

Effect of Facebook Social Comparison on Well-being: A Meta-Analysis

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Abstract

The aim of this meta-analysis was to investigate the effect of Facebook social comparison on an individual's well-being. Self-esteem, life satisfaction, and psychological well-being were evaluated as indicators of well-being, and individuals' Facebook social comparisons were assessed. Publications in the literature were collected ($N=228$) by investigating articles related to the topic. After meeting the inclusion criteria, 13 articles (encompassing 22 studies) were included in the analysis. This study comprised a sample group of 11,199 individuals. The mean age of the sample group was 22.78 years. Using the random effects model, this study demonstrated that Facebook social comparison had a significant moderating effect on well-being ($k=22$, $r=-0.20$, $p<0.001$). The components of well-being and participants' ages were used as moderator variables. Results of the moderator analysis indicated that the well-being components ($Q_b=3.95$, $df=2$, $p>0.05$), and age ($Q_b=5.11$, $df=2$, $p>0.05$) were not a significant moderator variable of the effect of Facebook social comparison on well-being. This indicated a negative association between Facebook social comparison and well-being. The results from the literature are discussed as follows.

Keywords: Social comparison, Well-being, Self-esteem, Life satisfaction, Meta-analysis

1 Introduction

In addition to Twitter, LinkedIn, and Myspace, Facebook is one of the most popular social networking sites [1]. It was launched in 2004 and currently has approximately 2 billion users. It provides people with the opportunity to communicate and share information with others [2] and a platform for self-presentation [3]. On social network sites (SNSs) people track how others present themselves, what they do, and how they interact with others [4].

In recent years, researchers have become increasingly interested in the effects of Facebook use on well-being, with a substantial body of research yielding mixed findings. All researchers seem to agree that Facebook use influences well-being; however, there are differing opinions as to whether it increases or decreases well-being. The first position argues that the Internet provides a context for social interaction and interpersonal development, and thus can improve psychological well-being [5-7]. Other researchers, however, have argued that Facebook use decreases well-being, holding that the more people use Facebook, the more their levels of life satisfaction decline [8-9]. Social comparison through Facebook influences well-being.

Facebook allows users to gain insight into their Facebook friends' lives that they would normally not have; thus, it is a seemingly ideal platform for social comparison. Social comparison is the process through which individuals compare themselves with others to obtain an external guide against which to assess their opinions, skills, abilities, personality traits, and emotions [10-11]. Although social comparison can occur between any two individuals, it most commonly occurs when an individual believes another shares similar opinions, beliefs, and abilities [12]. Social comparison can be derived from the type of social interactions on SNSs that changes participants' well-being. This study investigated the effect of Facebook social comparison on well-being.

1.1 Components of Well-being

Well-being has been represented by numerous psychological constructs, such as self-esteem, psychological well-being, and life satisfaction [13]. This inconsistency makes it difficult to draw any generalizable conclusions across studies, and also contributes to the mixed findings regarding this topic. It can be speculated that certain indicators of well-being maybe more sensitive than others to the effect of Facebook use.

The World Health Organization (WHO) brings personal development and potential to the forefront in its definition of health, thus promoting positive psychology. Health is defined as an individual's full experience of wellness physically, mentally, and socially, without disease or disability [14]. Although well-being had been emphasized previously, studies in the area of positive psychology (e.g., life satisfaction [15]) only began in the 1960s.

Çikrikci (2016) gathered studies investigating the correlation between Internet use and well-being in a meta-analysis. Of 23 studies, 15 used self-esteem as an indicator of well-being, seven used life satisfaction, three used the German Socio-Economic Panel, two used psychological well-being, and one used a subjective well-being scale. Positive psychology focuses on how people develop positive competencies over their life time. Researchers have extolled the benefits of high positivity [16-17]. Parameters such as subjective well-being, psychological well-being, and optimism have been analyzed in relation to positive psychology [18]. According to Lee (2014), self-esteem is negatively related to Facebook social comparisons on well-being. In this study, the well-being indicators of self-esteem, life satisfaction, and psychological well-being were evaluated.

