Reduction in Self-Esteem and Self-Evaluation
Following Upward Social Comparison on Facebook:
Depression as a Moderator
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Foreword

Submitted in partial fulfilment of the requirements of the BSc Psychology degree, Reykjavik University, this thesis is presented in the style of an article for submission to a peer-reviewed journal.
Abstract

Facebook, which is a context for a desirable self-presentation and identity management, is an ideal platform for upward social comparison. However, limited research has examined potential negative effects of exposure to upward social comparison on social networking sites. The aims of the current study were to examine the potential negative effects of upward social comparison on self-esteem and self-evaluation and to explore if these negative effects were more pronounced among individuals with depressed affect. Fifty-eight undergraduate psychology students were randomly assigned to either an upward or an downward comparison group, where the comparison manipulation was made with different amount of likes and comments on the fictitious Facebook profiles that participants’ temporarily viewed. Counter to hypotheses, following exposure to the Facebook profiles, there were no differences between the groups in state self-esteem and self-evaluation and temporal self-esteem decreased in both the downward and the upward social comparison condition. Confirming the moderation effect of depression, there was an interaction between social comparison and depressed affect for social self-esteem and self-evaluation. The findings suggest that depressed individuals are more vulnerable to upward social comparison on social networking sites than nondepressed individuals.

Útdráttur

Facebook er tilvalinn vettvangur fyrir félagslegan samanburð við einstaklinga sem eru betur settir vegna þess hversu auðvelt það er fyrir notendum að draga upp fullkomna jákvæða mynd af sjálfum sér. Hins vegar hafa möguleg neikvæð áhrið félagslegs samanburðar við einstaklinga sem eru betur settir litið verið skoðuð á samfélagsmiðlum. Tilgangur rannsóknarinnar var að skoða möguleg neikvæð áhrið félagslegs samanburðar við betur setta einstaklinga á sjálfsálit og sjálfsmat og að skoða hvort áhrifin væru greinilegri hjá einstaklingum með þunglyndiseinkenni. Fimmtiu og átta grunnnumum í sálfræði var tilvihanarkannt skipt í tvo hópa, það er félagslegan samanburð við betur settan einstakling eða félagslegan samanburð við verrat settan einstakling. Hagræðing samanburðar var gerð með mismunandi fjölda ummæla og fjölda aðila sem líkuðu við innlegg og myndir Facebook forsiðanna sem þátttakendur skoðuðu tímaðundir. Í kjölfar þess að skoða Facebook forsiðurnar var enginn munur á milli hópa á sjálfsáliti eða sjálfsmati og það dró úr tímaðunnu sjálfsáliti beggja hópa sem er ekki í samræmi við framsettar tilgátur. Í ljós kom samvirkni á milli félagslegs samanburðar og þunglyndiseinkennna á félagslegu sjálfsáliti og sjálfsmati sem bendir til þess að þynglyndir einstaklingar séu viðkvæmari fyrir félagslegum samanburði við einstaklinga sem virðast betur settir á samfélagsmiðlum.
Reduction in Self-Esteem and Self-Evaluation Following Upward Social Comparison on Facebook: Depression as a Moderator

Facebook is currently the predominant online social networking site around the world ("Company Info | Facebook Newsroom," 2014) and has become a great part of many people’s everyday routine. It has in turn caught the attention of many scholars and researchers who are interested in both the potential negative and positive effects that Facebook use might have on people’s lives. Although few studies have found that Facebook use can enhance self-esteem after viewing one’s own profile (Gonzales & Hancock, 2011) and help people to stay in touch with friends and family after moving away (N. B. Ellison, Steinfield, & Lampe, 2007), Facebook use has been linked to a variety of negative consequences. For example, overuse and strong attachment to Facebook could be relate to Internet addiction (Kittinger, Correia, & Irons, 2012) and frequent Facebook use has been associated with reduction in subjective well-being over time, where moment-to-moment satisfaction and life satisfaction decline with more Facebook use (Kross et al., 2013).

Facebook has approximately 829 million active daily users and the usage is particularly prevalent among young people (Boyd & Ellison, 2007). Facebook is a context for a desirable self-presentation and identity management, where users can choose the content that goes on their profile that reflects their ideal image (Rosenberg & Egbert, 2011). Suppression activities like untagging unattractive photos or deleting undesirable content are also very common among users (Strano & Wattai Queen, 2012). Given that identity management is easy on Facebook, it has been suggested that Facebook is an ideal platform for upward social comparison (Chou & Edge, 2012). For instance, individuals that spend a lot of time on Facebook believe others to be more successful and happier than themselves.

People compare themselves to others everyday, both consciously and unconsciously, which is a natural part of human behavior. According to Leon Festinger’s social comparison
theory (Festinger, 1954), individuals are driven to evaluate their opinions and abilities by comparing themselves to others, in order to gain more accurate self-evaluation. A comparison to a superior other, Festinger termed an upward social comparison. However, individuals can also be motivated by downward social comparison, where a comparison is made with a less fortunate other (Wills, 1981). Studies have shown that upward social comparison can be constructive, as it can inspire people to become more similar to their comparison target (Lockwood & Kunda, 1997) or result in self-enhancement for individuals with low self-esteem in low threat situations (Wood, Giordano-Beech, Taylor, Michela, & Gaus, 1994). However, in most instances upward social comparison yields negative outcomes. It has been related to a decrease in subjective well-being (Wheeler & Miyake, 1992) and in individual’s momentary level of self-esteem, following temporary exposure to people with socially desirable characteristics (Morse & Gergen, 1970).

