Facebook, Social Comparison and Happiness: Evidence from a Quasi-Natural Experiment

Online Appendix

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Appendix A: Questionnaire (translated from Hebrew)

Section A

1. Age

2. Sex: male / female

3. Family status:

   a) married

   b) single

   c) widow/er

   d) divorced

4. Education (years):

   a) *≤8*

   b) *9-11*

   c) *12*

   d) *13-14*

   e) *≥15*

5. The average income per person in Israel is NIS 9,000 gross. How does your income (gross) compare to the average?

   a) Much below the average

   b) Slightly below the average

   c) Average

   d) Slightly above the average

   e) Much above the average

Section B

In this part of the questionnaire you are asked to assess the frequency with which your friends and acquaintances engage in certain activities and encounter certain situations, on average.

By "friends" we mean all the circles of friends and acquaintances you have built up over the years. By "family" we mean immediate family (spouse/partner, children, parents and siblings).

1. How many times a month do your friends go out (to parties, pubs, restaurants, etc.)? ____

2. How many books do your friends read a month? ____

3. How many movies do your friends watch per month at the cinema?____ at home? _____

4. How many times a month do your friends go out with their spouse/partner? ____

5. What percentage of your friends subscribe to an Israeli daily newspaper (printed or online)?

6. What percentage of your friends regularly read the non-Hebrew press (newspapers, news websites, blogs, subscribe to feeds, etc.)? ____

7. How many articles a month (press / internet) do your friends read? ____

8. How many times a month do your friends spend time on family activities? ____

9. How many times a month are your friends disappointed with food they have eaten at a restaurant / had delivered or prepared themselves? ___

10. How many times a month do your friends get sick? ____

11. How many times a month do your friends get upset at work? ____

12. How many times a month do your friends quarrel with a family member? ____

13. How many times a month do your friends get moody? ____

14. How many times a year do your friends go on vacation in Israel or abroad? ____

15. On each of questions 1-14 above, we want to know how accurate you believe your answer is. Circle the numbers of the questions for which you believe your assessment is accurate plus/minus 1. How many questions have you circled? ____

Section C

Please indicate the degree to which you agree with each of the following statements on a scale of 1-6, where 1 means strongly disagree and 6 means strongly agree.

1. I often compare myself with others with respect to what I have accomplished in life

2. I always pay a lot of attention to how I do things compared with how others do things

3. I often compare how my loved ones (spouse/partner, family members, etc.) are doing with how others are doing

4. I am not the type of person who is always making comparisons with others

5. If I want to find out how well I have done something, I compare what I have done with what others have done

6. I often compare how I am doing socially (e.g., social skills, popularity) with other people

7. If I want to form an opinion about something, I try to find out what others think about it

8. I never compare my situation in life to that of other people

9. I often see others doing something fun and feel sorry I do not do it as well

10. After an enjoyable activity I feel the need to share the experience

11. When I hear about the positive experiences of acquaintances, I get ideas about similar things I can do myself

12. Sometimes I find it hard to see that other people have achieved things I have still not been able to achieve

Section D

Please indicate how much you agree with each of the following statements on a scale of 1-6, where 1 means strongly disagree and 6 means strongly agree.

1. I don't feel particularly pleased with the way I am

2. I feel that life is very rewarding

3. I am quite satisfied with everything in my life

4. I don't think I look attractive

5. I find beauty in different things

6. I can adapt myself to what I want

7. I feel fully alert

8. I do not have happy memories of the past

Section E

In this section, you are asked to estimate the frequency with which you find yourself in certain situations and engage in various activities in your daily life, on average. Please try to make your evaluations as accurate as possible.

1. How many times a month do you go out (to parties, pubs, restaurants, etc.)? _____

2. How many books do you read a month? _____

3. How many movies do you watch a month at the cinema? _____ at home?_____

4. How many times a month do you go out with your spouse/partner? _____

5. Do you subscribe to an Israeli daily newspaper (printed or online)? _____

6. Do you regularly read the non-Hebrew press (newspapers, news websites, blogs, subscribe to feeds, etc.)? _____

7. How many articles a month (press / internet) do you read? _____

8. How many times a month you spend time on family activities?

9. How many times a month are you disappointed with food you have eaten at a restaurant / had delivered or prepared by yourself? _____

10. How many times a month do you get sick? _____

11. How many times a month do you get upset at work? _____

12. How many times a month do you quarrel with a family member? _____

13. How many times a month do you get moody? _____

14. How many times a year do you go on vacation in Israel or abroad? _____

Section F

In this section, we want to know about your use of Facebook.

1. Do you have a Facebook account?

      a) Yes. I have an active account.

      b) I have an account but it is not active. (How long has the account been inactive?_____)

      c) I had a Facebook account but closed it. (How long ago?_____)

      d) No. I have never had a Facebook account.

2. What proportion of your friends use Facebook?

   If you are not sure, give your best estimate _____%

This is the end of the questionnaire for those of you who do not have a Facebook account.