1.1.1 Self-esteem

Self-esteem reflects a comprehensive evaluation comprising cognitive and behavioral aspects of the self [19]. Through this evaluation, individuals make positive and negative judgments about their concept of self, thus affecting self-esteem. Self-esteem is considered a developmental phenomenon, and varies during different stages of life and in reaction to situations and events [20]. Rosenberg (1965) defined self-esteem as the positive and negative attitudes toward oneself. Self-esteem comprises all internal beliefs about oneself. In other words, self-esteem is all of the values attributed to oneself [21].

1.1.2 Life Satisfaction

Life satisfaction is assessed using the hedonic dimension of subjective well-being. Accordingly, this involves an assessment of one's own life in terms of obtaining satisfaction (hedonic pleasure principle) [22]. This assessment has both cognitive and emotional dimensions. Life satisfaction is the overall evaluation of one's environment, which can be positive or negative [23] and may be defined as aspects of an individual's life that ensure hedonic satisfaction.

1.1.3 Psychological Well-being

Psychological well-being is related to the interaction between the meaning an individual gives to life and the route to the realization of this meaning [22]. Ryff

(1989) differentiated psychological well-being from subjective well-being. Psychological well-being emphasizes the optimal effort by individuals to use their potential and achieve perfection [24]. Psychological well-being considers the potential of an individual to enter interactions with others using abilities and communication skills and the effects of these processes in terms of life aims [25].

1.2 Social Comparison on Facebook

Festinger (1954) defined social comparison as an evaluation of one's own thoughts and behaviors compared with those of others (i.e., comparison targets) who are similar in terms of characteristics or background. According to social comparison theory, people compare themselves with others to evaluate their emotions, personality traits, opinions, and abilities. People also compare themselves with others to enhance their self-esteem and self-concept [12]. In addition, they often engage in comparison behavior to make judgments and decisions more efficiently [26].

On Facebook, many users practice image management and present an idealized version of themselves in the form of flattering pictures and status updates about their successes [27]. Facebook allows users to gain insight into their Facebook friends' lives that they would normally not have, thus making this SNS ideal for social comparison [3].

1.3 Current Study

Although previous empirical studies have provided useful references on the effect of Facebook use on well-being, the literature on the relationship between Facebook social comparison and well-being has certain limitations. The primary limitation is the lack of meta-analysis of this relationship, and the second is the lack of analysis of whether certain variables moderate this relationship. In this study, a meta-analysis of the evidence of the relationship between Facebook social comparison and well-being was conducted. The well-being components (self-esteem, life satisfaction and psychological well-being) thought to affect the size of the effect were assessed as moderator variables. Additionally, user's age for Facebook social comparison were evaluated as moderator's variables. To achieve the aims of this research, three hypotheses were tested.

- H1.** Facebook social comparison has a negative effect on well-being.
- H2.** Well-being moderates the negative effect of Facebook social comparison on well-being.
- H3.** Age is a moderator of the negative effect of Facebook social comparison on well-being.

2 Research Method

2.1 Study Design

This study explored the effect of social comparison on well-being through meta-analysis. Meta-analysis involves combining the results of many independent studies on a certain topic and statistically analyzing the obtained research findings [28].

2.2 Study Eligibility Criteria

To determine which studies should be included in the meta-analysis, a literature review the Education Research Information Center, PsycINFO, Academic Search Premier, American Doctoral Dissertations, eBook Collection (EBSCOhost), Education Research Complete, Library, Information Science & Technology Abstracts, and Google Scholar databases was performed.

The keywords for the searches were “Facebook,”

“social comparison,” and “well-being” (self-esteem, life satisfaction, and well-being). Several strategies were used to determine which studies were appropriate for inclusion in the meta-analysis. Initially, titles were analyzed during reviewing and a study pool of all research related to Facebook social comparison and well-being (228 studies) was created. Subsequently, the full texts of publications were downloaded from the databases. According to the criteria that follow, 215 studies were excluded from the research after the literature review. The descriptive statistics relating to the 13 articles totaling 22 studies are presented in Table 1. The inclusion criteria were as follows: studies must (1) present Pearson correlations (r) or standardized linear regressions (β); and (2) measure the relationship between Facebook social comparison and well-being. The researchers conducted the literature search on February 16, 2018 based on the search strategy presented. A flow diagram of process is provided in Figure 1.