Some characteristics have been found to increase upward social comparison. For example, high self-consciousness (Gibbons & Buunk, 1999), low self-certainty (Butzer & Kuiper, 2006) and negative mood or depressed affect (Wheeler & Miyake, 1992). It has been suggested that the influence of negative mood and depressed affect on upward social comparison is due to accessibility of happy memories and thoughts in a good mood, but the inverse in a bad mood (Bower, 1981). Furthermore, people in negative mood are likely to have negative thoughts and memories about themselves and more favorable thoughts towards others, because favorable thoughts towards others have been associated with negative feelings in the past (Wheeler & Miyake, 1992). For instance, depressed individuals engage more frequently in upward social comparison than nondepressed individuals and resultantly become more depressed (Bäzner, Brömer, Hammelstein, & Meyer, 2006; Swallow & Kuiper, 1992). These findings raise the possibility that the low self-esteem and the negative self-evaluation associated with depression (Kernis, Grannemann, & Mathis, 1991; Roberts &
Monroe, 1992; Tennen, Herzberger, & Nelson, 1987; Wood & Lockwood, 1999) could be maintained or even reinforced with frequent upward social comparison.

Relatively few studies have been done on social comparison on Facebook. A correlational study (Lee, 2014) found that frequent Facebook users are more likely to engage in social comparison and that social comparison frequency was associated with more negative feelings and lower self-esteem. Even though these findings are consistent with prior research on social comparison, they are from a correlation study and need to be interpreted with caution.

Most of existing literature on social comparison depends on self-reported social comparison, but people are usually reluctant to admit social comparison (Hemphill & Lehman, 1991). As of today, only two experiments have examined the negative impact of exposure to upward social comparison on Facebook. One of the experiments found that a temporarily exposure to an attractive profile (the upward comparison condition) resulted in less body satisfaction and a decrease in positive emotions (Haferkamp & Krämer, 2011). The other experiment found that participants that were temporarily exposed to a profile with many likes and comments (the upward comparison condition) reported lower state self-esteem and self-evaluation (Vogel, Rose, Roberts, & Eckles, 2014).

Because of the popularity of Facebook and the shortage of research on social comparison on the site, the aim of the current study is to replicate the experiment of Vogel et al. (2014). In addition, given the literature discussed above about the relationship between depression and upward social comparison, the aim is also to extend previous research by examining if depressed affect moderates the relationship between upward social comparison and self-evaluation and self-esteem. It is hypothesized that: 1) participants exposed to upward social comparison will report lower state self-esteem and self-evaluation compared to those exposed to downward social comparison; 2) temporal self-esteem will decrease from before
to after exposure to the Facebook profiles, but only in the upward social comparison; 3) participants high in depressed affect will have lower state self-esteem and self-evaluation than participants low in depressed affect; 4) upward social comparison will negatively affect state self-esteem and self-evaluation, but only among those high in depressed affect.

Method

Participants

Fifty-eight undergraduate psychology students from Reykjavik University in Iceland voluntarily participated in the experiment. The participants were Icelandic speaking first and second year students participating in the school’s Research Participants Pool and received course credit in exchange for participation. The average age of the convenience sample was 22.97 (range 19-37 years), 77.58 % of participants were women and 22.42 % were males. Participants were randomly assigned to experimental groups with 29 participants in the upward social comparison group and 29 participants in the downward social comparison group (see description blow).

Instruments and Measures

The Facebook social comparison manipulation was made with four fictitious Facebook profile conditions made specifically for the experiment (see Appendix A, page 27). There were two profiles for each gender, one upward comparison condition and one downward comparison condition. Participants were randomly assigned to either an upward or downward condition of their own gender. The upward Facebook profiles consisted of a Facebook owner with high social activity, more specifically, a profile with posts and statuses with a high number of comments and likes. The posts received 3 to 17 comments and 10 to 112 likes. The downward Facebook profiles consisted of an owner with low social activity, a profile with few comments and likes. The posts received 0 to 2 comments and 0 to 3 likes. All comments were positive and similar to profile comments of individuals at similar age. All
other Facebook information was identical in all conditions, namely age, number of friends, number of photos and interests. The profile owners were not real individuals, but a male and a female in their early 20’s donated their photos for research purpose. The profile manipulation was made with Inspect Element in Firefox 37.0.1, Adobe Photoshop CS6, Visual Studio Premium 2013 and Microsoft Azure Cloud.

The survey, which consisted of 25 questions, was presented online with Survey Monkey (Survey Monkey, n.d.). Participants’ depressed affect was measured with the Icelandic version of the depressed affect scale of the Brief Symptom Inventory (Derogatis, Lipman, Covi, & Rickels, 1971; Sigfusdottir, Farkas, & Silver, 2004). The scale consisted of ten Likert-type items asking about: “How frequently did you become aware of following indispositions or discomforts during the last three weeks?” The answer possibilities ranged from 1 (never) to 5 (very often) (see Appendix B, page 28). The scale was administered before the Facebook manipulation. All answers were summed up, which gave a scale total score for each participant. The scale total score spanned from 10 to 50, with higher score indicating higher depressed affect (Cronbach’s α = .90).

The State Self-Esteem Scale was used to measure state self-esteem following the Facebook manipulation (Heatherton & Polivy, 1991). The scale was translated to Icelandic by the researcher and translated back to English by the instructor to make sure that the translation was sufficient. The scale consisted of 20 items, with answer possibilities from 1 (not at all) to 5 (extremely), implying that the best answer of each statement is what you feel is true of yourself at the moment (see Appendix B, page 31). Sum scores ranged from 20 to 100 with a higher score corresponding to higher state self-esteem (Cronbach’s α = .89). The scale was subdivided into three scales: performance self-esteem (Cronbach’s α = .83), social self-esteem (Cronbach’s α = .76) and appearance self-esteem (Cronbach’s α = .84).
The item “Where would you rate your self-esteem at this moment?” (1 = extremely low; 10 = extremely high) was administered before and after the social manipulation to assess change in temporal self-esteem (see Appendix B, page 28 and 32). The item correlated significantly with the State Self-Esteem Scale both before and after the manipulation. Before the manipulation, $rs = 0.72, p < 0.0001$ and after the manipulation, $rs = 0.71, p < 0.0001$. This indicated that the item could be used as a within-subject measures of temporal self-esteem.

