doi.org/10.1016/j.paid.2017.03.027>

Dixon, S. (2022, June 21). Global social networks ranked by number of users 2022.

<https://www.statista.com/statistics/272014/global-social-networks-ranked-by-number-of-users/>.

DMC Media. (2022, May 27). 2022 analyses of social media and advertising markets. *DMC REPORT*.

https://www.dmcreport.co.kr/report/trendBrief/freeView?repotcode=DMCTBF20220028&drtopdeth=RPT_TYPE_1&keyword_type=REPORT_KEYWORD_16

Faelens, L., Hoorelbeke, K., Cambier, R., van Put, J., Van de Putte, E., De Raedt, R., & Koster, E. H. W. (2021). The relationship between Instagram use and indicators of mental health: A systematic review. *Computers in Human Behavior Reports*, 4, Article 100121. <https://doi.org/10.1016/j.chbr.2021.100121>

Fatt, S. J., Fardouly, J., & Rapee, R. M. (2019). #malefitspo: Links between viewing fitspiration posts, muscular-ideal internalization, appearance comparisons, body satisfaction, and exercise motivation in men. *New Media and Society*, 21(6), 1311-1325. <https://doi.org/10.1177/14614448188210>

Feinstein, B. A., Hershenberg, R., Bhatia, V., Latack, J. A., Meuwly, N., & Davila, J. (2013). Negative social comparison on Facebook and depressive symptoms: Rumination as a mechanism. *Psychology of Popular Media Culture*, 2(3), 161-170. <https://doi.org/10.1037/a0033111>

Festinger, L. (1954). A theory of social comparison processes. *Human Relations*, 7(2), 117-140. <https://doi.org/10.1177/001872675400700202>

Frison, E., & Eggermont, S. (2017). Browsing, posting, and liking on Instagram: The reciprocal relationships between different types of Instagram use and

adolescents' depressed mood. *Cyberpsychology, Behavior, and Social Networking*, 20(10), 603-609. <https://doi.org/10.1089/cyber.2017.0156>

Goethals, G. R. (1986). Social comparison theory: Psychology from the lost and found. *Personality and Social Psychology Bulletin*, 12(3), 261-278. <https://doi.org/10.1177/0146167286123001>

Goffman, E. (1959). *The presentation of self in everyday life*. A doubleday Anchor Original.

Haferkamp, N., & Krämer, N. C. (2011). Social comparison 2.0: Examining the effects of online profiles on social-networking sites. *Cyberpsychology, Behavior, and Social Networking*, 14(5), 309-314. <https://doi.org/10.1089/cyber.2010.0120>

Jordan, A. H., Monin, B., Dweck, C. S., Lovett, B. J., John, O. P., & Gross, J. J. (2011). Misery has more company than people think: Underestimating the prevalence of others' negative emotions. *Personality and Social Psychology Bulletin*, 37(1), 120-135. <https://doi.org/10.1177/0146167210390>

Kemp, S. (2022, April 21). Digital 2022: April global statshot report. *DataReportal*. <https://darareportal.com/reports/digital-2022-april-global-statshot>

Kross, E., Verduyn, P., Demiralp, E., Park, J., Lee, D. S., Lin, N., Shablack, H., Jonides, J., & Ybarra, O. (2013). Facebook use predicts declines in subjective well-being in young adults. *PLoS ONE*, 8(8), Article e69841. <https://doi.org/10.1371/journal.pone.0069841>

Lange, J., & Crusius, J. (2015). Dispositional envy revisited: Unravelling the motivational dynamics of benign and malicious envy. *Personality and Social Psychological Bulletin*, 41(2), 284-294. <https://doi.org/10.1177/0146167214564>

Lup, K., Trub, L., & Rosenthal, L. (2015). Instagram# instasad?: Exploring associations among Instagram use, depressive symptoms, negative social comparison, and strangers followed. *Cyberpsychology, Behavior, and Social Networking*, 18(5), 247-252. <https://doi.org/10.1089/cyber.2014.0560>

Marlene, G., & Sahrani, R. (2021). Moderator role of social support in relationship between social comparison and life satisfaction of Instagram users. *Proceedings of the International Conference on Economics, Business, Social, and Humanities (ICEBSH 2021)*, 958-963. <https://doi.org/10.2991/assehr.k.210805.151>

