Keeping in Touch or Keeping Score? Social Comparisons on Facebook

by

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A thesis submitted in conformity with the requirements for the degree of Master of Arts
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Abstract

In face-to-face contexts, individuals typically make one social comparison per day and make more self-enhancing downward comparisons (to worse-off others) than potentially threatening upward comparisons (to better-off others). However, online social networks such as Facebook may be radically altering these standards. In two studies, I examined the frequency, direction, and impact of social comparisons on Facebook, and investigated potential moderating factors, including self-esteem. Participants reported making more upward than downward Facebook comparisons (Studies 1 and 2) and made an average of four comparisons in a 20-minute Facebook session (Study 2). Both low self-esteem and being motivated to log onto Facebook to get information with others predict making more comparisons on Facebook (Study 1) and participants with lower self-esteem may feel worse about themselves after making both upward and downward Facebook comparisons compared to their higher self-esteem peers (Study 2).
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Chapter 1
Introduction

Since its inception in 2004, Facebook has grown from a small campus networking site into a widespread global phenomenon, with more than one billion monthly active users and almost 700 million users who visit the site on a daily basis (Facebook, Inc., 2013). The social networking site is particularly popular in North America; over half of the people in Canada and the United States have a Facebook profile ("North America Facebook statistics", n.d.). Given the tremendous popularity of social networking, it is important to study not only how and why individuals use Facebook, but also the potential positive and negative outcomes associated with its use. In my thesis, I examined whether viewing positively-skewed updates from Facebook friends might lead individuals to make a disproportionately large number of potentially threatening social comparisons on Facebook. Furthermore, I examined whether self-esteem and motivations for using Facebook influence the frequency, direction, and affective outcomes of these upward social comparisons.

1.1 Social Comparisons

A social comparison occurs when someone compares him or herself on a particular dimension to another individual (Festinger, 1954). These comparisons may be upward in direction, to a better-off other (Wheeler, 1966); downward, to a worse-off other (Wills, 1981); or lateral, to a similarly-achieving other (Festinger, 1954). In part, the direction of the comparison may be determined by whether the goal of the individual making the comparison is self-evaluation, self-enhancement, or self-improvement (for reviews, see Wood, 1989; Collins, 1996). For example, individuals with self-enhancement goals may be more likely to make downward comparisons; one can feel better about one’s own achievements when considering how they are superior to the achievements of another person (Gibbons, 1986). Self-improvement goals, in contrast, often lead to upward comparisons (Wills, 1981; Collins, 1996); individuals can be inspired by the example of a superior other (Lockwood & Kunda, 1997).

Although individuals may at times select social comparison targets to achieve enhancement or self-improvement goals, comparisons are often forced rather than chosen (Wood, 1989). For example, an individual may discover that her best friend outperformed her in a psychology exam,
even though she did not seek out this information, and this upward comparison may have significant consequences for her own self-perceptions. A large body of research has examined the impact of such forced social comparisons on affect (e.g., Salovey & Rodin, 1984; Buunk, Collins, Taylor, VanYperen, & Dakof, 1990) and self-esteem (e.g., Gibbons & Gerrard, 1989). Generally, downward comparisons result in individuals feeling better about themselves, whereas upward comparisons often result in individuals feeling worse about themselves (for reviews, see Wood, 1989; Collins, 1996). For example, in the now-classic “Mr. Clean” and “Mr. Dirty” study (Morse & Gergen, 1970), participants who believed they were interviewing for a job experienced a decrease in self-esteem after making an upward comparison to a more polished and competent competitor, and experienced an increase in self-esteem after comparing themselves to a less polished and competent competitor. Upward comparisons, however, do not always result in negative outcomes. For example, comparison to a superior role model can result in self-enhancement and inspiration, provided the domain of the comparison is self-relevant and the role model’s success is seen as attainable (Lockwood & Kunda, 1997).

1.2 Social Comparisons on Facebook

Traditionally, social comparison research has focused on comparisons that individuals make with friends, acquaintances, and strangers, in face-to-face or offline contexts. However, with the increase in use of computer-mediated communication and social networking sites, research has begun to investigate social comparisons in online environments. For example, in a qualitative study, MySpace users reported engaging in social comparisons while using the site and experiencing more negative feelings about the self after making these comparisons (Manago, Graham, Greenfield, & Salimkhan, 2008). In a more recent Facebook study, researchers found that making upward comparisons while using Facebook leads to an increase in depressive symptoms (Feinstein, Hershengberg, Bhatia, Latack, Meuwly, & Davila, 2013). These studies provide preliminary evidence that social comparisons occur in online contexts. However, it remains unclear how the frequency, direction, and impact of these online comparisons compare with those of traditional, offline comparisons discussed above.

I propose that Facebook comparisons differ fundamentally from offline comparisons in several ways. First, I argue that Facebook social comparisons may occur more frequently than comparisons in offline contexts. Past experience sampling studies looking at offline
comparisons have found that, on average, individuals report comparing themselves to other individuals about once per day (Wheeler & Miyake, 1992). With the incorporation of Facebook into daily life, however, this average may be increasing. Individuals who use Facebook likely encounter more frequent opportunities to compare themselves with other people than would individuals who do not use this social networking site. Most Facebook users have Facebook "friends" who are actually past friends or distant acquaintances, whose information would not be as readily, if at all, accessible without Facebook. Moreover, because many Facebook users allow all "friends" unrestricted viewing of their profiles (Pempek, Yermolayeva, & Calvert, 2009), individuals often have access to a large amount of information about even their most distant acquaintances. The posts provided by such individuals may form the basis for numerous social comparisons. When one sees a post from a former high school classmate regarding his or her career achievement, one may feel worse about one’s own less stellar accomplishments. Without Facebook, one would likely never have been aware of this classmate’s success.