Evaluation of the Facebook profile owner was assessed with six items, after the Facebook social comparison manipulation, to test whether the manipulation worked as intended (derived from Vogel et al., 2014) (see Appendix B, page 29-30): “How attractive do you think the person is?” (1 = very unattractive; 5 = very attractive); "How likable do you think the person is?” (1 = very unlikable; 5 = very likable); "How popular do you think the person is?” (1 = very unpopular; 5 = very popular); "How social do you think the person is?” (1 = very unsocial; 5 = very social); "How intelligent do you think the person is?” (1 = very unintelligent; 5 = very intelligent); "How happy do you think the person is?” (1 = very unhappy; 5 = very happy). The intelligence and attractiveness items were not included in the scale because of low inter-correlation with the other items. The total sum scores of remaining items ranged from 4 to 20 (Cronbach’s $\alpha = .79$).

Self-evaluation was assessed with six items after the Facebook social comparison manipulations (derived from Vogel et al., 2014) (see Appendix B, page 30-31): “Compared to your peers how attractive do you think you are?” (1 = very unattractive; 5 = very attractive); “Compared to you peers how likable do you think you are?” (1 = very unlikable; 5 = very likable); “Compared to your peers how popular do you think you are?” (1 = very unpopular; 5 = very popular); “Compared to your peers how social do you think you are?” (1 = very unsocial; 5 = very social); “Compared to your peers how intelligent do you think you
are? (1 = very unintelligent; 5 = very intelligent); “Compared to your peers how happy do you think you are?” (1 = very unhappy; 5 = very happy). The item of intelligence was eliminated because of low inter-correlation with the other items. The total sum score of remaining items ranged from 5 to 25 (Cronbach’s $\alpha = .73$).

Participants’ Facebook use was assessed with several items: “How many friends do you have on Facebook?” (open-ended response) (derived from Vogel et al., 2014): “On average, how much time do you spend on Facebook every day?” (1 = almost no time, 2 = 1/2-1 hours, 3 = about 1 hour, 4 = about 2 hours, 5 = about 3 hours, 6 = about 4 hours, 7 = about 5 hours, 8 = 6 hours or more) (derived from Rannsóknir & Greining, 2013). These two questions were asked before the social comparison manipulation (see Appendix B, page 28). The following two questions were made by researcher and were asked at the end of the survey, after the manipulation (see Appendix B, page 32): “On average, how many likes per week do you receive on Facebook?” (open-ended response) and “On average, how many likes per week do you give on Facebook?” (open-ended-response).

**Procedure**

After an approval by the institutional ethics committee, the experimenter briefly presented the study to first year and second year psychology undergraduate students at Reykjavik University during their regular class. Eighty-seven students wrote down their names and e-mail addresses indicating their interest in being contacted for potential participation. One week prior to the experiment, these students were contacted via e-mail and invited to register their name at available times. A total of 63 students registered but five participants failed to attend because of sickness, forgetfulness or weather. The final sample included 66.67% of the individuals from the initial sample.

The study spanned six days, only one participant participated at a time and participation varied from 10 to 25 minutes. Each day, researcher folded slips of paper with
the profile conditions and put into a box and randomized participation numbers with an online research randomizer (Urbaniak & Plous, n.d.). Before each participant entered the room, researcher drew a slip with the condition from the box, which randomly assigned participants to either an upward or a downward social comparison condition. The study took place in a research room at the university. Upon entry, the study was explained in detail to the participants and they read the Participation Information Sheet with all the appropriate information about the purpose, possible risk and discomfort, anonymity and the right to quit at any time throughout the study (see Appendix C, page 33-34). Furthermore, all participants needed to sign the Informed Consent Form before participation (see Appendix D, page 35). In order to eliminate possible bias, participants were not informed of the whole purpose of the study. Eight weeks after the experiment, participants were contacted through e-mail for a debriefing. The debriefing consisted of information of the true purpose of the study and basic results (see Appendix E, page 36).

To ensure confidentiality the computerized questionnaires were numbered with participants’ participation number with no links to participants’ names. When participants had completed the first half of the questionnaire they had to click on a link, which opened a Facebook profile (see Appendix B, page 29). Half of the participants received an upward social comparison profile and the other half received a downward comparison profile. The profile was open for three minutes and then automatically closed and the second part of the questionnaire appeared. Because of location problems the experiment was conducted in two different rooms. However, both rooms were similar, with a special chair and table for the participants and the researcher sat on a chair in an appropriate distance in the same room.

**Design and data analysis**

The study included three dependent variables, state self-esteem and self-evaluation, administered after exposure to the Facebook profiles, and temporal self-esteem, administered
before and after the Facebook profiles. State self-esteem furthermore had three subscales, which were also used as dependent variables; performance self-esteem, social self-esteem and appearance self-esteem. There were two independent variables, social comparison and depressed affect. Median split (19) for depression was used to create two groups: A group high in depressed affect (23 participants) and a group low in depressed affect (34 participants). The number of participants in the groups was unequal because of many participants scoring on the median. Social comparison was either upward (29 participants) or downward (29 participants). The data was transferred from the Survey Monkey database to Microsoft Excel 2011 and further transferred to IBM SPSS Statistics 20 where all the analysis was processed. Before examining the hypotheses, the relationship between demographic characteristics and the dependent variables was examined for possible experimental group differences. An independent-samples t-test was used to examine whether the social comparison manipulation worked as intended, that is whether participants in the upward social comparison group evaluated the Facebook profile owner higher than those in the downward comparison group. Analyses of covariance (ANCOVAs) were executed to test differences between experimental groups on state self-esteem, its subscales and on self-evaluation. The change in temporal self-esteem from before to after the manipulation was examined with a 2 (comparison group: upward and downward) x 2 (time: before and after exposure to the Facebook profiles) repeated measure ANCOVA. Furthermore, the differences of state self-esteem, its subscales and self-evaluation between the depressed affect groups were examined with an independent-samples t-test. Finally, two 2 (social comparison: upward and downward) x 2 (depressed affect: low and high) ANCOVAs, with likes received per week as a covariate, were used to examine potential interaction between depressed affect and social comparison. In addition, given the small number of subjects and possible lack of
power to detect significant interaction, an ANOCVA was executed separately for downward and upward comparison.

