

# Mirror, Mirror on my Facebook Wall: Effects of Exposure to Facebook on Self-Esteem

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## Abstract

Contrasting hypotheses were posed to test the effect of Facebook exposure on self-esteem. Objective Self-Awareness (OSA) from social psychology and the Hyperpersonal Model from computer-mediated communication were used to argue that Facebook would either diminish or enhance self-esteem respectively. The results revealed that, in contrast to previous work on OSA, becoming self-aware by viewing one's own Facebook profile enhances self-esteem rather than diminishes it. Participants that updated their profiles and viewed their own profiles during the experiment also reported greater self-esteem, which lends additional support to the Hyperpersonal Model. These findings suggest that *selective self-presentation* in digital media, which leads to intensified relationship formation, also influences impressions of the self.

## Introduction

OVER A DECADE AGO, INTERNET USE WAS THOUGHT to promote negative psychosocial well-being, including depression and loneliness.<sup>1</sup> Having attracted attention in and out of the research community, these findings prompted researchers to take a more nuanced look at the relationship between Internet use and psychosocial health,<sup>2,3</sup> at times finding evidence that Internet use could be beneficial.<sup>3,4</sup> The present study extends this research by examining the effects of the social-networking site Facebook (<http://facebook.com>), which represents a popular new form of Internet communication, on self-esteem.

Previous work has addressed the role of Facebook and the ability to socialize, and the role that socializing online plays in supporting self-esteem and various forms of social capital.<sup>5,6</sup> For example, one recent study found that Facebook can enhance "social self-esteem," measured as perceptions of one's physical appearance, close relationships, and romantic appeal, especially when users received positive feedback from Facebook friends.<sup>5</sup> Also, individuals with low self-esteem may see particularly positive benefits from the social opportunities provided by Facebook.<sup>6</sup>

The effect of Facebook exposure on general self-esteem has not been explored. Yet Facebook, and other social-network sites, have the potential to affect temporary states of self-esteem. Social-network sites are designed to share information about the self with others, including likes/dislikes, hobbies, and personal musings via "wall posts," and "status updates." This information could make people aware of their own limitations and shortcomings, which would lower self-esteem,<sup>7</sup>

or it could be that this information represents selective and therefore positively biased aspects of the self, which might raise self-esteem.<sup>8</sup> Does Facebook operate on self-esteem in the same way non-digital information does, by decreasing self-esteem? Or does the opportunity to present more positive information about the self while filtering negative information mean that reviewing one's own Facebook site enhances self-esteem? The following piece examines these questions, by exploring the theoretical predictions of Objective Self-Awareness (OSA) theory<sup>9</sup> and the Hyperpersonal Model.<sup>8</sup>

## Objective self-awareness

One theoretical approach relevant to the effects of social-networking sites on self-esteem is OSA theory, one of the first experimentally tested psychological theories of the self. The theory assumes that humans experience the self as both subject and object.<sup>9</sup> For example, the self as subject is found in daily experiences of life (e.g., waiting for the bus, eating lunch, watching TV<sup>10</sup>). In those experiences the self is an active participant in life and is not self-conscious. However, people become the "object of [their] own consciousness" when they focus attention on the self,<sup>9(p2)</sup> which can have both positive and negative effects.

In a state of objective self-awareness, Duval and Wicklund<sup>9</sup> claim that people are prone to self-evaluations based on broader social standards and norms. This usually results in a greater sense of humility, or downgraded ratings of self, and increased pro-social behavior. For example, people report feeling greater responsibility for social injustice,<sup>11</sup> or are less likely to take an extra helping of candy without

being observed.<sup>12</sup> On the other hand, because most people often fall short of social standards when self-awareness is heightened, positive affect and self-esteem typically decrease when people are exposed to objective self-awareness stimuli.<sup>13</sup>

The stimuli used to evoke objective self-awareness is most commonly a mirror,<sup>13</sup> although other stimuli include images of the self,<sup>14</sup> audio feedback,<sup>15</sup> having a video camera pointed at participants,<sup>16</sup> or having participants write autobiographical information.<sup>11</sup> These stimuli cause people to view themselves as they believe others do, even if they are not immediately under observation. Exposure to these stimuli is what leads to pro-social behavior and decreases in self-esteem.