3. Please indicate how much you agree with each of the following statements on a scale of 1-6, where 1 means strongly disagree and 6 means strongly agree.

      a) Facebook is part of my daily activity
      b) I am proud to tell people I'm on Facebook
      c) Facebook has become part of my daily routine
      d) I feel out of touch when I haven't logged onto Facebook for a while
      e) I feel I am part of the Facebook community
      f) I would be sorry if Facebook shut down

4. How often on average do you check your Facebook account?

    a) Every few minutes

    b) Every hour

    c) Several times a day

    d) Every day

    e) Every few days

    f) Once a week

    g) Less than once a week

5. In the past week, on average, approximately how much time a day have you spent actively using Facebook? ___ (minutes)

6. Specify the extent to which you use Facebook for each of the following activities, where 1 means that you do not use Facebook for this activity and 6 means that you use Facebook mostly for this activity.

a) Look at pictures posted by others

b) Read articles / reports

c) Watch amusing videos

d) Know what is happening to people who are close to me

e) Know about social events that are to take place

f) Keep up on what is happening in the country and on the views of the public about what is happening

g) Keep in touch with distant acquaintances

h) Keep in touch with social and professional groups

i) Share my thoughts and my views

7. To what extent do you perform the following actions on Facebook, where 1 means not at all and 6 means very frequently?

a) Post statuses

b) Upload photos and videos

c) Like

d) Comments

e) Tag places, friends, etc.

Comment: Construction of the variables Δ(pos) and Δ(neg)

Based on the answers to sections B and E, we measured the difference between the frequency of others' positive and negative experiences and one's own. Because the differences in frequencies for the various experiences (questions) use different scales, the difference for each experience was translated into a relative score, i.e. a percentile for that experience. We then averaged across the 10 positive experiences to obtain the variable Δ(pos) and averaged across the 5 negative experiences to obtain the variable Δ(neg). Thus, a high value of Δ(pos) (Δ(neg)) indicates that, relative to the sample, an individual tends to believe that others have more positive (negative) experiences than he does.

Appendix B: Complementary Analysis

As mentioned in the main text, the assignment into users and non-users was not random and therefore there is the possibility that it is associated with personal characteristics that are correlated with social comparison and happiness. Our main analysis, which was carried out on a matched sample based on propensity scores, partially deals with this issue, since the treatment and control groups are balanced in the observed variables. However, it is still possible that the after-matching assignment is associated with important unobservable variables. Furthermore, and as in other field experiments, there may be non-compliers among the participants who decided not to use Facebook even though they did not face any particularly severe usage restrictions, thus introducing self-selection bias. To address these issues, we conducted **post-study interviews** with non-users in order to assess the magnitude of self-selection in our sample. In addition, we **compared the sample to a parallel group** of university students in order to determine whether it is unique in its characteristics and its pattern of Facebook usage. This allows us to evaluate the generalizability of the results.

Post-study interviews

In order to estimate the magnitude of self-selection in our sample, we conducted post-study interviews with the organization's non-user employees, trying to understand their reasons for not using Facebook and how those reasons relate to the restrictions placed on them. We interviewed 38 employees who do not use Facebook.

When asked to explain why they do not use Facebook, 32 out of the 38 employees cited the restrictions placed on them by the organization. Of the other six, three had restrictions placed on them at the time of the study, and two were forbidden to use Facebook in the past. Although those five employees did not state the restrictions as the reason for not using Facebook, their choice of not using Facebook might have been affected by these unique circumstances (possibly without their awareness). Thus, only one of the 38 employees chose not to use Facebook despite of not being restricted in the past or at the time of the study.

The interviews suggest that our non-user group includes a small number of employees who do not use Facebook out of choice. For these employees, the choice not to use Facebook may be correlated with some personal characteristics, which in turn may be correlated with their social comparison and happiness. However, self-selection into the group of non-users based on individual differences is small in magnitude: a conservative conclusion would be that 16% (6 out of 38) of our non-users might have voluntarily selected not to use Facebook. Since the choice of 5 out of these 6 employees might have been affected by the restrictions in the past or in the present, we believe that the magnitude of self-selection is actually smaller than that.

Comparison to a different group of Facebook users outside the organization

The generalization of our findings depends on the degree to which the sample is representative. In order to determine whether the level of social comparison and happiness or the pattern of Facebook usage is unique to the sample or representative of the population, we compared the results for our matched sample to those for a sample of 175 undergraduates with a comparable socioeconomic background at a university located near the organization's facility. The student sample, which was close to gender-balanced (49% females) and aged 18-35 (average age: 22.4), completed an identical questionnaire online. Only four percent of the students were not Facebook users. Thus, we compare only Facebook users in the two samples. Although the original sample is unique in some ways (i.e. employees of a security-related organization), we found that the social comparison and happiness scores of Facebook users were similar in the two samples when controlling for demographic variables (social comparison: B=-0.007 (0.187), p>.1, n=208; happiness: B=0.192 (0.141), p>.1, n=208, see Table S1). This suggests that the original sample is not unique with respect to the variables of interest.

The pattern of Facebook usage, however, differs between the two samples even when controlling for demographic variables. Thus, Facebook usage in the student sample is more intense: they feel more connected to Facebook (question F3); they spend more time on Facebook (question F5, minutes per day); and they check their account more frequently (question F4). Accordingly, they have a higher usage intensity score relative to the original sample (B=0.647 (0.223), p<.01, n=208, Table S2). Nonetheless, Facebook usage in the original sample is not negligible: they spend an average of 48 minutes on Facebook each day (median of about 30 minutes) and 78% of the users check their account at least once a day (34% more than once). Furthermore, the students are more active according to the passive vs. active measure derived from question F6 (B=-0.936 (0.243), p<.01, n=208, Table S2).[1] On the other hand, the samples are similar in the

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[1] The *passive vs. active* measure is based on Question 6 in Section F and reflects the ratio between passive activities (e.g. learning) and active usage (e.g. connecting): (q1+q2+q3+q4+q5+q6) / (q7+q8+q9). Thus, a higher score indicates that usage is more passive.

balance between self-focused and others-focused Facebook activity, as reflected in the answers to question F7 (B=0.015 (0.036), p>.1, n=208, Table S2).[2]

Although the two groups differ with respect to age and the other demographic variables that may affect Facebook usage, it is nonetheless of interest to compare their overall patterns of Facebook usage. It appears that the original sample is somewhat more passive than the student sample (mean passive vs. active index: 3.045 (0.258) vs. 2.539 (0.076), respectively). Nevertheless, passive usage is quite common also among the students: after eliminating the most active 38% of the student sample, the average becomes 3.002 (0.097), similar to that of the original sample. Thus, the passive usage observed in the original sample is not uncommon among a large group of individuals not subject to any usage restrictions. In fact, passive social media usage is prevalent in the general population and is becoming an increasing concern, as manifested in recent studies (e.g., Verduyn et al., 2015).