**Results**

All participants reported being Facebook users apart from one missing answer. On average, participants reported having 645.67 friends on Facebook and spending around 2 hours a day on the site. They also reported receiving 21.27 likes on average per week and giving others 27.06 likes per week. The differences between the experimental groups are shown in Table 1. The experimental groups did not differ on gender, $t(56) = .31, p = .76$, age, $t(56) = .08, p = .94$, time spent on Facebook, $t(56) = .36, p = .72$, amount of friends, $t(55) = -.48, p = .63$, or on amounts of likes given on Facebook per week, $t(55) = -.65, p = .52$.

However, the groups did significantly differ on the amount of likes received on Facebook per week, $t(54) = 2.91, p = .005$. Therefore, likes received per week was entered as a covariate into the analyses.

Table 1

*Social Comparison Groups’ Means (Standard Error)*

<table>
<thead>
<tr>
<th></th>
<th>Downward</th>
<th>Upward</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>1.79 (.08)</td>
<td>1.76 (.08)</td>
</tr>
<tr>
<td>Age</td>
<td>23.00 (.64)</td>
<td>22.93 (.60)</td>
</tr>
<tr>
<td>Time spent on Facebook each day</td>
<td>4.21 (.26)</td>
<td>4.07 (.28)</td>
</tr>
<tr>
<td>Amount of Facebook friends</td>
<td>626.82 (55.82)</td>
<td>663.86 (52.80)</td>
</tr>
<tr>
<td>Amount of likes received on Facebook per week</td>
<td>28.56 (4.14)**</td>
<td>14.48 (2.62)</td>
</tr>
<tr>
<td>Amount of likes given on Facebook per week</td>
<td>25.29 (3.13)</td>
<td>28.78 (4.37)</td>
</tr>
</tbody>
</table>

*Note.* ** $p < 0.01$.

ANCOVA was executed with the evaluation of the Facebook profile owner as the dependent variable. This was done in order to examine whether the manipulation worked as
intended. There was a significant main effect for social comparison after controlling for the effect of received likes per week, $F(1,53) = 5.81, p = .019$, partial $\eta^2 = .10$. On average, participants in the upward social comparison group evaluated the target person higher ($M = 16.64, SE = .44$) than participants in the downward comparison group ($M = 15.06, SE = 0.46$).

ANCOVAs were used to test the hypothesis that state self-esteem and self-evaluation, following exposure to Facebook profiles, would be lower among those exposed to the upward comparison compared to those exposed to the downward comparison. As shown in Table 2, the social comparison groups did not differ significantly on overall state self-esteem, $F(1,51) = 2.59, p = .11$, partial $\eta^2 = .05$, nor on any of the subscales, i.e. performance self-esteem, $F(1,52) = 1.04, p = .31$, partial $\eta^2 = .02$, social self-esteem, $F(1,52) = 2.67, p = .11$, partial $\eta^2 = .05$ or appearance self-esteem, $F(1,53) = 2.03, p = .16$, partial $\eta^2 = .04$. The difference was also not significant on self-evaluation, $F(1,53) = .52, p = .47$, partial $\eta^2 = .01$.

Table 2

Means (standard error) of State Self-Esteem, its Subscales, and Self-Evaluation of the Social Comparison Groups

<table>
<thead>
<tr>
<th></th>
<th>Downward</th>
<th>Upward</th>
</tr>
</thead>
<tbody>
<tr>
<td>State self-esteem</td>
<td>73.14 (2.44)</td>
<td>67.51 (2.34)</td>
</tr>
<tr>
<td>Performance self-esteem</td>
<td>26.01 (1.06)</td>
<td>24.45 (1.04)</td>
</tr>
<tr>
<td>Social self-esteem</td>
<td>26.55 (.89)</td>
<td>24.48 (.84)</td>
</tr>
<tr>
<td>Appearance self-esteem</td>
<td>21.67 (.99)</td>
<td>19.65 (.95)</td>
</tr>
<tr>
<td>Self-evaluation</td>
<td>18.92 (.56)</td>
<td>18.35 (.53)</td>
</tr>
</tbody>
</table>

Note. Total score of overall state self-esteem ranged from 20-100, performance self-esteem and social self-esteem ranged from 7-35, appearance self-esteem ranged from 6-30 and self-evaluation ranged from 5-25.

The change in temporal self-esteem, from before to after the exposure to the Facebook profiles, was examined with a 2 (comparison group: upward and downward) x 2
(time: before and after exposure to the Facebook profiles) repeated measure ANCOVA. The main effect for social comparison was not significant, $F(1,46) = 1.20, p = .28$, partial $\eta^2 = .03$. The main effect for time was significant, $F(1,46) = 7.10, p = 0.01$, partial $\eta^2 = .13$. Temporal self-esteem after the manipulation ($M = 7.00$, $SE = .23$) was significantly lower than before the manipulation ($M = 7.35$, $SE = .20$). However, the interaction of social comparison and time was not significant, $F(1,46) = .001, p = .98$, partial $\eta^2 = .00$, indicating that the social comparison conditions did not differentially affect change in self-esteem.