Given that social-networking profiles include information about the self similar to the type of information that is used to prompt objective self-awareness (e.g., photos, autobiographical information), viewing one's profile should prompt a downgrading of self-esteem according to OSA theory. That is, viewing one's Facebook profile should negatively affect one's self-esteem. Furthermore, research in computer-mediated communication has found that information online is often over-interpreted relative to the same information provided offline,<sup>17</sup> leading to exaggerated or stereotyped impressions.<sup>18</sup> Is it possible that this same process could occur for impressions of the self? If Facebook acts on self-esteem in the same way as previous OSA stimuli, only to a more extreme degree, one prediction is:

**H1: Exposure to one's Facebook site will have a more negative effect on self-esteem than traditional objective self-awareness stimuli (e.g., mirror).**

### *Selective self-presentation*

A second relevant theoretical approach to understanding effects of Facebook use is the Hyperpersonal Model.<sup>8</sup> Walther posits that affordances of the Internet allow users to *selectively self-present* themselves in asynchronous media. People can take their time when posting information about themselves, carefully selecting what aspects they would like to emphasize. Evidence of selective self-presentation is found in a variety of Internet spaces, including e-mails,<sup>19</sup> discussion boards,<sup>20</sup> and online dating Web sites.<sup>21,22</sup>

In addition to evidence that online self-presentations are especially positive presentations, recent research in computer-mediated communication (CMC) suggests that online self-presentations can become integrated into how we view ourselves, especially when the presentations take place in a public, digital space.<sup>23</sup> This phenomenon, known as *identity shift*, demonstrates that self-presentations enacted in online space can impact users' self-concepts.

Self-presentations online can be optimized through selective self-presentation, and online self-presentation affects attitudes about the self. Facebook profiles may provide sufficiently positively biased stimuli to counter the traditional effects of objective self-awareness, and instead prompt a positive change in self-esteem. From this perspective, the hyperpersonal prediction of exposure to Facebook is:

**H2: Exposure to one's Facebook site will have a more positive effect on self-esteem than a control condition or traditional self-awareness stimuli (e.g., mirror).**

Furthermore, if exposure to one's own Facebook profile increases self-esteem due to selective self-presentation, then behaviors associated with selective self-presentation should correlate with changes in self-esteem. For example, because self-stimuli are most likely to be on one's own profile page, we would expect that participants who only view their own profile page would report higher self-esteem than participants who view other profiles within Facebook. Thus:

**H3: Participants who exclusively examine only their own profile will report higher self-esteem than participants who view other profiles in addition to their own profiles.**

Finally, selective self-presentation should be reflected primarily in editing of one's online self-presentation, according to Walther.<sup>8</sup> That is, the ability to edit one's self-presentation after the fact is a unique attribute of asynchronous, text-based communication. Thus, according to the Hyperpersonal Model, we predict that:

**H4: Participants who make changes to their profile during the experiment will report higher self-esteem than participants who do not.**

Each of these predictions is tested in the following study, comparing the effect of viewing one's Facebook site, viewing one's own image in a mirror, and being in a control condition on self-reported self-esteem.

## **Methods**

### *Participants*

A total of 63 students (16 males, 47 females) from a large, Northeastern university participated in this study for extra credit. The study consisted of three conditions: exposure to a mirror, exposure to one's own Facebook site, and a control condition in which participants used the same room without any treatment. Participants were randomly assigned to one of the three conditions, with a total of 21 participants taking part in each of the three conditions.

### *Procedure*

Each participant was told that the study was designed to examine "people's attitudes about themselves after exploring different Internet sites." People in both offline conditions were told that they were in a control condition, and thus would not be online. In the online condition, participants were asked to examine their own Facebook site.

In the Facebook stimulus condition, after logging on to Facebook, participants were instructed to click on the "Profile" tab after the experimenter left the room. The profile page contains the primary source of information on an individual user. Participants were told to look through any of the tabs on that page (Wall posts, Photos, Info, Boxes). Participants were given no specific instructions about making changes to their profile during the study. In addition to the main profile photo, the profile page has information on recent activity on Facebook sent to and from the site owner, personal demographic information, photos, and quizzes completed by the site owner. After being on Facebook for 3 minutes, the experimenter returned with a survey. Participants were instructed to keep the profile page open while completing the questionnaire.

Participants in the offline conditions were taken to the same small computer cubicle used in the online condition. In the objective self-awareness stimulus condition, a mirror was placed against the computer screen. To reduce suspicion of the mirror, they were also told that the cubicle was being used for another experiment and that they should not move anything. Other items were laid about the room in all conditions (e.g., intercoms, a television) in order to enhance the perception that the room was being used for another experiment. Participants were given a survey of questions, which were answered while being exposed to their own reflection in the mirror.

In the offline control condition, participants sat in the same room as participants in the previously mentioned two conditions, but without the mirror present and without the computer screen turned on. Participants were left with the survey and given instructions to buzz the experimenter when they had finished completing the survey. In all conditions, experimenters returned to collect the survey, and participants were then debriefed and probed for suspicion or failure to comply with instruction.