Table 1. Studies of relations between Facebook social comparison and well-being

Study	Mean age	N	well-being	Alpha	Type of social interactions	Alpha	r
Appel, Crusius, & Gerlach (2015) [34]	27.45	130	Self-esteem	.94	Upward comparison	.88	-.39
Burke & Kraut (2016) [6]	46.2	1910	Well-being	0.89	Social comparison	.58	-.018
Cohen & Blaszczynski (2015) [35]	19.32	185	Self-esteem	.88	Appearance comparison	.94	-.37
^a Cramer, Song, & Drent, (2016) [36]	23.63	267	Self-esteem	0.89	Social comparison	.80	-.05
^a Cramer, Song, & Drent (2016) [36]	23.63	267	Positive affect	NR	Social comparison	.80	.42
^a Frison & Eggermont (2016) [7]	14.76	1840	life satisfaction	.90	Social comparison	.89	-.42
^a Frison & Eggermont (2016) [7]	14.76	1577	life satisfaction	.90	Social comparison	.89	-.39
^a Gerson et al. (2016) [5]	36.5	337	Eudaimonic well-being	.89	Social comparison	.92	-.26
^a Gerson et al. (2016) [5]	36.5	337	life satisfaction	0.93	Social comparison	.92	-.22
^a Jang, Park, & Song (2016) [37]	21.17	313	Self-esteem	.81	Social comparison	.92	-.13
^a Jang, Park, & Song (2016) [37]	21.17	313	Mental health	.83	Social comparison	.92	-.15
Lee, (2014) [4]	19.9	191	Self-esteem	.87	social comparison	NR	-.29
^a Morry, Sucharyna, & Petty (2018) [38]	19.56	220	life satisfaction	.82	Upward comparison	NR	-.11
^a Morry, Sucharyna, & Petty (2018) [38]	19.56	220	happiness	.78	Upward comparison	NR	-.18
^a Morry, Sucharyna, & Petty (2018) [38]	19.56	220	self-esteem	.87	Upward comparison	NR	-.10
^a Park & Baek (2018) [39]	NR	331	life satisfaction	.87	ability-based social comparison	0.92	-0.07
^a Park & Baek (2018) [39]	NR	331	life satisfaction	.87	opinion-based social comparison	0.72	0.09
Rousseau, Eggermont, & Frison (2017) [40]	14.76	1840	life satisfaction	.90	Social comparison	NR	-.24
^a Vogel et al. (2014) [41]	19.64	145	Self-esteem	.87	Upward comparison	NR	-.35
^a Vogel et al. (2014) [41]	19.64	145	Self-esteem	.87	Downward comparison	NR	-.30
^a Vogel et al. (2015) [42]	18.93	40	Self-esteem	.90	Social comparison	.80	-.57
^a Vogel et al. (2015) [42]	18.93	40	Affect balance	NR	Social comparison	.80	-.43

Note. NR: Not reported. ^a Those studies were evaluated as different studies and meta-analysis was performed with 22 studies.