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[2] The *self vs. others* measure is the ratio between self-focused and others-focused activity, based on the five answers to question 7 in Section F: (q1+q2) / (q3+q4+q5). Thus, a higher score indicates that the user is more self-focused.

Table S1: Students and employees' happiness and social comparison score

Considering only Facebook users, we compare a population of students with the employees in the organization. The following table presents the OLS estimation for two models, one in which social comparison level is the dependent variable and another in which happiness is the dependent variable. In both, the explanatory variables are the demographic variables as well as a dummy variable – whether the subject belongs to the sample of students (=1) or to the sample of employees in the organization (=0).

	Social comparison	Happiness
Age	-0.051** (0.020)	0.021 (0.015)
Gender	-0.028 (0.125)	-0.051 (0.094)
Education	-0.049 (0.089)	0.019 (0.067)
Income	-0.042 (0.067)	0.059 (0.050)
Family	-0.636** (0.253)	0.069 (0.190)
Students	-0.007 (0.187)	0.192 (0.141)
R^2	.060	.035
N	208	208

*p<.1, **p<.05, *** p0.01

Table S2: Students and employees' Facebook usage

The following table presents the estimation results of three OLS models. The dependent variables are: intensity of usage, a measure of active vs. passive usage and a measure of self-focused vs. others-focused usage. The results show that the students use Facebook more intensely than the employees. They are also more active vs. passive. However, the balance between self-focused and others-focused activity is the same for the two samples.

	Intensity	Passive vs. active	Self vs. others
Age	-0.034 (0.024)	-0.048* (0.026)	0.009* (0.004)
Gender	0.062 (0.149)	-0.153 (0.162)	0.029 (0.024)
Education	0.010 (0.106)	-0.281** (0.116)	0.023 (0.017)
Income	0.047 (0.080)	-0.012 (0.087)	-0.019 (0.013)
Family	-0.576* (0.301)	-0.142 (0.328)	0.003 (0.049)
Students	0.647*** (0.223)	-0.936*** (0.243)	0.015 (0.036)
R^2	.069	.092	.050
N	208	208	208

*p<.1, **p<.05, *** p<.01

Appendix C: Supplementary Tables and Figures

Table S3: The correlations between the study variables

Gender: 1 is male, 2 is female. Education: 3 is high-school education, 5 is more than 15 years of education and 4 is in between. Income: 3 is the average income in the country, 1 is much lower and 5 is much higher than the average income. Family status: 1 is married and 2 is single. Social comparison and happiness are both between 1 and 6. Δ(pos) is the extent (potentially between 0 and 1) to which one finds others' lives richer in positive experiences compared to one's own; Δ(neg) is the analogous extent for negative experiences.

	Age	Gender	Education	Income	Family status	% Friends Facebook	Facebook	Δ(pos)	Δ(neg)	Social comparison	Happiness
Age	1	-.397**	.537**	.777**	-.573**	-0.112	-0.05	-0.172	-0.045	-0.137	0.128
Gender		1	-.464**	-.350**	0.159	0.062	0.052	.228*	0.076	-0.044	-0.145
Education			1	.471**	-.405**	-.265*	-0.084	-0.074	-0.068	0.051	0.029
Income				1	-.593**	-0.172	-0.049	-0.128	0.085	-0.069	0.173
Family status					1	0.217	0.051	0.113	-0.161	-0.055	-0.054
% Friends Facebook						1	0.215	-0.099	-0.13	0.068	-0.059
Facebook							1	-0.021	0.028	0.185	-0.176
Δ(pos)								1	0.17	0.095	-0.151
Δ(neg)									1	-0.077	.264*
Social comparison										1	-.291**
Happiness											1

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

Perception of others' lives

We found that Facebook usage has no impact on the Δ(pos) and Δ(neg) scores (Δ(pos): B=-0.007 (0.026), p=.776, n=82, Δ(neg): B=0.009 (0.039), p=.808, n=82), using an OLS regression model with the demographic variables as covariates. We tested a number of models for both Δ(pos) and Δ(neg) and obtained Facebook coefficients that are very small in magnitude and non-significant (four models are presented in Tables S4 and S5 each). Note, however, that given our small sample, the minimal effect size that we can detect with a power of 80% is f^2=0.14, whereas the effect size of both Δ(pos) and Δ(neg) is 0.001.[3] It is also possible that the participants referred to the experiences of their close friends when evaluating the frequency of positive and negative experiences others (even though they were instructed to consider "*all the circles of friends and acquaintances you have built up over the years").* In such a case, differences between evaluation of users and non-users shrink because social media are likely to be used more to gain information on friends we are less close to.