In addition, Facebook allows for efficient access to information about many of these friends in a short space of time. Whereas individuals may not meet or engage in face-to-face conversations with even close friends on a daily basis, Facebook allows individuals to keep in touch, and keep tabs on, numerous friends multiple times a day, even when those friends are in different locations. As a result, individuals may be exposed to relevant comparison information about a large number of individuals on a daily basis, increasing the number of social comparisons that are forced rather than chosen. The very nature of the news feed, in which friends can post their “status” on a regular basis, allows for the possibility of comparing oneself to many other people more frequently than might be the case in offline situations. In a single perusal of one’s newsfeed, for example, one might learn that about friends who have been accepted to the school of their choice, earned a big raise at work, failed a test, travelled to an exotic country, or come down with a bad cold. Individuals may then compare their own current situation – their lower salary, better health, or less interesting vacation plans – with the various status updates posted by friends. As a result, they may come to feel better or worse about their own circumstances.

Facebook may increase not only the number of forced comparisons that individuals make, but may also make it easier for individuals to seek out comparison targets who meet their goals. As mentioned above, social comparison research suggests that motivations for making social comparisons vary, and individuals seek out different comparison targets who allow them to
achieve particular objectives (Kruglanski & Mayseless, 1990). For example, if a student receives a bad mark on a test, he or she might try to repair his or her self-esteem by seeking out information about a fellow student who performed even worse; however, the same student might later try to meet self-improvement goals by intentionally comparing himself or herself to someone who outperformed him or her in squash. The numerous updates from many different friends on Facebook increase the likelihood that one will find comparison target who matches one’s current goals.

Facebook not only offers more frequent opportunities for comparison, it also may offer more opportunities for upward comparisons in particular, due to the positive nature of information people choose to display on Facebook. Offline, individuals report making significantly more downward than upward comparisons (Wheeler & Miyake, 1992); however, the online Facebook environment may present so many more opportunities to view positive information posted by others that upward comparisons may occur more frequently than downward comparisons. Although people do not typically post false information about themselves online (Back et al., 2010), they do engage in selectively positive self-presentation (Walther, 2007) and are more likely to post positive than negative emotions (Lin & Qiu, 2012). In short, people manage their online image by playing down their negative traits and highlighting their achievements (Wilson, Gosling, & Graham, 2012). This means that when browsing the Facebook news feed, individuals are more likely to see status updates about friends’ fun and exciting vacations than about uneventful days at the office. Viewing this selectively positive information on Facebook is likely to result in users making significantly more upward than downward comparisons. Indeed, a recent study showed that heavy Facebook users were more likely to agree that others were “happier” and “had better lives” than individuals who used the site less frequently (Chou & Edge, 2012), indicating that Facebook does leave users with a positively-skewed view of how others are doing. Consistent with the possibility that upward comparisons may be responsible for negative affective responses among Facebook users, individuals in another recent study rated envy as the most likely reason for people experiencing “frustration and exhaustion” on Facebook (Krasnova, Wenninger, Widjaja, & Buxmann, 2013).

Because upward comparisons often make people feel worse about themselves, making a disproportionate number of upward relative to downward comparisons while using Facebook may result in users feeling worse about themselves after using the site. Indeed, Facebook use
can lead to a decline in subjective well-being (Kross et al., 2013); more specifically, ‘Facebook envy’ is associated with decreased life satisfaction after using Facebook (Krasnova et al., 2013). As previously noted, it is possible for upward comparisons to be inspiring rather than threatening; however, this is only likely when individuals view the superior other as a representation of their future self (Lockwood & Matthews, 2007). For example, in one study, first year students were inspired by the successes of a graduating student in their own program, because they still had four years ahead of them in which to achieve a similar level of excellence. Facebook friends, however, are often peers and will not necessarily be viewed as role models. The friend who gets a better job, takes a nicer vacation, or posts about her exciting weekend plans, is likely in many cases to prompt envy rather than inspiration. Even when individuals hope to achieve something similar in the future, the recognition that their present circumstances are less bright may lead to at least a short-term threat to self-esteem (Lockwood, Shaughnessy, Fortune, & Tong, 2012). Furthermore, this effect may be exaggerated by the absence of face-to-face contact during Facebook interactions. In a face-to-face context, one may downplay a good performance on a test, particularly when talking to an insecure friend who did not do as well; online, however, the same individual might post a boastful update without considering the poorly performing friend who might see the post and be negatively affected. In sum, individuals using Facebook may be exposed to more upward, and therefore more esteem-threatening information than they would be in offline contexts.