### Measures

**Self-esteem.** Self-esteem was measured using the Rosenberg Self-Esteem scale,<sup>24</sup> in which 10 items were used to assess self-esteem ( $\alpha = 0.82$ ). Half of the items were reverse coded. Responses were scored on a 4-point scale, ranging from "strongly agree" to "strongly disagree." Although this scale is generally used to measure trait self-esteem, as mentioned above, previous studies of objective self-awareness have used this measure to capture temporary changes in self-esteem due to awareness-enhancing stimuli.<sup>7</sup>

**Selective self-presentation.** In order to examine behaviors predicted by the Hyperpersonal Model, we asked participants in the Facebook condition about their behavior while they were on Facebook. Questions included, "Did you leave your profile at any time during the study?" (1 = "yes," 2 = "no"), and "Did you change your profile while you were on the Web site?" (1 = "yes," 2 = "no").

### Results

To establish that the objective self-awareness stimuli had an effect on self-esteem, an analysis of variance (ANOVA) was first performed. Gender was also included in the model as a covariate, given previous research suggesting that gender may predict differences in self-esteem.<sup>25</sup> The following analyses all reflect significant differences using two-tailed tests of significance, unless otherwise noted. Indeed, the stimuli did have an effect on self-esteem,  $F(1, 59) = 4.47$ ,  $p = 0.02$ ,  $\eta^2 = 0.13$ . However, gender was not a significant predictor of self-esteem,  $F(1, 60) = 0.94$ ,  $p = 0.34$ . This finding reveals that self-reported self-esteem did vary by condition.

To test the hypothesis that Facebook had a more negative effect on self-esteem than traditional objective self-awareness stimulus (H1), a linear contrast analysis was performed with a weight 0 assigned to the traditional objective self-awareness stimulus condition (i.e., mirror,  $M = 2.97$ ,  $SD = 0.51$ ), a weight of  $-1$  assigned to the Facebook condition ( $M = 3.35$ ,  $SD = 0.37$ ), and a weight of 1 assigned to the control condition

( $M = 3.23$ ,  $SD = 0.40$ ). The results of this test were not significant,  $F(1, 60) = 0.95$ ,  $p = 0.33$ .

To test the opposing hypothesis that Facebook has a positive impact on self-esteem (H2), a different linear contrast analysis was performed. A contrast weight of  $-1$  was assigned to the traditional objective self-awareness stimulus condition, 0 was assigned to the control condition, and  $+1$  was assigned to the Facebook condition. This contrast analysis was significant,  $F(1, 59) = 8.60$ ,  $p < 0.01$ ,  $\eta^2 = 0.13$ , demonstrating support for H2 and suggesting that Facebook has a positive effect on self-esteem relative to a traditional objective self-awareness stimulus.

Given that viewing Facebook enhanced self-esteem, is there additional evidence that the process of selective self-presentation was responsible for influencing self-esteem? Our first method of testing this question included examining whether participants who exclusively viewed their own profile reported having higher self-esteem than participants who also viewed the profiles of others. An ordinary least squares (OLS) regression of self-esteem on viewing behavior (self-only profile vs. self and other profiles) and gender revealed a significant effect on viewing behavior,  $b = 0.40$ ,  $p = 0.03$  (one-tailed, 1 = "yes," 2 = "no"), indicating that participants who left their profile during the study reported lower self-esteem than those participants who exclusively viewed their own profile site, supporting H3. The relationship between gender and self-esteem was not significant,  $b = 0.33$ ,  $p = 0.12$  (1 = female, 2 = male).

Finally, we expected that changes to any part of the profile (i.e., status, photo, etc.) during the study would increase participant self-esteem (H4), as editing is a primary means of optimizing self-presentation, according to the Hyperpersonal Model.<sup>8</sup> We tested this hypothesis using OLS regression, and once again included gender in the analysis. In support of this hypothesis, participants who changed their profile during the study reported higher self-esteem than those who did not change their profile,  $b = -0.53$ ,  $p = 0.01$ , (1 = "yes," 2 = "no"). These data suggest that, because asynchronous social-network profiles allow for added time and energy to construct positive self-presentations, profiles contain information that prompts positive, rather than negative, effects on self-esteem. Men reported having greater self-esteem than women after controlling for the likelihood that participants changed their profile,  $b = 0.45$ ,  $p = 0.03$ . However, this result cannot be fairly interpreted due to the very small number of men (17 women, 4 men).

### Discussion

This study was designed to test the effects of exposure to Facebook on self-esteem relative to traditional self-awareness enhancing stimuli, such as a mirror or photo of oneself. The study suggests that selective self-presentation, afforded by digitally mediated environments can have a positive influence on self-esteem.