Independent-samples t-test was executed to test the hypothesis that participants high in depressed affect would have lower state self-esteem and self-evaluation than participants low in depressed affect. As shown in Table 3, there were significant differences between the affect groups’ means on all of the variables, indicating main effects of depressed affect. The state self-esteem difference, 13.18, 95% CI [7.14, 19.22], was significant $t(53) = 4.38, p < .0001$. The difference, 4.77, 95% CI [2.06,7.48], on performance self-esteem was significant $t(54) = 3.528, p = .001$. On social self-esteem the difference, 3.80, 95% CI [1.38,6.22], was significant $t(54) = 3.15, p = .003$. Appearance self-esteem difference, 4.88, 95% CI [2.47, 7.28] was significant $t(55) = 4.06, p < .0001$. The difference, 2.21, 95% CI [.65, 3.76], in self-evaluation was significant $t(35.90) = 2.88, p = .007$. 
Table 3

Means (standard error) of State Self-Esteem, its Subscales, and Self-Evaluation of the Depressed Affect Groups

<table>
<thead>
<tr>
<th></th>
<th>Low depressed affect</th>
<th>High depressed affect</th>
</tr>
</thead>
<tbody>
<tr>
<td>State self-esteem</td>
<td>75.09 (1.87)**</td>
<td>61.91 (2.40)</td>
</tr>
<tr>
<td>Performance self-esteem</td>
<td>27.00 (.83)**</td>
<td>22.23 (1.10)</td>
</tr>
<tr>
<td>Social self-esteem</td>
<td>26.76 (.71)**</td>
<td>22.96 (1.02)</td>
</tr>
<tr>
<td>Appearance self-esteem</td>
<td>22.53 (.71)*****</td>
<td>17.65 (1.01)</td>
</tr>
<tr>
<td>Self-evaluation</td>
<td>19.38 (.38)**</td>
<td>17.17 (.67)</td>
</tr>
</tbody>
</table>

Note. Total score of overall state self-esteem ranged from 20-100, performance self-esteem and social self-esteem ranged from 7-35, appearance self-esteem ranged from 6-30 and self-evaluation ranged from 5-25.

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

Two 2 (social comparison: upward and downward) x 2 (depressed affect: low and high) ANCOVAs, with received likes per week as a covariate, were used to test the hypothesis that upward social comparison would negatively affect state self-esteem and self-evaluation, but only among those high in depressed affect. The results for social state self-esteem showed a significant main effect for social comparison $F(1,49) = 4.84, p = 0.03$, partial $\eta^2 = .09$ and depressed affect, $F(1,49) = 10.73, p = .002$, partial $\eta^2 = .18$. However, there was no significant interaction between social comparison and depressed affect, $F(1,49) = 1.81, p = 0.19$, partial $\eta^2 = .04$. Given the small number of subjects, the power might not have been sufficient to detect a significant interaction. Therefore, to test this further, an ANCOVA was computed separately for downward and upward comparison. The results showed a significant main effect of depressed affect in the upward social comparison group, $F(1,25) = 14.80, p = .001$, partial trau, but not in the downward comparison group, $F(1,23) = 1.83, p = .18$, partial $\eta^2 = .07$, as can be seen in Figure 1. Upward social comparison negatively affected social self-esteem but only among those who reported high levels of depressed affect.
The results for self-evaluation showed that the main effect of depressed affect was significant $F(1,50) = 8.33, p = .006$, partial $\eta^2 = .14$ but not for social comparison $F(1,50) = 2.84, p = .098$, partial $\eta^2 = .05$. However, there was a marginally significant interaction between depressed affect and social comparison, $F(1,50) = 3.40, p = .071$, partial $\eta^2 = .06$. Similar to the results on social self-esteem, the small number of subjects may have caused low power to detect a significant interaction. Therefore, an ANCOVA was computed separately for downward and upward comparison on self-evaluation. As can be seen in Figure 2, the results showed a significant main effect of depressed affect in the upward social comparison group, $F(1,25) = 8.98, p = .006$, partial $\eta^2 = .26$ but not in the downward comparison group $F(1,25) = .50, p = .48$, partial $\eta^2 = .02$. Upward social comparison negatively affected self-evaluation but only among those who reported high levels of depressed affect.
Discussion

The aims of the current study were to examine the potential negative effects of exposure to upward social comparison on Facebook on state self-esteem and self-evaluation and to explore if these negative effects were moderated by depressed affect. The main results showed that the upward and downward social comparison groups did not differ on state self-esteem or self-evaluation. Furthermore, temporal self-esteem decreased from before to after the social comparison manipulation in both the upward and downward social comparison group, which is counter to what was hypothesized. Depressed affect moderated the relationship between social comparison and state self-esteem and self-evaluation, with upward social comparison negatively affecting state self-esteem and self-evaluation, but only among those with high depressed affect.
The finding that the upward and the downward social comparison groups did not differ on state self-esteem, or on any of the subscales or self-evaluation is inconsistent with the findings by Vogel et al. (2014). There are several potential reasons for these discrepant results. Vogel et al. (2014) profiles were different from the profiles of the current study, their sample was larger and included only women. However, it should be noted that the means in the current study were generally lower in the upward social comparison group, suggesting that our sample might have been too small to detect group differences.

It was found that temporal self-esteem decreased from before to after the social comparison manipulation. However, contrary to our hypothesis, the change did not depend on which manipulation participants received. This finding suggests that merely viewing a Facebook profile can decrease self-esteem. However, this finding needs to be interpreted with caution, as this is the first study to show this and only one item was used to assess temporal self-esteem.

In line with our hypothesis, participants above the median on depressed affect had significantly lower overall state self-esteem, self-esteem on all of the subscales, and on self-evaluation compared with those below the median. This is consistent with existing literature on the relationship between self-esteem and depression (Kernis et al., 1991; Roberts & Monroe, 1992; Tennen et al., 1987; Wood & Lockwood, 1999).