1.3 Motivations for Facebook Use

One factor that may influence the likelihood of making social comparisons on Facebook is goals of the user when logging onto the site. Much of the previous Facebook research involving motivations for Facebook use has focused on ‘keeping in touch’ or maintaining relationships (e.g. Ellison, Steinfield, & Lampe, 2007); however, Joinson (2008) also identified social surveillance or ‘virtual people-watching’ as another common motivation for Facebook use. People who are more likely to view Facebook as a way to obtain information about others than a tool to communicate with friends might be more likely to make social comparisons while using the site and therefore feel worse afterwards. Indeed, previous research has shown that individuals who engage in passive browsing of Facebook content experience worse outcomes (i.e. reduced social capital, increased loneliness) than those who engage in directed communication with others (Burke, Marlow, & Lento, 2010). It may also be that individuals
who primarily use Facebook to observe others are more likely to engage in social comparisons and therefore feel worse about themselves compared to those who use Facebook to maintain relationships or tell others about themselves. I examined this possibility directly.

1.4 Self-esteem

Self-esteem is another factor that may influence both the direction and impact of Facebook comparisons. In particular, I propose that making upward comparisons may be especially likely, and threatening, for individuals with lower self-esteem. Past research indicates that individuals with lower self-esteem tend to make more upward comparisons than those with higher self-esteem (Wheeler & Miyake, 1992). Furthermore, compared with high self-esteem individuals, people with low self-esteem may engage in more passive browsing than active communication on Facebook. Ryan & Xenos (2011) found that extraversion was associated with preference for Facebook features that involve ‘active social contributions’ and ‘real-time social interaction’, whereas neuroticism, shyness, and loneliness were positively correlated with a preference for Facebook features that involve ‘passive engagement’. Because individuals high in self-esteem tend to ascribe socially desirable traits to themselves (e.g. high extraversion, low neuroticism; Robins, Tracy, Trzesniewski, Potter, & Gosling, 2001), it is reasonable to predict that self-esteem may also be positively associated with a preference for active, social engagement on Facebook and negatively associated with passive Facebook activities. This preference may increase the likelihood of individuals lower in self-esteem making comparisons to others rather than socializing or telling other people about themselves. Coupled with the fact that low self-esteem individuals tend to react more negatively after making these types of comparisons (Wheeler & Miyake, 1992), low self-esteem individuals may feel disproportionately bad after spending time on Facebook compared with individuals who have higher self-esteem.

The present research examined the frequency and direction, and impact of social comparisons made by individuals using Facebook. In Study 1, I examined individuals’ retrospective self-reports regarding the social comparisons they make on Facebook. In Study 2, I examined Facebook social comparisons as they occurred in real time in a lab setting. First, I hypothesized that participants would report making frequent comparisons on Facebook (Study 1) and would make multiple comparisons during the 20-minute in-lab session (Study 2). Second, I hypothesized that the majority of comparisons made on Facebook, both in daily life (Study 1)
and in the lab setting (Study 2), would be upward in direction. Third, I predicted that the outcome of these upward comparisons would typically be negative; that is, after making comparisons to superior others on Facebook, individuals would report feeling worse about themselves (Studies 1 and 2). Finally, I predicted that motives for using Facebook and self-esteem would moderate these outcomes. Specifically, I expected that participants who use Facebook to obtain information about others would make more social comparisons online than would individuals who log on to share information about themselves or to connect with others. With respect to self-esteem, I predicted that participants lower in self-esteem would make more social comparisons, and more upward social comparison in particular, than would individuals with higher self-esteem. I also predicted that lower self-esteem individuals would respond especially negatively to upward social comparisons, evaluating themselves less positively after such comparisons than would higher self-esteem individuals.
Chapter 2
Study 1

In Study 1, I examined participants’ retrospective accounts of the social comparisons they made on Facebook. Participants answered questions about their self-esteem and Facebook use. They indicated the extent of their Facebook use, their motivations for using Facebook, how they generally feel after using Facebook, and how often they make different types of social comparisons while using Facebook. They were also asked to describe and answer questions about a specific comparison they had made on Facebook, including questions about how that comparison made them feel.

I predicted that participants would report making social comparisons on Facebook on a regular basis, would report making more upward than downward comparisons, and that making more upward comparisons on Facebook would be associated with feeling worse after using the site. Furthermore, I predicted that greater motivation to use Facebook to obtain information about others would predict making more online social comparisons, whereas motivation to use Facebook to share information about the self and connect with others would not predict comparison frequency. Finally, I predicted that lower self-esteem would be associated with making upward comparisons, which in turn would be associated with more negative feelings about the self.

2.1 Method

2.1.1 Participants

Participants were 101 University of Toronto introductory psychology students (56 female, 35 male, 10 unknown; \(M_{age} = 18.67, SD = 1.16\)) who received course credit for taking part in the study\(^1\). Students were invited to sign up for the study if they used Facebook at least once per week, and during the study all participants indicated that they used Facebook either daily or weekly. Gender did not interact with self-esteem for any of the key outcome variables (frequency, direction, or outcome of comparisons).