These findings are in contrast to predictions from OSA theory, which posits that stimuli that prompt self-awareness (e.g., mirror, photo, autobiographical information) activate discrepancies between oneself and social standards,<sup>9</sup> and consequently lower self-esteem.<sup>13,15</sup> Instead, the results demonstrate that exposure to information presented on one's Facebook profile enhances self-esteem, especially when a person edits information about the self, or *selectively*

*self-presents*. These findings are consistent with Walther's Hyperpersonal Model<sup>8</sup> and suggest that the process of selective self-presentation, which takes place in mediated spaces due to increased time for creating a self-presentation, makes Facebook a unique awareness-enhancing stimuli.

This study is a preliminary step toward understanding how selective self-presentation processes, which have been previously discussed in the context of interpersonal impression formation,<sup>19,20,22</sup> may also influence impressions of the self. Whereas a non-edited view of the self (i.e., mirror) is likely to decrease self-esteem, these findings suggest that the extra care involved in digital self-presentations may actually improve self-esteem. By allowing people to present preferred or positive information about the self, Facebook is a unique source of self-awareness stimuli in that it enhances awareness of the optimal self. This finding is consistent with previous work that has found that digital self-presentations can shape self-assessments.<sup>23</sup> In this case, however, the findings are striking because they contradict previous work on the negative effect of self-awareness enhancing information on self-assessments.

Previous work examining self-esteem suggests that consistency between the actual and the ideal self is an important factor in understanding how information can affect self-esteem.<sup>26</sup> Although participant perceptions between the actual and ideal self were not measured, it is possible that Facebook activates the ideal self. Future research on implications of self-evaluations on self-esteem is needed to test this possibility.

Facebook may also be unique in that the public nature of the site may contribute to objective self-awareness. In previous work, autobiographical information or photos have prompted objective self-awareness.<sup>11,14,15</sup> We tested OSA in Facebook because these features are present there. However, Facebook is a public site, which should also remind users of self-evaluation. In this case, the same information that is prompting OSA is *actually* viewed and evaluated by others as well. Further work is necessary to determine whether public Internet audiences alone may stimulate OSA. In this case, we can only speculate that the high visibility of one's Facebook profile further adds to a sense of objective self-awareness. The difference is that while Facebook may prime awareness of an audience and self-evaluation, it is a more optimal self that is being evaluated. Thus the effect of self-esteem is positive rather than negative.

### Limitations

An important limitation of this study was our failure to account for the effect of the number of Facebook friends on self-esteem. As previous research has demonstrated, the social opportunities in Facebook contribute to an enhanced feeling of social competence.<sup>5,6</sup> We cannot rule out the possibility that reminders of one's social connections are partially responsible for the increase in self-esteem. On the other hand, social connection does not seem to be completely responsible for this effect. Changes to one's profile and attention to one's profile (vs. others' profiles) have a positive effect on self-esteem, which suggests that selective self-presentation is a factor in shaping the resultant self-reports of self-esteem.

Another limitation is that we cannot know the long-term implications of using Facebook on self-esteem from a single study. The measure of self-esteem used in this study is gen-

erally used as a measure of stable self-esteem, but has been used on other occasions to measure temporary shifts in self-esteem.<sup>7,13,15</sup> Though difficult to perform in an experimental setting, research that examines long-term effects of social-network sites, such as Facebook, would be valuable. Also, incorporating pre- and post-test measures of self-esteem and other relevant psychological measures would be useful in future work.

The focus in the present study is on Facebook, although we make arguments about social-network sites in general regarding their effect on self-esteem. While future research will be required to extend these findings beyond Facebook, the Facebook interface has several advantages over other sites, such as MySpace (<http://myspace.com>), including a more uniform layout and the sheer popularity of the site. Given that every person must view their own site, the increased uniformity and popularity of Facebook made it a useful starting point for examining digital self-awareness stimuli and self-esteem.

Finally, participants in the offline conditions did not have the same 3-minute lapse between coming into the room and completing the questionnaire as participants in the Facebook condition. We were concerned, however, that including a filler task would potentially introduce an additional and unintended manipulation into the study. It seems unlikely that the time lapse alone was part of the reason for the different ratings of self-esteem, but to be sure, future research will need to account for this effect by providing an appropriate filler task for participants in the non-digital environments.

### Conclusion

The Internet has not created new motivation for self-presentation, but provides new tools to implement such motives. The negative effects of objective self-awareness on self-esteem originated from work in the early 1970s.<sup>9,13-15</sup> Social-networking sites, a product of the 21st century, provide new access to the self as an object. By providing multiple opportunities for selective self-presentation—through photos, personal details, and witty comments—social-networking sites exemplify how modern technology sometimes forces us to reconsider previously understood psychological processes. Theoretical development can benefit from expanding on previous "offline" theories by incorporating an understanding of how media may alter social processes.

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