Lastly, there was a trend for a significant interaction between social comparison and depressed affect on social state self-esteem and self-evaluation. Because of small number of subjects and a possible lack of power to detect a significant interaction, analyses were done separately for the social comparison groups. Findings revealed significant main effect of depressed affect, but only for the upward social comparison. Social comparison had a negative impact on self-esteem and self-evaluation, but only among those high in depressed affect. This suggested moderating effects of depression on the relationship between social
comparison and social self-esteem and self-evaluation on Facebook. This finding is consistent with the findings that depressed individuals are more vulnerable to upward social comparison than nondepressed individuals (Bäzner et al., 2006; Swallow & Kuiper, 1992).

The current study is not without limitations. First, a convenience sample of psychology students in Reykjavik University was used in the study. Convenience samples may not be representative of the general populations and it is therefore probable that the current sample deviates from the target population. Secondly, as has been mentioned, the sample was relatively small and the gender ratio was unequal which also threatens the generalizability of the findings. Furthermore, participants only viewed one Facebook profile and viewed a profile of a stranger. This may be different from normal Facebook viewing, because people are usually exposed to many different profiles and of acquaintances or of people they know. Moreover, social comparison was only manipulated with the amount of likes and comments on posts and statuses. However, social comparison on Facebook is undoubtedly very complex and it is probably not enough to only use objective measures like comments and likes, but should also use more subjective information that users look at, like photos.

The study has both practical and theoretical implications. The main theoretical implication of the study is based on the fact that the current study is the first to experimentally examine the possible role of depression in the relationship between social comparison on social networking sites and self-esteem and self-evaluation. The findings suggest that exposure to Facebook may be particularly negative for depressed individuals. This is consistent with prior research demonstrating that depressed are more negatively affected by upward social comparison (Bázner et al., 2006; Swallow & Kuiper, 1992). Future studies should replicate these findings and examine this relationship on other social networking sites.
From the practical perspective the study gives insight into everyday Facebook use. Even though Facebook and other social networking sites have some benefits (Ellison, Steinfield, & Lampe, 2007; Gonzales & Hancock, 2011) there is a downside of their use. Because of easy identity management, users are likely to experience frequent upward comparison, which in turn decreases their well-being (Chou & Edge, 2012). Depressed individuals are more vulnerable to those effects, which can possibly preserve the depression or even retrograde it (Bätzner et.al, 2006; Swallow & Kuiper, 1992).

Facebook use is very prevalent, especially among the younger generations (Boyd & Ellison, 2007). The literature suggests that prolonged use has its downside and it is important to address the problem and continue finding the potential negative factors. The findings of the study are promising and a step closer to the understanding of the complex environment of social networking sites. However, it is important for future studies to continue the examination of social comparison on social networking sites and expectable negative effects. For further confirmation, similar experiments are needed with both a larger and a more diverse sample and on other social networking sites like Instagram, Snapchat and Twitter. Additionally, having participants log into their own accounts and exposing them to the profiles of their friends or acquaintances could emulate real life Facebook use better than a fictitious profile of a stranger. It is important to identify individuals who might be particularly vulnerable for the negative effects of Facebook and to develop and test preventive intervention for these individuals.
References


Appendix A

The Social Comparison Facebook Profiles

Removed to protect the privacy of the people who donated their pictures for research purpose.
Appendix B

The survey

Skynjun einstaklinga á Facebook og notendum síðunnar

1. Þáttakendanúmer:
2. Kyn: □ Karl □ Kona
3. Aldur: □
4. Hvar myndir þú staðsetja sjálfsálit þitt á þessu augnabliki á skalanum 1 til 10? (1=mjög lítið, 10=mjög mikið) □
5. Ertu Facebook notandi? □ Já □ Nei
6. Hvað átt þú marga vini á Facebook?
7. Hversu miklum tíma verð þú að jafnaði í Facebook á hverjum degi?
   □ Nær engum tíma □ ½-1 klst. □ Um 1 klst. □ Um 2 klst. □ Um 3 klst.
   □ Um 4 klst. □ Um 5 klst. □ 6 klst. eða fleiri
8. Hversu oft varð þú var/vör við eftirfarandi vanliðan eða ópægindi síðastliðnar 3 vikur? (Depressed affect)
   □ Aldrei □ Sjaldan □ Stundum □ Nokkuð oft □ Mjög oft

Þú varst leið(ur) eða hafðir lítinn áhugur að að gera hluti
Þú hafðir lítil maturlyst
Þér fannst þú einmana
Þú grést aðvöldlega eða langaði til að gráta
Þú áttir erfitt með að sofna eða halda þér sofandi
Þú varst niðurdregin(n) eða dapur/döpur
Þú varst ekki spennt(ur) fyrir að gera nokkurn hlut
Þér fannst þú vera hægfara eða hafa lítinn mátt
Þér fannst framtíðin vonlaus
Þú hugsaðir um að stytt þér aldur
Vinsamlegast ýtið á Opna Prófil hér fyrir neðan en þá opnast Facebook síða X. Facebook síðan verður opin í 3 mínútur en að þeim tíma liðnum þá lokast slóðin aftur og færir þig til baka á þessa síðu. Á næstu síðu eru síðan nokkrar spurningar um X og þig sjálfa/sjálfan.