\(^1\) Due to a clerical error, age and gender information was not recorded for 10 participants. The mean age corresponds to the 91 participants for whom demographic information was collected.
2.1.2 Procedure

Participants were invited to participate in a study on undergraduate Facebook use. Upon arrival at the lab, participants completed the Rosenberg Self-Esteem scale (Rosenberg, 1965); they rated themselves on 10 items (e.g., “I take a positive attitude toward myself”) using a 7-point scale with endpoints labeled 1 (Strongly disagree) and 7 (Strongly agree). Participants then answered 32 questions regarding their motivations for logging onto Facebook. Thirteen items tapped motivation to obtain information about others (e.g., “I go on Facebook to see what’s new with friends”; Cronbach’s alpha = .866). Ten items tapped motivation to tell others about the self (e.g., “I go on Facebook to tell people about what I am doing or where I am”; Cronbach’s alpha = .877). Finally, 9 items tapped motivation to maintain social ties with others (e.g., “I go on Facebook to keep in touch with friends”; Cronbach’s alpha = .867). Ratings were made on a 7-point scale with endpoints labeled 1 (Never) and 7 (Always).

Participants then answered the open-ended question “In general, how do you feel after spending time on Facebook? Why do you think you feel this way?” Participants were then asked to report the frequency with which they compare themselves to others on Facebook on a 7-point scale from 1 (Never) to 7 (Always). Participants also indicated how frequently they made social comparisons on Facebook to better-off others (upward comparisons), worse-off others (downward comparisons), and others on a similar level (lateral comparisons), again using a 7-point scale from 1 (Never) to 7 (Always).

Next, participants were asked to describe a specific comparison they had previously made on Facebook. They then reported the extent to which the comparison target was better- or worse-off than them on a 7-point scale ranging from -3 (Much worse off than me) to +3 (Much better off than me) with a midpoint of 0 (About equal to me). Finally, participants competed six items tapping how they felt after making the described comparison (e.g., “After making this Facebook comparison, I felt better about my life”, “After making this Facebook comparison, I felt worse about myself” [reverse-scored]; Cronbach’s alpha = .872).

2 Two items had low inter-item correlations with the rest of the scale items (“I go on Facebook to invite people to an event” and “I go on Facebook because I am lonely) and therefore were not included in the overall scale mean.
2.2 Results and Discussion

2.2.1 Frequency and Direction of Facebook Comparisons

When asked ‘How often do you think you make comparisons on Facebook?’, the mean response from participants was 4.04 ($SD = 1.47$), corresponding to “sometimes” on the scale associated with this item. Only 17.9% participants selected ‘never’ or ‘almost never’, indicating that the majority of participants believe they at least occasionally make social comparisons on Facebook. Participants reported making upward comparisons to better-off others ($M = 4.27$, $SD = 1.54$) more often than lateral comparisons to similar others ($M = 3.87$, $SD = 1.28$; $t(100) = 3.05$, $p < .005$, and more often than downward comparisons to worse-off others ($M = 3.35$, $SD = 1.41$; $t(100) = 6.73$, $p < .001$). Participants also reported making lateral comparisons more often than downward comparisons ($t(100) = 4.32$, $p < .001$).

2.2.2 Outcomes of Facebook Comparisons

2.2.2.1 General Facebook Comparisons

To investigate outcomes of making social comparisons on Facebook, I first compared participants’ open-ended reports on how they generally feel after using Facebook and how often they reported making comparisons on Facebook. The open-ended responses were coded for positive and negative emotions using the Linguistic Inquiry and Word Count (Pennebaker, Booth, & Francis, 2007). This program analyzes text on a word-by-word basis and calculates the percentage of the text that matches predetermined sets of words for different linguistic categories, including positive and negative. In the present study, neither the positive emotion score nor the negative emotion score were significantly associated with frequency of making Facebook social comparisons of any direction.

2.2.2.2 Specific Facebook Comparisons

To investigate outcomes of making social comparisons on Facebook, I looked at how participants reported feeling after a specific comparison they had previously made while using Facebook. The majority of participants (84%) were able to describe a social comparison. Eleven of these participants (13%) described a downward comparison (-3 to -1), 19 (22%) described a lateral comparison (0), and 55 (65%) described an upward comparison (+1 to +3), $X^2 (2, N = 85)$
= 38.776, \( p < .001 \). Thus, as predicted, comparisons were predominantly upward in direction. Comparison direction was negatively related to participants’ ratings of how they felt about themselves after making the comparison, \( r(83) = -.66, p < .001 \), indicating that participants felt worse after making upward comparisons.

### 2.2.3 Motivations for Facebook Use

The correlations between motivations for Facebook use and frequency of making different types of social comparisons are presented in Table 1. As predicted, motivation to use Facebook to obtain information about others was associated with making more online social comparisons, in all directions. Also, motivation to use Facebook to share information about the self was not associated with making more social comparisons, in any direction. Motivation to use Facebook to connect with others was not associated with making social comparisons overall or with making comparisons to worse-off others; however, it was associated with making comparisons to better-off others and marginally correlated with frequency of lateral comparisons.

### 2.2.4 Self-esteem

Correlations between self-esteem and frequency of making different types of social comparisons are presented in Table 2. Self-esteem was negatively associated with making social comparisons on Facebook, indicating that participants with lower self-esteem were more likely than those with higher self-esteem to make social comparisons while using Facebook. Moreover, self-esteem was negatively associated with the number of upward comparisons. Self-esteem was not, however, associated with the frequency of downward comparisons or lateral comparisons. Interestingly, self-esteem was also negatively associated with being motivated to use Facebook to obtain information about others \( r(101) = -.304, p < .01 \), but not associated with either motivation to share information about the self, \( r(101) = .003, p = .976 \), or motivation to connect with others, \( r(101) = -.056, p = .580 \).