- Nayenggita, S. K., & Adishesa, M. S. (2021). Social comparison as mediator: Does Instagram intensity predict self-esteem? *Journal of Educational, Health and Community Psychology, 10*(1), 104-117.
<http://dx.doi.org/10.12928/jehcp.v10i1.18051>
- Nesi, J., & Prinstein, M. J. (2015). Using social media for social comparison and feedback-seeking: Gender and popularity moderate associations with depressive symptoms. *Journal of Abnormal Child Psychology, 43*(8), 1427-1438.
<https://doi.org/10.1007/s10802-015-0020-0>
- Pittman, M., & Reich, B. (2016). Social media and loneliness: Why an Instagram picture may be worth more than a thousand Twitter words. *Computers in Human Behavior, 62*, 155-167. <https://doi.org/10.1016/j.chb.2016.03.084>
- Radloff, L. S. (1977). The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement, 1*(3), 385-401.
<https://doi.org/10.1177/014662167700100306>
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton University Press.
- Rosenberg, M. (1979). *Conceiving the self*. Basic Books.
- Schmuck, D., Karsay, K., Matthes, J., & Stevic, A. (2019). "Looking up and feeling down." The influence of mobile social networking site use on upward social comparison, self-esteem, and well-being of adult smartphone users. *Telematics and Informatics, 42*(73), Article 101240.
<https://doi.org/10.1016/j.tele.2019.101240>
- Sherlock, M., & Wagstaff, D. L. (2019). Exploring the relationship between frequency of Instagram use, exposure to idealized images, and psychological well-being in women. *Psychology of Popular Media Culture, 8*(4), 482-490.
<https://doi.org/10.1037/ppm0000182>
- Solberg, E. C., Diener, E., Wirtz, D., Lucas, R. E., & Oishi, S. (2002). Wanting, having, and satisfaction: Examining the role of desire discrepancies in satisfaction with income. *Journal of Personality and Social Psychology, 83*(3), 725-734.
<https://doi.org/10.1037/0022-3514.83.3.725>
- Son, Y.-J., & Heo, M.-S. (2020). A study on social media usage, helplessness, and loneliness experienced by college students since the COVID-19 pandemic.

Journal of Digital Contents Society, 21(11), 1957-1971.

<http://dx.doi.org/10.9728/dcs.2020.21.11.1957>.

Stapleton, P., Luiz, G., & Chatwin, H. (2017). Generation validation: The role of social comparison in use of Instagram among emerging adults. *Cyberpsychology, Behavior, and Social Networking*, 20(3), 142-149.

<https://doi.org/10.1089/cyber.2016.0444>

Verduyn, P., Gugushvili, N., Massar, K., Täht, K., & Kross, E. (2020). Social comparison on social networking sites. *Current Opinion in Psychology*, 36, 32-37.

<https://doi.org/10.1016/j.copsyc.2020.04.002>

Vogel, E. A., Rose, J. P., Roberts, L. R., & Eckles, K. (2014). Social comparison, social media, and self-esteem. *Psychology of Popular Media Culture*, 3(4), 206-222.

<https://doi.org/10.1037/ppm0000047>

Wang, J.-L., Wang, H.-Z., Gaskin, J., & Hawk, S. (2017). The mediating roles of upward social comparison and self-esteem and the moderating role of social comparison orientation in the association between social networking sites usage and subjective well-being. *Frontiers in Psychology*, 8, Article 771.

<https://doi.org/10.3389/fpsyg.2017.00771>

Yang, H.-S., Kim, J.-H., & Seo, M.-H. (2014). Does Facebook make us happy?: Examining the relationship among college students' Facebook use, upward social comparison and life satisfaction. *Korean Journal of Journalism and Communication Studies*, 58(6), 215-244. UCI: G704-000203.2014.58.6.004

Yun, B., & Lee, O. H. (2017). Socio-cultural implications of womens using image based SNS: Focusing on Instagram. *Korean Journal of Broadcasting and Telecommunication Studies*, 31(5), 78-119.

<https://www.dbpia.co.kr/journal/articleDetail?nodeId=NODE07246719>

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