Nautðsynlegt er að þú skoðir prófilett ÁDUR en þú heldur áfram og að þú skoðir hann ADEINS einu sinni

Opna Prófil

9. Ertu búin/n að skoða prófilinn?
☐ Já
☐ Nei

Nú koma nokkrar spurningar um X (evaluation of the Facebook owner)

10. Hversu aðlaðandi finnst þér X vera?
☐ Mjög óaðlaðandi ☐ Frekar óaðlaðandi ☐ Hvorki óaðlaðandi né aðlaðandi
☐ Frekar aðlaðandi ☐ Mjög aðlaðandi

11. Hversu viðkunnanleg/viðkunnanlegur finnst þér X vera?
☐ Mjög óviðkunnanleg/ur ☐ Frekar óviðkunnanleg/ur ☐ Hvorki óviðkunnanleg/ur né viðkunnanleg/ur
☐ Frekar viðkunnanleg/ur ☐ Mjög viðkunnanleg/ur

12. Hversu vinsæl/l finnst þér X vera?
☐ Mjög óvinsæl/l ☐ Frekar óvinsæl/l ☐ Hvorki óvinsæl/l né vinsæl/l
☐ Frekar vinsæl/l ☐ Mjög vinsæl/l

13. Hversu félagslynd/ur finnst þér X vera?
☐ Mjög ófélagslynd/ur ☐ Frekar ófélagslynd/ur ☐ Hvorki ófélagslynd/ur né félagslynd/ur
☐ Frekar félagslynd/ur ☐ Mjög félagslynd/ur

14. Hversu vitur finnst þér X vera?
☐ Mjög vitgrönn/vitgrannur  ☐ Frekar vitgrönn/vitgrannur  ☐ Hvorki
vitgrönn/vitgrannur né vitur  ☐ Frekar vitur  ☐ Mjög vitur

15. Hversu hamingjusögm/hamingjusamur finnst þér X vera?
☐ Mjög óhamingjusögm/óhamingjusamur  ☐ Frekar óhamingjusögm/óhamingjusamur
☐ Hvorki óhamingjusögm/óhamingjusamur né hamingjusögm/hamingjusamur
☐ Frekar hamingjusögm/hamingjusamur  ☐ Mjög hamingjusögm/hamingjusamur

Nú koma nokkrar spurningar um þig sjálfa/n (self-evaluation)

16. Miðað við jafnaldra þína hversu aðalaðandi finnst þér þú vera?
☐ Mjög óaðalaðandi  ☐ Frekar óaðalaðandi  ☐ Hvorki óaðalaðandi né aðalaðandi
☐ Frekar aðalaðandi  ☐ Mjög aðalaðandi

17. Miðað við jafnaldra þína hversu viðkunnanleg/viðkunnanlegur finnst þér þú vera?
☐ Mjög óviðkunnanleg/ur  ☐ Frekar óviðkunnanleg/ur  ☐ Hvorki óviðkunnanleg/ur né
viðkunnanleg/ur  ☐ Frekar viðkunnanleg/ur  ☐ Mjög viðkunnanleg/ur

18. Miðað við jafnaldra þína hversu vinsæl/l finnst þér þú vera?
☐ Mjög óvinsæl/l  ☐ Frekar óvinsæl/l  ☐ Hvorki óvinsæl/l né vinsæl/l
☐ Frekar vinsæl/l  ☐ Mjög vinsæl/l

19. Miðað við jafnaldra þína hversu félagslynd/ur finnst þér þú vera?
☐ Mjög ófélagslynd/ur  ☐ Frekar ófélagslynd/ur  ☐ Hvorki ófélagslynd/ur né
félagslynd/ur  ☐ Frekar félagslynd/ur  ☐ Mjög félagslynd/ur

20. Miðað við jafnaldra þína hversu vitur finnst þér þú vera?
☐ Mjög vitgrönn/vitgrannur  ☐ Frekar vitgrönn/vitgrannur  ☐ Hvorki
vitgrönn/vitgrannur né vitur  ☐ Frekar vitur  ☐ Mjög vitur

21. Miðað við jafnaldra þína hversu hamingjusögm/hamingjusamur finnst þér þú vera?
☐ Mjög óhamingjusögm/óhamingjusamur  ☐ Frekar óhamingjusögm/óhamingjusamur
☐ Hvorki óhamingjusögm/óhamingjusamur né hamingjusögm/hamingjusamur
Frekar hamingjusöm/hamingjusamur  Mjög hamingjusöm/hamingjusamur

22. (The State Self-Esteem Scale)

Þetta er spurningalisti var hannadur var til þess að mæla það sem þú ert að hugsa á þessu augnabliki. Að sjálfsgöðu er ekkert rétt svar. Besta svarið er sá svarmöguleiki sem þér finnst eiga best við þig á þessu augnabliki. Gaktu í skugga um að svara öllum spurningum, jafnvel þeim sem þú ert ekki viss um besta svarið. Mundu að svara spurningunum eins og þær eiga best við þig á ÞESSU AUGNABLÍKI.

Á alls ekki við  Á við að hluta  Á þónokkuð við  Á við að miklu leyti  Á algjörlega við

Mér finnst ég vera fullviss um eigin getu
Ég hef áhyggjur af því hvaða álit fólk hefur á mér
Ég finn að ég er sátír með það hvernig líkami minn lítur út á þessu augnabliki
Ég finn að ég er vonsvikuð eða í uppnámi með frammistöðu mín
Ég finn að ég á í erfiðleikum með að skilja það sem ég les
Ég finn að aðrir virða mig og líta upp til mín
Ég er óagonalur með þýngd mína
Ég finn að ég er sálfsmeðvitutur/sjálfsmeðvitaður
Mér finnst ég jafngáfuð/jafngáfaður og aðrir
Mér finnst ég óánægður með sjálfa/n mig
Mér líður vel með sjálfa/n mig
Ég er ánægður með útlit mitt á þessu augnabliki
Ég er áhyggjufullur um hvað aðrir hugsa um mig
Ég er sannfærtur um að ég skilji hluti
Mér finnst ég óæðri öðrum á þessu augnabliki
Mér finnst ég óaðlaðandi
Ég finn að ég hef áhyggjur af því hvernig ég kem öðrum fyrir sjónir
Mér finnst ég vera með verri námsetu en aðrir á þessu augnabliki
Ég finn að ég er ekki að standa mig vel
Ég er áhyggjufullur yfir því að sýnast heimskuleg
23. Hvar myndir þú staðsettja sjálfsálit þitt á þessu augnabliki á skalanum 1 til 10? (1 = mjög lítið - 10 = mjög mikið)

24. Hveru mörg „like” færð þú að meðaltali á viku á Facebook?
25. Hversu mörg „like” gefur þú að meðaltali á viku á Facebook?
Boð til þátttöku

Þér er boðið að taka þátt í BSc rannsókn minni í sálfræði við Háskólan í Reykjavík. Áður en ákvöðun er tekin er nauðsynlegt að þátttakendur skilj í hvers vegna rannsóknin er framkvæmd og hvað í henni felst. Þetta upplýsingaskjal þátttakenda mun skýra fyrir þér tilgang, huganlegar áhættur og ávining rannsóknarinnar.