In addition to predicting that self-esteem is associated with making more upward comparisons on Facebook, I also hypothesized that lower self-esteem participants would feel worse after using Facebook, and this would be partially explained by their greater tendency to make more upward social comparisons. To examine this possibility I looked at whether self-esteem predicted the direction of the specific comparison participants described, and whether that in turn predicted
how they felt after making the comparison. Results based on 5000 bootstrapped samples indicated that although the total effect of self-esteem on how participants felt after making the comparisons was significant, $t(85) = 3.917, p < .001$, the direct effect was not $t(85) = 1.782, p = .079$. Therefore, direction of participants’ described comparisons mediates the relationship between self-esteem and how they felt after making the comparisons, such that participants who indicated lower levels of self-esteem were more likely to make an upward comparison and therefore more likely to feel worse afterwards.

### 2.2.5 Discussion

Study 1 provides initial evidence that most individuals make social comparisons on a regular basis while using Facebook, and the majority of these comparisons are upward in direction. Furthermore, as with social comparisons in offline contexts, people reported feeling worse about themselves after making upward rather than downward Facebook comparisons. As predicted, individuals with lower self-esteem reported making more upward Facebook comparisons, which in turn was associated with feeling worse about themselves after the comparison. In addition to self-esteem predicting comparison frequency, Study 1 also provides evidence that being motivated to use Facebook in order to obtain information about others might also lead to making more social comparisons online.

Although Study 1 provides initial evidence for predictions about frequency, direction and impact of social comparisons on Facebook, participants in this study recalled previous social comparisons they had made while using Facebook. It is possible that when participants try to remember comparisons they have made on Facebook, they assume their reactions were more similar to what their reactions would be in offline contexts than they actually were. Therefore, in Study 2, I had participants come into the lab and report on any social comparisons they made while using Facebook in real-time. This also allowed me to obtain more information on the how many social comparisons individuals make in a specific amount of time, the direction of these comparisons, and also what proportion of Facebook posts result in social comparison. Finally, this second study allowed me to obtain measures of state self-esteem and state affect directly after participants used Facebook, thereby allowing me to more accurately assess the impact of social comparisons made on Facebook.
Chapter 3
Study 2

In Study 2, I investigated participants’ reactions to posts in their Facebook news feed in real time. In a pre-test, participants answered questions about their self-esteem, extent of their Facebook use, their motivations for using Facebook, and how they generally feel after using Facebook. Next, in a lab session, participants reported on the direction, domain, and impact of comparisons they made while viewing their newsfeed for 20 minutes.

I predicted that, as in Study 1, making more upward social comparisons on Facebook would be associated with lower self-esteem and being motivated to use Facebook to obtain information about others. Additionally, I predicted that participants would report feeling worse after seeing a post that led them to make an upward comparison. Finally, I predicted that making more upward comparisons during the 20 minute session would be associated with lower positive affect and higher negative affect scores on the post-test measure.

3.1 Method

3.1.1. Participants

93 participants (57 female, 36 male; $M_{\text{age}} = 21.11, SD = 5.63$) were recruited from an introductory psychology class and flyers posted on campus; they received either course credit or $10 for participation in the study. There were no gender effects on any of the variables, therefore gender is not discussed further.

3.1.2 Procedure

Participants were invited to take part in a study on Facebook use. Before arriving at the lab, participants completed an online pre-test that included the Rosenberg Self-Esteem scale (Rosenberg, 1965) and then answered 30 questions regarding their motivations for logging onto Facebook. Eight items tapped motivation to obtain information about others (e.g., “I go on Facebook to see what’s new with friends”; Cronbach’s alpha = .830) \(^3\). Ten items tapped

\(^3\) In creating the ‘motivation to obtain information about others’ scale, two items failed reliability testing and were removed: “I go on Facebook to look at my news feed” and “I go on Facebook to be inspired by others”.
motivation to tell others about the self (e.g., “I go on Facebook to tell people about what I am doing or where I am”; Cronbach’s alpha = .924). Finally, 4 items tapped motivation to maintain social ties with others (e.g., “I go on Facebook to keep in touch with friends”; Cronbach’s alpha = .730). At the end of the pre-test questionnaire, participants were asked to report how often they felt good [and bad] after using Facebook from 1 (Never) to 7 (Always).

Upon arriving in the lab, participants logged onto Facebook on a laptop and then, using a desktop computer at the same location, answered questions about successive posts in their Facebook news feed. Starting with the most recent post, participants were first asked about the source of the post – whether it was from a Facebook friend, a source other than a Facebook friend (e.g. a company or celebrity), or something they themselves had posted. If the post was from a Facebook friend, participants then answered more questions about the post, including the extent to which the post made them feel good and bad (from 1 = Strongly Disagree to 7 = Strongly Agree) and the extent to which the post led them to compare themselves to the person who posted the item (from 1 = Not true at all to 7 = Completely true). If participants answered anything above 1 to the question of whether they made a social comparison, they were asked additional questions about the comparison: They were asked to indicate what domain the comparison fell into (i.e. looks/attractiveness, clothes/personal style, school achievement, work/career achievement, intelligence, popularity, current romantic partner, previous romantic partner, possessions, vacations/travel, leisure activities, or other) and the extent to which they saw the comparison target as better- or worse-off than themselves (-3 = Much worse-off than me, 0 = About equal to me, +3 = Much better-off than me). When participants finished answering all applicable questions for the first post, they were prompted to move to the next most recent post in their news feed, and follow the same pattern of questions.