To further examine the robustness of the null result, we conducted multivariate analysis. We calculated, for each question in Section B and its parallel in Section E, the difference between the estimated frequency with which friends experience something and the frequency with which the participant experiences it. Thus, 15 differences were obtained: Δpos_i, where i=1,…,10 (for the 10 questions on positive experiences) and Δneg_i, where i=1,...,5 (for the 5 questions on negative experiences). Multivariate analysis using the demographic variables as covariates affirmed that Facebook usage does not affect the set Δpos_i, i=1,…,10 (Pillai's Trace = 0.095, Wilks' Lambda = 0.905, Hotelling's Trace = 0.105, Roy's Largest Root = 0.105, F=0.696, p=.724) nor does it affect the set Δneg_i, i=1,...,5 (Pillai's Trace = 0.070, Wilks' Lambda = 0.930, Hotelling's Trace = 0.075, Roy's Largest Root = 0.075, F=1.07, p=.384). Similar qualitative results were obtained when allowing for an interaction of Facebook and age.

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[3] In the social sciences, f^2 effect sizes of 0.02, 0.15 and 0.35 are considered small, medium and large, respectively (Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences*. Routledge).

The finding that there is no significant bias in the perception is somewhat surprising in view of the fact that Facebook is considered to be a tool for impression management and that users tend to portray improved versions of themselves there (Zhao et al., 2008). Moreover, earlier findings suggest that users tend to believe that others have better lives than they do (Chou and Edge, 2012). Taking our results with a grain of salt, they suggest that users (at least partially) self-correct for this bias when thinking about particular experiences, perhaps due to the increasing attention given to this issue in popular media[4], and the understanding that Facebook photos and reports do not represent reality.

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[4] E.g. https://www.newyorker.com/tech/elements/how-facebook-makes-us-unhappy

Table S4: The effect of Facebook on Δ(pos)

The following table presents the OLS estimation of four models in which Δ(pos) is the dependent variable, where the explanatory variables are the demographic variables and Facebook usage. We also explore the interaction of Facebook usage and age. We found that Facebook have no significant effect on this index.

	Δ(pos) (1)	Δ(pos) (2)	Δ(pos) (3)	Δ(pos) (4)
Age	-0.002 (0.003)	0.001 (0.004)	-0.002 (0.003)	-0.001 (0.003)
Gender	0.056* (0.033)	0.060* (0.033)	0.060* (0.033)	
Education	0.011 (0.02)	0.012 (0.019)	0.014 (0.019)	
Income	0.002 (0.012)	0.002 (0.012)	0.003 (0.012)	
Family	0.022 (0.036)	0.028 (0.036)	0.017 (0.036)	
Facebook	-0.002 (0.027)	0.129 (0.109)		0.093 (0.107)
% Friends Facebook	-0.001 (0.001)	-0.001 (0.001)		
Facebook X age		-0.005 (0.004)		-0.004 (0.004)
Facebook intensity			-0.003 (0.007)	
R^2	.082	.101	.072	.042
N	82	82	82	82

*p<.1, **p<.05, *** p<.01

Table S5: The effect of Facebook on Δ(neg)

The following table presents the OLS estimation of four models in which Δ(neg) is the dependent variable, where the explanatory variables are the demographic variables and Facebook usage. We also explore the interaction of Facebook usage and age. We found that Facebook have no significant effect on this index.

	Δ(neg) (1)	Δ(neg) (2)	Δ(neg) (3)	Δ(neg) (4)
Age	-0.007 (0.005)	-0.010 (0.006)	-0.008 (0.005)	-0.003 (0.004)
Gender	-0.009 (0.048)	-0.005 (0.049)	-0.015 (0.049)	
Education	-0.026 (0.029)	-0.027 (0.029)	-0.022 (0.028)	
Income	0.022 (0.018)	0.022 (0.019)	0.023 (0.018)	
Family	-0.082 (0.053)	-0.088 (0.054)	-0.090* (0.053)	
Facebook	0.017 (0.039)	-0.115 (0.162)		-0.082 (0.162)
% Friends Facebook	-0.001 (0.001)	-0.001 (0.001)		
Facebook X age		0.005 (0.006)		0.003 (0.006)
Facebook intensity			-0.007 (0.011)	
R^2	.094	.103	.085	.007
N	82	82	82	82

*p<.1, **p<.05, *** p<.01

Table S6: The results of a mediated moderation model without moderation of Δ(pos)

The following table presents the results of an estimation of variation of the model outlined in Figure 1, eliminating the interaction term social comparison X Δ(pos). We find a significant effect of Facebook and of Facebook X age on social comparison, as well as a main effect of social comparison on happiness. The estimated effect of Facebook use on happiness level is significant for the 10th, 25th and 50th percentiles of age, and is not significant for the higher percentiles, as in the original model's estimation. For the 19-, 22- and 25-year-olds, the effects are: -0.149 (0.103), -0.111 (0.077) and -0.074 (0.054), respectively.

	Social comparison	Happiness
Facebook	2.455*** (0.812)	-0.188 (0.134)
Age	0.022 (0.021)	
Facebook X age	-0.08** (0.03)	
Δ(neg)		1.041*** (0.386)
Social comparison		-0.158** (0.074)
Δ(pos)		-0.996* (0.576)
R^2	.146	.193
N	82	82

*p<.1, **p<.05, *** p<.01

Table S7: The estimated indirect effect of Facebook on happiness

Based on the estimation on Table 2, the following table summarizes the indirect effect of Facebook on happiness given the different values of the two moderators (the values for age and Δ(pos) moderators that correspond to the 10th, 25th, 50th, 75th, and 90th percentiles). Significant effects are shaded.