Ef þú ákveður að taka þátt í rannsókninni verður þú beðinn(n) um að skrifa undir eyðublæð upplýsts samþykktis. Ef einhver vafatríið eru fyrir hendi skal ég með glöðu geði útksýra þau fyrir þér. Vinsamlegast taktu þér eins langan tíma og þú þarf til að lesa yfir þessar upplýsingar. Nauðsynlegt er að þú samþykktir þátttöku aðeins þegar þú finnur að þú skiljir hvað er verið að búa í af þér og að þú hafir fengið nægan tíma til að hugsu um ákvöðun þína. Takk kærlega fyrir að lesa þetta.

Tilgangur rannsóknarinnar

Tilgangur rannsóknarinnar er að skoða samskiptamiðillinn Facebook og skynjun einstaklinga á öðrum notendum síðunnar. Gíðarleg augkning hefur orðið á vinsældum Facebook síðustu ár og er síðan orðin stór og mikilvægur partur af daglegu lífi margra. Þrátt fyrir vinsældir síðunnar hafa fáar rannsóknir verið gerðar á því hvernig skynjun notenda er á öðrum notendum síðunnar. Þessi rannsókn hefur það markmið að varpa ljósi á spurningar um þetta viðfangsefni. Þú ásamt öðrum sálfræðinum á 1. og 2. ári við Háskólan í Reykjavík hafa verið beðin um að taka þátt í þessari rannsókn í gegnum Research Participant’s Pool skólans. Vonast er að um 40-60 nemendur samþykki að taka þátt.

Þátttaka - Hvað í henni felst

Það er fullkomlega undir þér komið hvort þú viljir taka þátt í rannsókninni. Ef þú ákveður að taka þátt er þér gefið þetta upplýsingaraskjal og þú beðinn(n) um að skrifa undir eyðublæð upplýsts samþykktis. Athugið að þrátt fyrir að þú ákveður að taka þátt er þér velkomið að hætta þátttöku hvenær sem er án nauðsynlegar útskýringar eða refsingar.


UPWARD SOCIAL COMPARISON ON FACEBOOK

Appendix C

Participants Information Form

Rannsókn: Samfélagsmiðlar og skynjun einstaklinga - Facebook
eins lengi og þú þarft til að ljúka henni. 


Ef þú hefur einhverjar frekari spurningar eða áhyggur sem tengjast rannsókninni getu þú haft samband við Helgu Margréti Ólafsdóttur (helgamo12@ru.is).

Ef þú hefur einhverjar áhygjur um rannsóknina og óskar eftir því að hafa samband við einhverni í trúnaði þá getur þú haft samband við: Sálfræðideild, Háskólanum í Reykjavík.
Appendix D

Informed Consent Form

Nafn rannsóknanda: __________________________________________________________

1. Ég staðfesti að ég hef leið upplýsingaskjal ofannefndrar rannsóknarar og að ég hafi fengið tækifæri til að spyrja spurninga.

2. Ég er sátt(ur) með það að ég skilji gefnar upplýsingar og að ég hafi fengið nægan tíma til að íhuga þær.

3. Ég skil að þátttaka mín er af frjálsum vilja og að ég get hætt þátttöku hvenær sem er án þess að þurfa að gefa ástæðu og án þess að rétti minum sé ógnað.

4. Ég samþykki að taka þátt í ofannefndri rannsókn.

________________________________   ____________________________________  ____________________________
Nafn þátttakanda   Dagsetning   Undirskrift

________________________________   ____________________________________  ____________________________
Rannsakandi   Dagsetning   Undirskrift
Appendix E

Summary Report for Participants

Kæri þátttakandi

Ég vil byrja að þakka þér kærlega fyrir að taka þátt í rannsókninni minni. Þú varst ein(n) af 58 einstaklingum sem tóku þátt og er ég mjög ánægð þann fjölda. Heiti rannsóknarrinnar er: Reduction in Self-Esteem and Self-Evaluation Following Upward Social Comparison on Facebook: Depression as a Moderator.

Það mikilvægasta til að taka fram er að megintilgangur rannsóknarinnar var ekki fullkomlega útskipður áður enn þú tókst þátt. Það var gert í von um að koma í veg fyrir hugsanlega svarhneigð. Markmið rannsóknarinnar var að rannsaka móguleg neikvæð áhrif félagslegs samanburðar við betur settan einstakling (upward social comparison) á sjálfþáliti (self-esteem) og sjálfþálit (self-evaluation) og að skoða hvort þau neikvæð áhrif væru meira ábernandi meðal einsaklinga með þunglyndiseinkenni. Félagslegur samanburður var gerður með því að búa til fjóra prófíla í heildina, tvo fyrir hvert kyn. Sá prófíll sem var með hátt hlutfall ummæla og aðila sem liðuð við innlegg og myndir síðunnar var kallaður félagslegur samanburður við betur settan einstakling (upward s.c.). Sá prófíll sem var með lágt hlutfall ummæla og aðila sem liðuð við innlegg og myndir síðunnar var félagslegur samanburður við verr settan einstakling (downward s.c.).


Ef þú hefur einhverjar frekari spurningar eða hefur áhuga á því að vita meira um niðurstöður rannsóknarinnar þá er þér velkommið að hafa samband.

Með bestu kveðju og ósk um gleðilegt sumar
Helga Margrét Ólafsdóttir