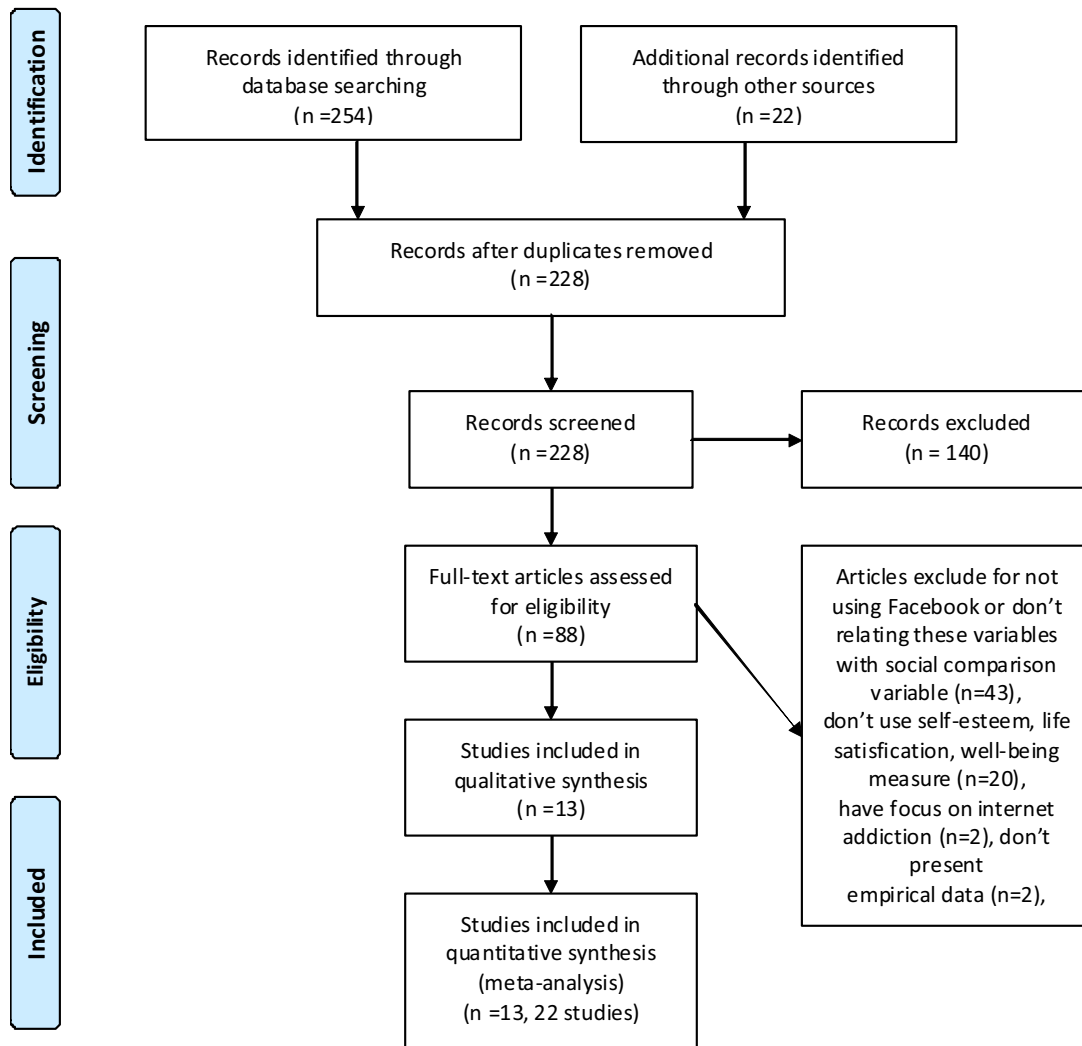


Figure 1. Flow diagram based on PRISMA [29]

2.3 Effect Size

The effect size obtained from a meta-analysis is a standard scale value used to determine the strength and direction of the relationships in a study [30]. Because the correlation coefficient and linear regression values are standardized between +1 and -1, this r value or β value can be transformed into a value on z tables and used for calculations [31].

In this study, the research was not considered to be functionally equivalent, and the calculated effect size was intended to be generalized to a larger population; therefore, the random effects model was chosen for meta-analysis. The meta-analysis procedure employed ESS and Excel programs [32] to examine effect size, Duval, Tweedie’s trim and fill test, publication bias, moderator analysis.

2.4 Moderator Variables

A moderator analysis tests the differences in the mean effect size of variables (moderators) and the direction of differences between subgroups. A moderator analysis in a meta-analysis study should be planned according to the aim of the study and should

be performed in accordance with this plan [28]. Statistical significance of differences between the moderator variables was tested with the Q statistical method developed by Hedges and Olkin (1985) [31]. In this method, Q is divided into Q_{between} (Q_b) and Q_{within} (Q_w) and analyzed; Q_w tests the homogeneity within the moderator variable used, whereas Q_b examines the homogeneity between the groups [30-31, 33].