Age	Δ (pos)	Effect	Boot SE	BootLLCI	BootULCI
19	0.29	0.036	0.098	-0.140	0.260
19	0.32	-0.003	0.087	-0.195	0.163
19	0.41	-0.120	0.083	-0.354	-0.002
19	0.49	-0.225	0.114	-0.504	-0.043
19	0.57	-0.329	0.158	-0.684	-0.056
22	0.29	0.027	0.073	-0.101	0.197
22	0.32	-0.002	0.065	-0.145	0.127
22	0.41	-0.090	0.062	-0.263	-0.002
22	0.49	-0.168	0.086	-0.375	-0.031
22	0.57	-0.245	0.120	-0.511	-0.042
25	0.29	0.018	0.050	-0.061	0.145
25	0.32	-0.001	0.044	-0.095	0.087
25	0.41	-0.059	0.043	-0.183	-0.002
25	0.49	-0.111	0.062	-0.267	-0.014
25	0.57	-0.162	0.089	-0.374	-0.017
30	0.29	0.003	0.024	-0.034	0.071
30	0.32	0.000	0.020	-0.050	0.029
30	0.41	-0.009	0.031	-0.093	0.040
30	0.49	-0.016	0.054	-0.138	0.082
30	0.57	-0.023	0.079	-0.203	0.116
35	0.29	-0.013	0.047	-0.181	0.043
35	0.32	0.001	0.042	-0.083	0.097
35	0.41	0.042	0.057	-0.019	0.220
35	0.49	0.079	0.089	-0.051	0.305
35	0.57	0.116	0.126	-0.080	0.423

Table S8: The results of a mediated moderation model with intensity of Facebook usage

The following table reports the estimation of the effect of Facebook usage intensity on social comparison and happiness, using a variation of the mediated moderation model described in Figure 1 (replacing Facebook in Facebook intensity). We find a significant effect of Facebook intensity on social comparison and significant interactions – Facebook intensity X age and Social comparison X Δ(pos).

	Social comparison	**Happiness**
Facebook intensity	0.733*** (0.23)	-0.053 (0.036)
Age	0.021 (0.02)	
Facebook intensity X age	-0.024*** (0.009)	
Δ(neg)		1.189*** (0.373)
Social comparison		0.442* (0.226)
Δ(pos)		3.659** (1.766)
Social comparison X Δ(pos)		-1.373*** (0.496)
R^2	.146	.277
N	82	82

*p<.1, **p<.05, *** p<.01

Table S9: The estimated indirect effect of intensity of using Facebook on happiness

The following table summarizes the indirect effect of Facebook intensity on happiness (based on the estimation reported on Table S8) given the different values of the two moderators (the values correspond to the 10th, 25th, 50th, 75th, and 90th). Significant effects are shaded.

Age	Δ (pos)	Effect	Boot SE	BootLLCI	BootULCI
19	0.29	0.012	0.029	-0.037	0.082
19	0.32	0.001	0.026	-0.050	0.056
19	0.41	-0.033	0.025	-0.098	0.004
19	0.49	-0.063	0.034	-0.145	-0.010
19	0.57	-0.094	0.046	-0.200	-0.017
22	0.29	0.009	0.021	-0.026	0.063
22	0.32	0.001	0.019	-0.036	0.042
22	0.41	-0.024	0.019	-0.073	0.003
22	0.49	-0.047	0.026	-0.111	-0.008
22	0.57	-0.069	0.035	-0.154	-0.012
25	0.29	0.006	0.014	-0.015	0.046
25	0.32	0.000	0.013	-0.023	0.030
25	0.41	-0.016	0.013	-0.053	0.001
25	0.49	-0.030	0.019	-0.078	-0.003
25	0.57	-0.044	0.026	-0.107	-0.004
30	0.29	0.000	0.007	-0.010	0.019
30	0.32	0.000	0.006	-0.012	0.012
30	0.41	-0.001	0.009	-0.024	0.013
30	0.49	-0.002	0.015	-0.037	0.025
30	0.57	-0.003	0.022	-0.055	0.035
35	0.29	-0.005	0.015	-0.059	0.014
35	0.32	0.000	0.013	-0.034	0.025
35	0.41	0.013	0.016	-0.006	0.062
35	0.49	0.026	0.025	-0.013	0.087
35	0.57	0.038	0.035	-0.021	0.117

Table S10: Bootstrap estimates of regression coefficients for the model outlined in Figure 1

The following tables report the summary statistics of regression coefficients obtained through bootstrapping (B=5000 bootstrap samples), estimating the model outlines in Figure 1. The results are similar to those presented in Table 2. In particular, we find a significant effect of Facebook on social comparison and significant interactions – Facebook X age and Social comparison X Δ(pos).

Table S10 (A)

Dependent variable: Social comparison

	Coefficient	BootMean	BootSE	BootLLCI	BootULCI
Facebook	2.455	2.513	0.952	.749	4.478
Age	0.022	0.023	0.027	-0.023	0.081
Facebook X age	-0.08	-0.081	0.034	-0.153	-0.018

Table S10 (B)

Dependent variable: Happiness

	Coefficient	BootMean	BootSE	BootLLCI	BootULCI
Facebook	-0.139	-0.149	0.134	-0.416	0.114
Δ(neg)	1.214	1.186	0.448	0.319	2.074
Social comparison	0.44	0.445	0.213	0.015	0.860
Δ(pos)	3.69	3.699	1.790	-0.125	7.246
Social comparison X Δ(pos)	-1.383	-1.380	0.484	-2.282	-0.332

Table S11: Facebook usage of younger vs. older employees

Considering only Facebook users in the organization, the following table compares the type of usage and intensity of usage of the group of young users (24 and younger) with that of older users (25 and older). No significant differences were found. The "continuous" variable age, however, was found to be correlated with the self vs. others index (Pearson r=.321, p=.041), with the frequency of checking the account (Pearson r=.368, p=.018), with the % of friends who use Facebook (Pearson r=-.313, p=.046) and, in the 10% significance level, with the passive vs. active index (Pearson r=-.282, p=.074). Namely, younger employees have more friends who use Facebook, they tend to check their account more often and their usage is more passive and more focused on others than on themselves.