After 20 minutes of answering questions about posts in their Facebook news feed, participants completed a 20-item state affect scale (PANAS; Watson, Clark, & Tellegen, 1988), for which participants indicated the extent they felt each feeling or emotion “right now, that is, at the present moment” from 1 (Very slightly or not at all) to 5 (Extremely). Ten items tapped positive

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4 In creating the ‘motivation to maintain social ties’ scale, two items failed reliability testing and were removed: “I go on Facebook to see if anyone has messaged me or written on my wall” and “I go on Facebook because I am lonely”.
affect (e.g. interested, excited) and 10 items tapped negative affect (e.g. distressed, upset); the two sets of items were used to create separate positive and negative affect scores (Cronbach’s alpha for positive affect = .874, negative = .671). Participants also completed a state self-esteem measure (Heatherton & Polivy, 1991), indicating how true a series of 20 statements were for them “right now” (1 = Not at all to 5 = Extremely), including “I feel confident about my abilities” and “I feel self-conscious” (reverse-scored; Cronbach’s alpha = .913). Finally, participants answered a series of demographic questions, and then were debriefed.

3.2 Results and Discussion

3.2.1 Frequency and Direction of Facebook Comparisons

On average, participants viewed 16.82 posts during the 20-minute session ($SD = 8.54$) and made 3.94 social comparisons ($SD = 2.49$). Participants made more upward comparisons to better-off others ($M = 1.45, SD = 1.75$) than downward comparisons to worse-off others ($M = .75, SD = 1.05; t(92) = 3.08, p < .01$). Participants also made fewer downward comparisons than lateral comparisons to similar others ($M = 1.54, SD = 1.80; t(92) = 3.77, p < .001$). The number of lateral and upward comparisons that participants made were not significantly different ($t(92) = .30, p = .76$).

3.2.2 Predicting Facebook Comparison Frequency and Direction

Unlike in Study 1, self-esteem was not correlated with the total number of comparisons, the number of upward, or the number of downward comparisons made during the 20-minute Facebook session. Similarly, scores on the three ‘motivation to log onto Facebook’ scales were not significantly associated with frequency of making upward or downward social comparisons on Facebook. However, multi-level modeling analyses indicated that participants’ trait self-esteem marginally predicted the directions of their individual social comparisons made during the 20-minute Facebook session, $F(1, 101) = 3.202, p = .077$; individuals with lower self-esteem tended to make comparisons that were more upward in direction than did higher self-esteem individuals.
3.2.3 Outcomes of Facebook Comparisons

3.2.3.1 Frequency of upward and downward Facebook comparisons

To investigate overall outcomes of making social comparisons on Facebook, I compared the number of comparisons participants made during the 20-minute Facebook session with their subsequent positive and negative state affect and state self-esteem scores. As shown in Table 3, neither state self-esteem nor positive state affect were associated with the frequency of total Facebook comparisons, nor comparisons of any specific direction. Negative affect, however, was positively associated with total number of comparisons made and also with the number of lateral comparisons made. No significant association was found between negative affect after the Facebook session and number of downward or upward comparisons. Thus, although more social comparison activity generally was associated with feeling worse after the Facebook session, there was no evidence that upward comparisons were responsible for this effect. Indeed, if anything, upward comparisons resulted in more positive affect. It may be that individuals were making upward comparisons to friends in domains that were relatively low in self-relevance. According to Tesser’s influential Self-Evaluations Maintenance model (Tesser, 1988), when individuals compare themselves to a close other who has achieved success in a domain that is not relevant to their own self-esteem, individuals can bask in the reflected glory of the close other’s achievement without feeling threatened. It may be that a significant number of upward comparisons on Facebook result in reflection rather than threat. In future research, it will be important to examine the self-relevance of the comparison domain, in addition to the comparison direction.

Contrary to my predictions, self-esteem did not predict frequency of upward comparisons: Lower self-esteem individuals did not make more frequent upward comparisons than did higher self-esteem individuals. The results on the 7-point direction scale reported above, however, suggest that the upward comparisons that lower self-esteem make may in fact be more “upward” in direction than those made by higher self-esteem individuals. High self-esteem individuals may view superior others as more similar to themselves than do lower self-esteem individuals.
3.2.3.2 Impact of Upward and Downward Facebook Comparisons

To further investigate outcomes of making social comparisons on Facebook, I looked at how participants reported feeling after making each specific comparison during the 20-minute Facebook session. Multi-level modeling analyses showed a marginal effect of comparison direction on feeling good after making the comparison, $F(1, 341) = 3.795, p = .052$; more upward comparisons were marginally associated with feeling better afterwards. There was no significant main effect of comparison direction on how bad participants felt after reading the post that led to the comparisons, $F(1, 346) = .383, p = .536$. Furthermore, when self-esteem was included as a moderator in each model, neither interaction term was significant. Thus, contrary to predictions, lower self-esteem individuals were not more likely to feel worse after upward comparison that were higher self-esteem individuals.