In this study, only the statistical significance of differences between moderators was examined; therefore, only Q_b values were used. This study considered two moderator variables to play a role in the mean effect size. Because the well-being components (self-esteem, life satisfaction, and psychological well-being) for Facebook social comparison and well-being may affect the effect size, the components of well-being and age (high school student, college student, adult) for Facebook social comparison were evaluated as possible moderators.

2.5 Publication bias

The funnel plot of all research in this study is presented in Figure 2. Although no evidence relating to publication bias was observed in the funnel plot, this

bias was noted in the Duval and Tweedie’s trim and fill tests used to evaluate the influence of publication bias on effect size obtained in the meta-analysis. As shown in Table 2, no differences were observed between effect size value and the virtual effect size created to correct for the influence of publication bias.

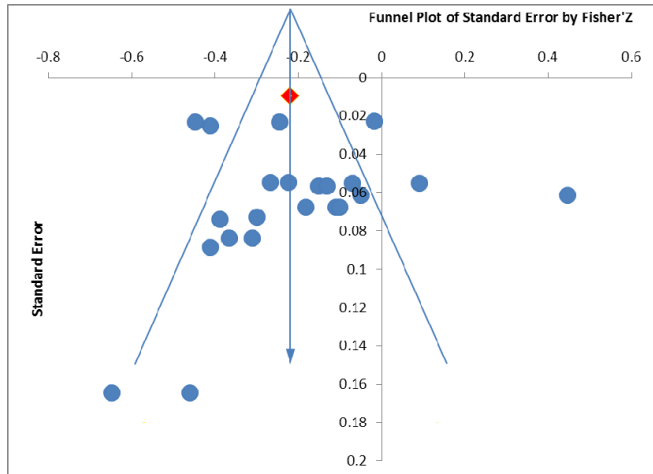


Figure 2. Funnel plot of effect size related to publication bias

Table 2. Results of Duval, Tweedie’s trim and fill test

	Excluding study	Point estimate	95% CI		Q
			Lower	Upper	
Observed values		-0.20	-0.29	-0.11	430.86
Adjustment values	0	-0.20	-0.29	-0.11	430.86

3 Results

3.1 Description of Included Studies

The meta-analysis included 13 articles yielding 22 studies with a total of 11,199 participants. Table 1 lists the mean age, sample size, well-being measure, reliability of well-being measure, reliability of Facebook social comparison measure, and the effect size. Only seven studies did not use undergraduate students as the study sample. Most sample sizes were smaller than 200; but, in five studies, samples exceeded 500 participants, and six studies comprised approximately 300 participants. The mean age of the sample group was 22.78 years.

3.2 Facebook Social Comparison and Well-being

The results revealed a negative relationship between Facebook social comparison and well-being, supporting H1. As shown in Table 3, the effect size of Facebook social comparison on well-being was significant ($r = -0.20, p < 0.01; 95\% \text{ CI } [-0.29 \sim -0.11]$). These results revealed that Facebook social comparison had a moderating effect [43] on well-being.

Table 3. Effect of Facebook social comparison on well-being: meta-analysis results

	k	N	r	95% CI		Q
				Lower	Upper	
Well-being	22	1119	-0.20**	-0.29	-0.11	430.86**

** $p < .01$.

3.3 Moderator Analyses

3.3.1 Indicators of Well-being

According to the random effects model (Table 4), the well-being indicator did not significantly influence effect sizes. Although the effect size among well-being components was not significant, the effect of self-esteem on well-being achieved statistical significance ($r = -0.27, p < .01; 95\% \text{ CI } [-0.38 \sim -0.17]$). The effect of life satisfaction on well-being was also significant ($r = -0.21, p < .01; 95\% \text{ CI } [-0.34 \sim -0.08]$).

Table 4. Results of moderator analysis

	k	N	r	95% CI		Qb
				Lower	Upper	
Well-being indicator						3.95
Self-esteem	9	1636	-0.27**	-0.38	-0.17	
Life satisfaction	7	6476	-0.21**	-0.34	.08	
Psychological well-being	6	3087	-0.09	-0.28	.10	
Age						5.11
Adult	4	2714	-0.22*	-0.39	-0.04	
College student	13	2566	-0.19**	-0.33	-0.06	
High school student	3	5257	-0.37**	-0.49	-0.24	

* $p < .05$.