		N	Mean	Std.dev	t	p
Association	25 & older	21	3.32	1.32	0.61	.54
	24 & younger	20	3.06	1.39		
Frequency (1 is the largest)	25 & older	21	4.19	1.03	1.76	.87
	24 & younger	20	3.65	0.93		
Time (minutes)	25 & older	21	48.10	51.82	0.02	.99
	24 & younger	20	47.85	49.65		
Facebook intensity	25 & older	21	3.30	1.18	0.29	.77
	24 & younger	20	3.19	1.19		
% Friends Facebook	25 & older	21	90.57	7.78	-1.41	.17
	24 & younger	20	93.65	6.17		
Passive vs. active	25 & older	21	2.80	1.32	-0.96	.34
	24 & younger	20	3.30	1.94		
Self vs. others	25 & older	21	0.51	0.22	1.26	.22
	24 & younger	20	0.44	0.13		

Table S12: The results of a mediated moderation model with binary moderators

The following table reports the estimation of the effect of Facebook usage on social comparison and happiness, using a variation of the mediated moderation model described in Figure 1 by replacing the continuous variables Age and $\Delta(pos)$ and $\Delta(neg)$ in the binary variables Age < 25, $\Delta(pos)_H$ and $\Delta(neg)_H$, respectively. We find significant interactions – Facebook X (Age < 25) and Social comparison X $\Delta(pos)_H$. Thus, the indirect effect of Facebook on Happiness is significant only for the younger employees with high level of $\Delta(pos)$, as reported in Figure 2.

	Social comparison	**Happiness**
Facebook	-0.095 (0.248)	-0.165 (0.13)
Age < 25	-0.289 (0.272)	
Facebook X (Age < 25)	0.94** (0.387)	
$\Delta(neg)_H$		0.398*** (0.129)
Social comparison		0.046 (0.09)
$\Delta(pos)_H$		1.251*** (0.457)
Social comparison X $\Delta(pos)_H$		-0.408*** (0.13)
R^2	.127	.255
N	82	82

*p<.1, **p<.05, *** p<.01

Figure S1: Cumulative distribution of social comparison level among younger users and non-users

18–25 years old
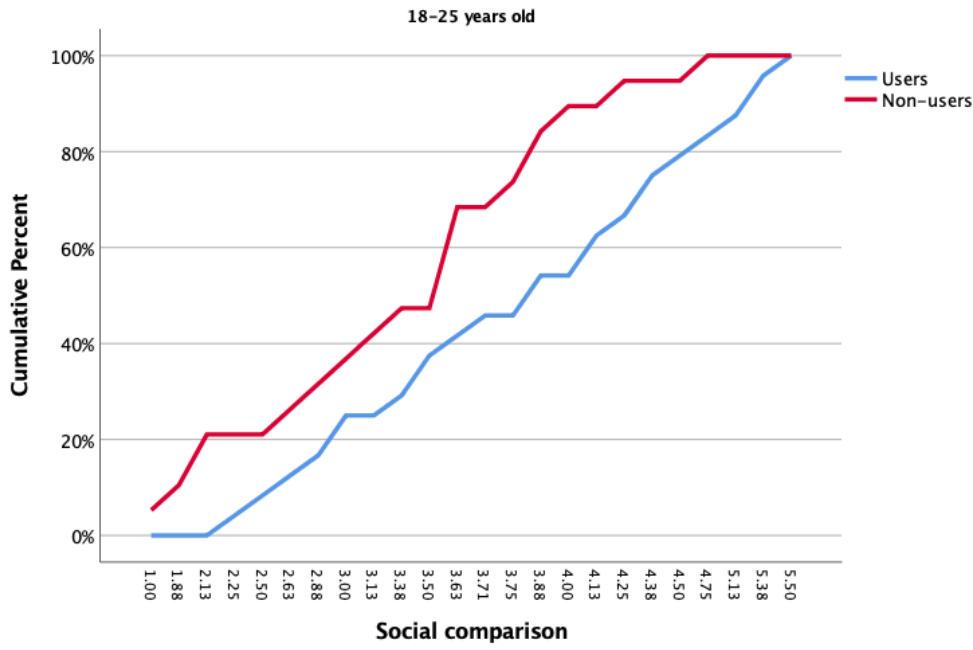
Figure S2: Cumulative distribution of social comparison level among older users and non-users
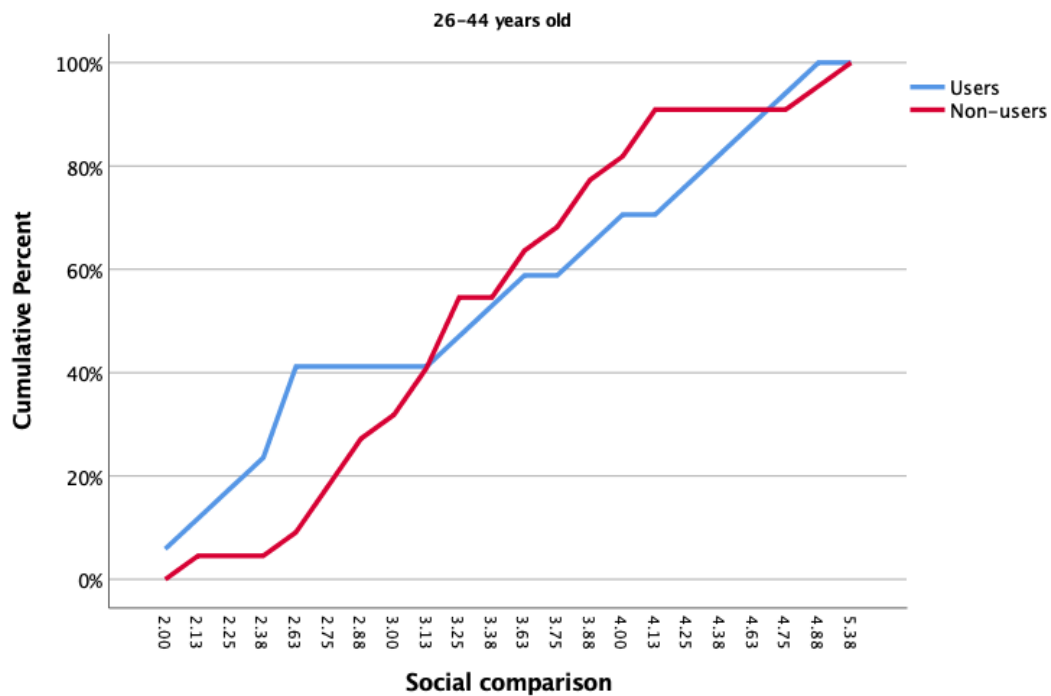