3.2.3.3 Domain of Comparison

Participants were most likely to report that the comparisons they made during the 20-minute Facebook session were in the domains of ‘looks/attractiveness’, ‘intelligence’, ‘popularity’, and ‘leisure activities’ (see Table 4). Within each of these categories, I examined whether self-esteem predicted direction of comparison using multi-level modeling. Popularity was the only category in which self-esteem predicted comparison direction, $F(1, 37) = 7.737, p = .010$, with self-esteem being negatively associated with comparison direction. This means that when viewing posts that fall in the domain of popularity, participants with lower self-esteem are more likely to make an upward than a downward comparison. Further analyses revealed that direction of popularity comparisons did not directly predict how good or bad participants felt, but when self-esteem was included as a moderator, the interaction terms were significant for predicting both feeling bad, $t(29) = 2.498, p < .05$, and feeling good, $t(41) = -2.283, p < .05$. Thus, in the domain of popularity, self-esteem may moderate the impact of comparison direction on the affective outcome of the comparison. As may be seen in Figure 1, participants high in self-esteem tended to feel less bad after making a downward comparison than an upward comparison, $t(30) = 3.318, p < .01$. Low self-esteem participants, on the other hand, felt equally bad after making downward and upward comparisons, $t(53) = -0.720, p = .475$, just as bad after making an upward comparison as those high in self-esteem, $t(25) = 0.920, p = .366$. As shown in Figure 2, high self-esteem participants tended to feel relatively better after making a downward comparison than an upward comparison, $t(63) = -2.104, p = .039$, whereas low self-esteem
participants felt marginally less good after making a downward compared to an upward comparison, $t (63) = 1.729$, $p = .089$, and less good after making a downward comparisons than their high self-esteem peers, $t (63) = t=5.306$, $p=.025$.

### 3.2.4 Discussion

Study 2 provides further evidence that participants make more upward than downward comparisons on Facebook. Furthermore, comparing these findings to previous experience sampling data, it seems that participants make far more comparisons on Facebook than in face-to-face contexts. However, this study did not replicate the Study 1 findings lower self-esteem and motivation to use Facebook to obtain information about others predicts making more social comparisons on Facebook. Also contrary to predictions, neither making more upward comparisons nor making fewer downward comparisons during the 20-minute session led participants to report lower state self-esteem or state affect after the session. However, within the domain of popularity, self-esteem did moderate the effects of making an upward vs. a downward comparison on affect. Participants with high self-esteem benefitted more from making downward comparisons (i.e. felt less bad and more good) compared to participants with lower self-esteem. It may be that higher self-esteem individuals were able to enjoy their superiority to the comparison target, but that lower self-esteem individuals were concerned that they themselves might experience a similarly negative fate in the future (Lockwood, 2002).

Unexpectedly, comparison direction did not predict participants’ affective response to each comparison. Specifically, for each post in their news feed, participants were asked to respond to the statements “this post made me feel good” and “this post made me feel bad”. It may be that participants reported that a post describing a friend’s achievements made them feel good because they are aware that they should feel happy for a friend’s achievements. It may be, however, that participants feel happy for the friend, but nevertheless feel worse about their own achievements. In future research, it will be important to ask more specifically how posts make participants feel about themselves as well as how they feel for their friend.

Also unexpectedly, I found evidence that comparisons were associated with more negative and less positive affect following the Facebook session, or that state self-esteem was negatively affected by the direction or frequency of comparisons made. It may be that participants did indeed experience negative affect, such as jealousy, but that the negative items in the PANAS
(e.g., jittery, nervous), did not tap the specific form of the negative affect. In future studies, it will be important to examine emotions that are more relevant to social comparisons. It is also possible that the short 20-minute session simply did not allow for sufficient comparisons to have an impact on participants’ affect or self-esteem. The impact of comparisons may not be evident after such a brief session with relatively few comparisons. In future research, it will be important to examine the impact of comparisons made on Facebook over a longer time span.
Chapter 4
General Discussion

Across two studies, I investigated the frequency, direction, and impact of social comparisons made on Facebook and examined self-esteem and motivations for using Facebook as moderators. I found that individuals, on average, made four social comparisons on Facebook during a 20-minute session (Study 2), a significantly higher frequency than the previously reported offline average of one social comparison per day (Wheeler & Miyake, 1992). Although the methodological differences between past experience sampling studies examining comparison frequency and direction, and the present research, make direct comparisons of the results impossible, it is nevertheless noteworthy that Facebook comparisons do occur on a frequent basis, even during a brief lab session. In terms of direction, whereas offline comparisons are more likely to be downward than either lateral or upward (Wheeler & Miyake, 1992), I found that Facebook comparisons were more likely to be upward than downward or lateral (Studies 1 and 2). However, although retrospective accounts indicated that individuals feel worse after making upward rather than downward comparisons on Facebook (Study 1), these findings were not replicated when participants reported on their reactions to making social comparisons as they viewed the Facebook news feed and directly after the Facebook session (Study 2). In future research, it will be important to examine whether the impact of online comparisons differs from that of more traditional offline comparisons, and to further investigate the impact of Facebook social comparisons over time.

Although self-esteem and motivation to obtain information about others predicted social comparison frequency in Study 1, these findings were not replicated in Study 2. This may be due to inadequate sample size or time spent on Facebook during the session; however, it may also be that Facebook acts as an ‘equalizer’ and makes it highly likely for everyone to make social comparisons, regardless of individual differences that may ordinarily predict social comparison in offline contexts.