3.3.2 Age and Facebook Social Comparison

In two studies, the age of participants was not provided, and only 20 studies were included in the moderator analysis. The effect of age on the relationship between Facebook social comparison and well-being was not significant (Table 4). Although the effect size of age for social comparison was not significant ($Q_b = 5.11, p > .05$), the moderating effect of being an adult on Facebook social comparison was significant ($r = 0.22, p < .05; 95\% \text{ CI } = -0.39 \sim -0.04$), the effect of being a college student on Facebook social comparison was significant ($r = 0.19, p < .01; 95\% \text{ CI } = -0.33 \sim -0.06$), and the moderating effect of being a high school student on Facebook social comparison was significant ($r = 0.37, p < .01; 95\% \text{ CI } = -0.49 \sim -0.24$).

4 Discussion

In this study, a meta-analytic approach was used to determine the effect of Facebook social comparison on

well-being, and a general evaluation of the findings obtained from studies researching the correlation between Facebook social comparison and well-being was performed. Correlations ($N = 11,199$) were analyzed for 22 studies. The results demonstrate that the investigations yielded a mean correlation size of -0.20 in the random effects model. The negative effect indicated an association between Facebook social comparison and well-being, supporting H1. The effect size was considered to have a moderating effect when assessed using the guidelines developed by Cohen.

The results of the correlations between Facebook social comparison and well-being were heterogeneous. According to the random effects model, the effect of moderators, including components of well-being and participant age, of Facebook social comparison's effect on well-being was nonsignificant. H2 and H3 were therefore rejected. The absence of a significant moderating effect may be a result of the small number of data points included in this meta-analysis. In two studies, the ages of participants were not provided; therefore, only 20 studies were involved in the age moderator analysis. Of these 20 studies, three focused on ages of 13-18 years, 13 focused on ages 18-23 years, and four focused on participants aged 23 years and older. To examine the potential age effect on the relationship between Facebook social comparison and well-being, future empirical studies should focus on teenagers and adults. Because the moderators failed to explain variations in the relationship between Facebook social comparison and well-being, it remains necessary to investigate the determinants of these differences.

Within this study, the components of well-being were assessed as moderator variables of the effect of social comparison on well-being. The results revealed that there was no moderator effect of self-esteem, life satisfaction, or psychological well-being on the effect of Facebook social comparison on well-being. Positivity is a tendency to assess all aspects of life as good in reality [44]. Additionally, positivity is a basic trait determinant of well-being [45]. It is accepted that an individual's beliefs affect a variety of assessments about quality of life. Well-being is based on assessments made about one's beliefs. This study determined a correlation between Facebook social comparison and well-being; therefore, Facebook social comparison may reduce negative feelings [4]. Future studies should analyze the involvement of a negative mental state.

5 Conclusion

SNSs such as Facebook are a common destination for daily Internet use. This study was the first meta-analysis that investigated a recurring concern, the connection between Facebook social comparison and

well-being, evident in previous research, and a negative effect of Facebook social comparison on well-being was found. Social comparison through Facebook influences well-being. Facebook use decreases well-being, the more people use Facebook, the more their levels of well-being decline.

This study had some limitations that future studies should address. In addition to the components of self-esteem, life satisfaction, and psychological well-being used in this meta-analysis, other well-being components (e.g., depression, loneliness, anxiety, optimism, happiness) could have been included in the study. Future studies should address how different age groups have different levels of well-being and Facebook social comparison. We conjecture that there would be a notable difference between teenagers and adults in terms of Facebook social comparison. Researchers should continue to determine the exact effect of Facebook on social comparison between different age groups. Otherwise, most studies in this article were in Western culture. In the future works, researchers should investigate the difference of well-being between Western culture and Eastern culture on the Facebook usage.

Reference

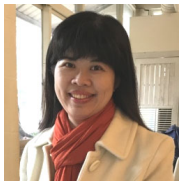
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