26–44 years old

Figure S3: Cumulative distribution of social comparison level among all users and non-users

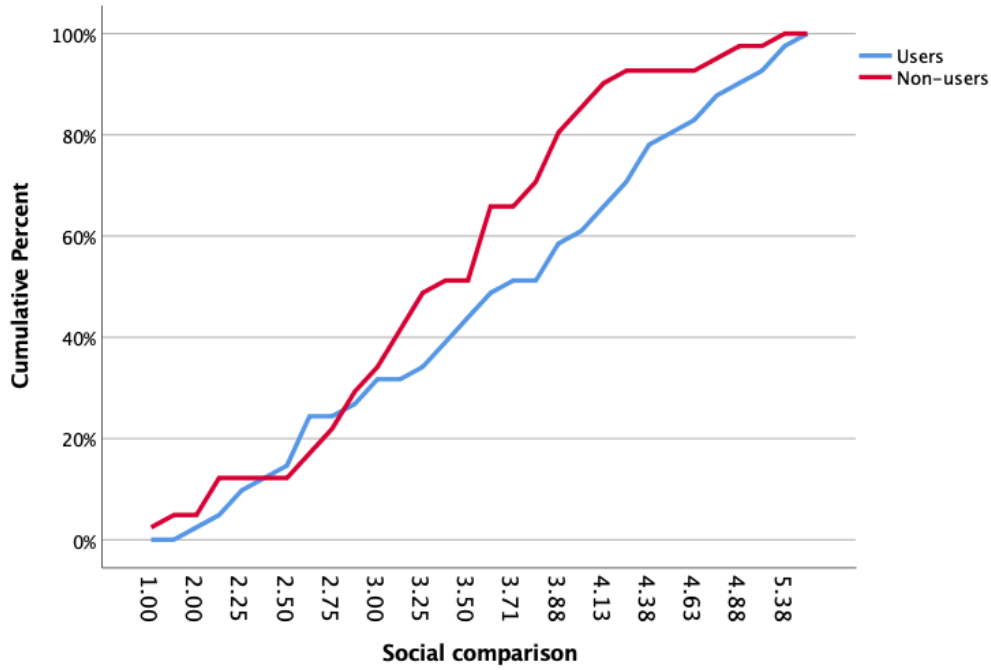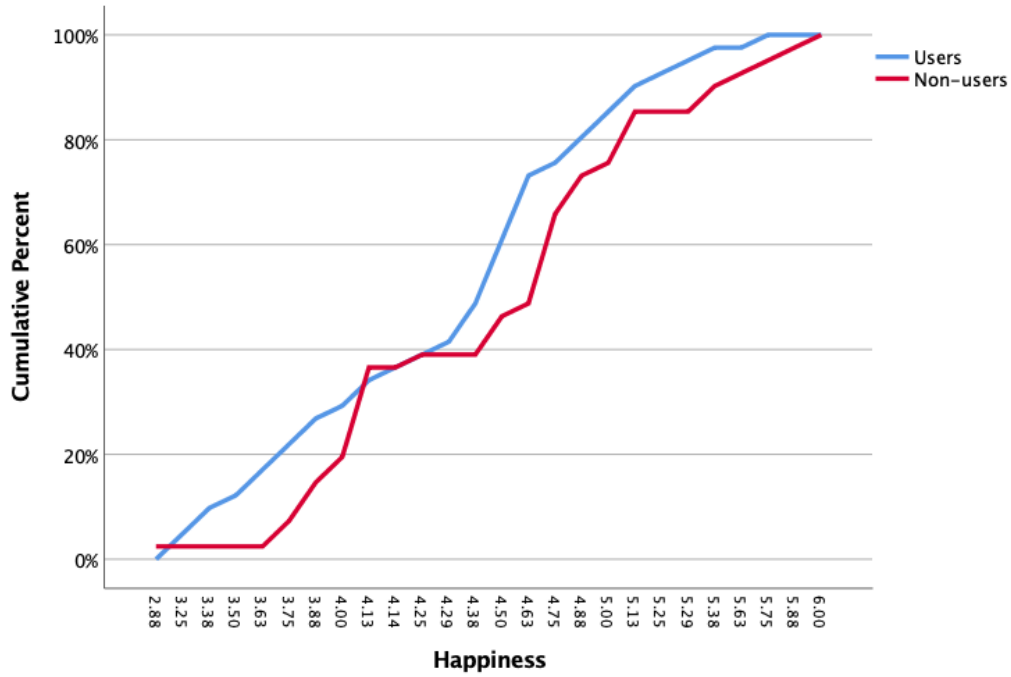**Figure S4: Cumulative distribution of happiness level among all users and non-users**