4.1 Limitations and Future Directions

Although the present findings indicate that participants make more frequent and more upward comparisons on Facebook than they would in face-to-face settings, it is important to note that
these studies did not directly ask participants to report on offline comparisons. In future retrospective questionnaires, it will be important to compare more directly the frequency, direction, and impact of comparisons made in online and offline contexts.

In addition, participants in Study 2 were restricted to browsing their news feed, rather than using the site as they normally would. This design was to ensure that participants did not simply spend the study session posting information about themselves; I was specifically interested in responses to posts by others. It is perhaps not surprising, therefore, that motivations to use Facebook did not moderate my results: I made it impossible for individuals to use Facebook to communicate with friends or share information about themselves. In future research, it will be important to examine how individuals make comparisons to others during more naturalistic Facebook use.

Comparing oneself to others is an inevitable part of daily life (Festinger, 1954; Wheeler & Miyake, 1992). However, with the increasing popularity of Facebook and other social networking sites, the frequency of these comparisons may also be on the rise. Moreover, online comparisons are more likely to be upward than those made in face-to-face contexts, potentially making sites like Facebook less of a morale-booster and more of a chronic threat to self-esteem. Alternatively, individuals may view and respond differently to online vs. offline comparisons, possibly being 'numbed' by the sheer number of social comparisons made online. Although other sites may replace Facebook in the future, the popularity of social networking more generally seems unlikely to decline. Given the unparalleled availability of social comparison information through the social network, it will be crucial to understand how such information is affecting individuals’ perceptions of themselves and their lives more generally.
References


Table 1. Correlations for motivations for Facebook use and comparison frequency (Study 1).

<table>
<thead>
<tr>
<th>Motivation for Facebook Use</th>
<th>To Obtain Information About Others</th>
<th>To Share Information About the Self</th>
<th>To Maintain Social Ties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency of Social</td>
<td>.51***</td>
<td>.12</td>
<td>.16</td>
</tr>
<tr>
<td>Comparisons on Facebook</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upward Comparisons</td>
<td>.56***</td>
<td>.11</td>
<td>.24*</td>
</tr>
<tr>
<td>(to Better-off Others)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lateral Comparisons</td>
<td>.36***</td>
<td>.06</td>
<td>.19†</td>
</tr>
<tr>
<td>(to Similar Others)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Downward Comparisons</td>
<td>.32**</td>
<td>.04</td>
<td>.04</td>
</tr>
<tr>
<td>(to Worse-off Others)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* † = p < .10, * = p < .05, ** = p < .01, *** = p < .001. N = 101 for all analyses.
Table 2. Correlations for self-esteem and comparison frequency (Study 1).

<table>
<thead>
<tr>
<th></th>
<th>Self-esteem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency of Social Comparisons on Facebook</td>
<td>-.31**</td>
</tr>
<tr>
<td>Upward Comparisons (to Better-off Others)</td>
<td>-.25*</td>
</tr>
<tr>
<td>Lateral Comparisons (to Similar Others)</td>
<td>-.03</td>
</tr>
<tr>
<td>Downward Comparisons (to Worse-off Others)</td>
<td>-.06</td>
</tr>
</tbody>
</table>

Note. † = p < .10, * = p < .05, ** = p < .01, *** = p < .001. N = 101 for all analyses.
Table 3. Correlations for number of comparisons, state affect, and state self-esteem (Study 2).

<table>
<thead>
<tr>
<th></th>
<th>State Self-esteem</th>
<th>State Positive Affect</th>
<th>State Negative Affect</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Social Comparisons made</td>
<td>.05</td>
<td>.05</td>
<td>.22*</td>
</tr>
<tr>
<td>during 20-minute Facebook session</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upward Comparisons (to Better-off Others)</td>
<td>-.04</td>
<td>-.05</td>
<td>-.04</td>
</tr>
<tr>
<td>Lateral Comparisons (to Similar Others)</td>
<td>.00</td>
<td>.02</td>
<td>.26*</td>
</tr>
<tr>
<td>Downward Comparisons (to Worse-off Others)</td>
<td>.13</td>
<td>.13</td>
<td>.14</td>
</tr>
</tbody>
</table>

Note. † = p < .10, * = p < .05, ** = p < .01, *** = p < .001. N = 101 for all analyses.
<table>
<thead>
<tr>
<th>Domain</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Looks/attractiveness</td>
<td>72</td>
</tr>
<tr>
<td>Clothes/personal style</td>
<td>35</td>
</tr>
<tr>
<td>School achievement</td>
<td>46</td>
</tr>
<tr>
<td>Work/career achievement</td>
<td>54</td>
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<tr>
<td>Intelligence</td>
<td>71</td>
</tr>
<tr>
<td>Popularity</td>
<td>70</td>
</tr>
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<td>Current romantic partner</td>
<td>11</td>
</tr>
<tr>
<td>Previous romantic partner</td>
<td>10</td>
</tr>
<tr>
<td>Possessions</td>
<td>19</td>
</tr>
<tr>
<td>Vacations/travel</td>
<td>62</td>
</tr>
<tr>
<td>Leisure activities</td>
<td>84</td>
</tr>
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</table>
Figure 1. Popularity comparisons: Feeling bad regressed on comparison direction and self-esteem (Study 2).
Figure 2. Popularity comparisons: Feeling bad regressed on comparison direction and self-esteem (Study 2).