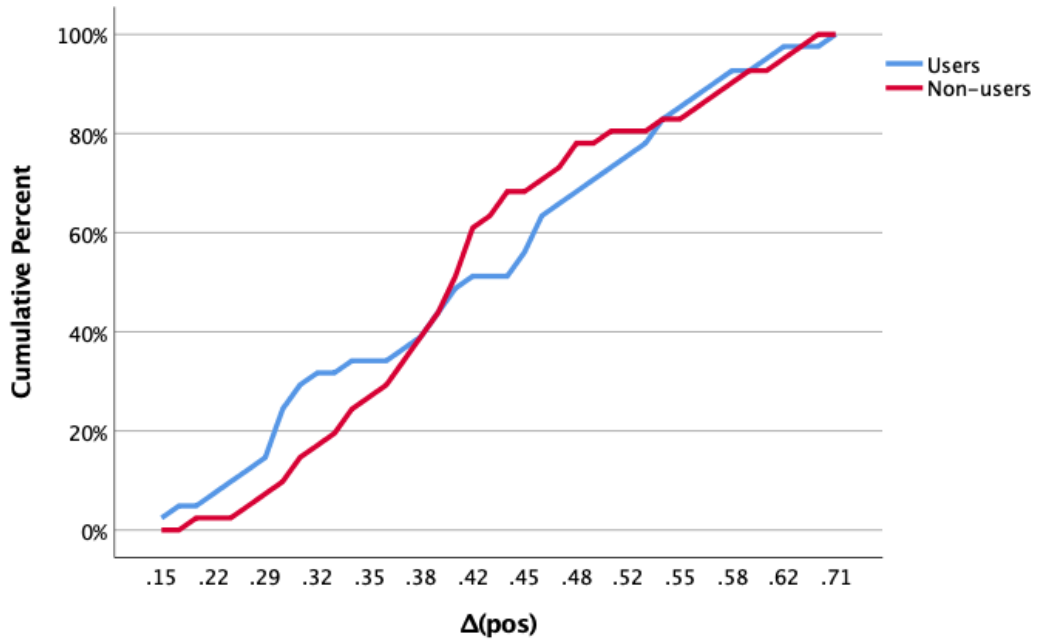**Figure S5: Cumulative distribution of Δ(pos) among all users and non-users**

Figure S6: Cumulative distribution of Δ(neg) among all users and non-users
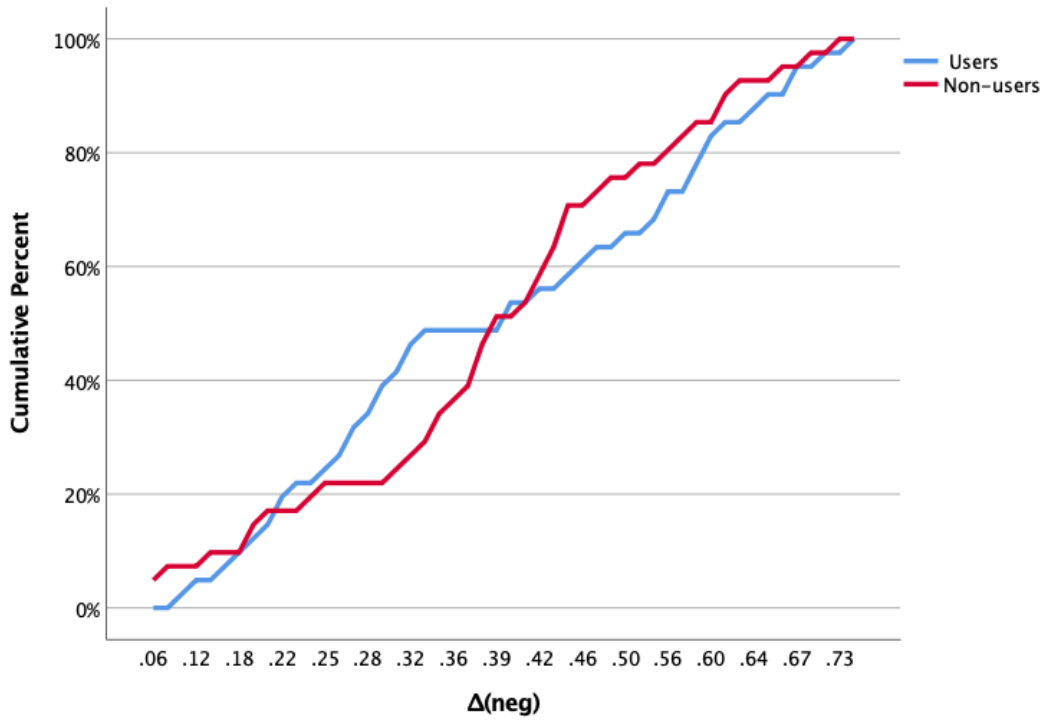
Figure S7: The association between social comparison and happiness levels among all employees