

The Impact of Facebook on Social Comparison and Happiness: Evidence from a Natural Experiment

* Online Appendix *

Questionnaire (translated from Hebrew)

Section A

1. Age
2. Sex: (1) male (2) 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 we ask you 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 consider 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, we want you 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.

Table A1: The correlations between the study variables

	Age	Gender	Education	Income	Family status	% Friends_FB	Facebook	Δ(pos)	Δ(neg)	Social Comparison	Happiness
Age	1	-.349**	.527**	.691**	-.670**	-.201*	-.380**	-0.145	-0.063	-0.119	0.033
Gender		1	-.514**	-.352**	.170*	-0.05	0.146	.190*	0.083	-0.08	-0.108
Education			1	.513**	-.463**	-.196*	-.279**	-0.158	-0.119	0.031	0.01
Income				1	-.577**	-.177*	-.233**	-0.068	0.053	0.001	0.127
Family status					1	.234**	.335**	0.108	-0.06	-0.012	-0.041
% Friends_FB						1	.251**	-0.036	-0.016	-0.004	0.084
Facebook							1	-0.009	0.091	0.162	-0.095
Δ(pos)								1	.180*	-0.004	-0.146
Δ(neg)									1	-0.002	.263**
Social Comparison										1	-.215*
Happiness											1

*p<0.05, **p<.01

Table A2: Do Facebook users and non-users differ in their experiences?

We examined the 15 answers of Facebook users and non-users to Section E in the questionnaire related to their own activities and experiences (pos_i , for $i=1, \dots, 10$ and neg_i , for $i=1, \dots, 5$). Multivariate analysis, using the demographic variables as covariates, indicated that Facebook has no effect on the frequency of these activities and experiences (Pillai's Trace = 0.141, Wilks' Lambda = 0.859, Hotelling's Trace = 0.164, Roy's Largest Root = 0.164, $F=0.961$, $p=0.502$). We obtained similar qualitative results when allowing for an interaction of Facebook and age. Exploring each type of experience separately, an OLS estimation indicates that Facebook is not related to any of them as can be seen in the following Tables.

Table A2a (Pos₁-Pos₅)

	Pos ₁	Pos ₂	Pos ₃	Pos ₄	Pos ₅
<i>Age</i>	0.132 (0.113)	-0.015 (0.022)	-0.014 (0.021)	-0.034 (0.110)	0.005 (0.115)
<i>Gender</i>	0.814 (1.160)	-0.458** (0.228)	0.300 (0.217)	-0.109 (1.139)	0.531 (1.203)
<i>Education</i>	1.313* (0.699)	-0.142 (0.137)	0.333** (0.131)	0.439 (0.686)	1.453** (0.724)
<i>Income</i>	-0.325 (0.453)	-0.043 (0.085)	-0.037 (0.081)	0.006 (0.425)	0.83 (0.446)
<i>Family</i>	0.284 (1.437)	0.035 (0.282)	-0.089 (0.270)	-0.641 (1.413)	-0.400 (1.472)
<i>Facebook</i>	-1.156 (1.121)	-0.116 (0.221)	-0.221 (0.213)	-0.07 (1.104)	1.571 (1.172)
R^2	0.085	0.052	0.069	0.009	0.058
N	134	134	134	135	131

* $p<0.1$, ** $p<0.05$, *** $p<0.01$

Table A2b (Pos₆-Pos₁₀)

	Pos ₆	Pos ₇	Pos ₈	Pos ₉	Pos ₁₀
<i>Age</i>	-0.13 (0.009)	-0.002 (0.010)	0.309 (2.771)	0.001 (0.079)	-0.046 (0.031)
<i>Gender</i>	-0.008 (0.089)	0.079 (0.106)	11.846 (28.931)	-0.367 (0.819)	0.412 (0.324)
<i>Education</i>	-0.001 (0.055)	-0.010 (0.065)	-21.080 (17.323)	0.193 (0.493)	0.523 (0.195)
<i>Income</i>	0.025 (0.034)	0.013 (0.040)	-6.271 (10.670)	-0.011 (0.306)	0.076 (0.121)
<i>Family</i>	-0.051 (0.109)	0.136 (0.130)	-20.376 (35.708)	-1.035 (1.016)	0.065 (0.403)
<i>Facebook</i>	0.055 (0.087)	-0.072 (0.103)	-34.698 (27.784)	1.195 (0.794)	0.169 (0.315)
<i>R²</i>	0.033	0.026	0.038	0.032	0.066
<i>N</i>	123	125	133	135	135

*p<0.1, **p<.05, *** p<0.01

Table A2c (Neg₁-Neg₅)

	Neg ₁	Neg ₂	Neg ₃	Neg ₄	Neg ₅
<i>Age</i>	-0.010 (0.041)	-0.001 (0.053)	-0.007 (0.122)	0.008 (0.067)	-0.005 (0.061)
<i>Gender</i>	-0.490 (0.427)	0.165 (0.551)	0.948 (1.254)	-0.103 (0.688)	0.777 (0.629)
<i>Education</i>	-0.286 (0.256)	-0.154 (0.334)	0.831 (0.757)	0.116 (0.414)	0.542 (0.378)
<i>Income</i>	-0.023 (0.161)	-0.058 (0.207)	0.157 (0.471)	-0.244 (0.258)	-0.058 (0.236)
<i>Family</i>	-0.527 (0.541)	-0.178 (0.684)	0.32 (1.560)	-0.655 (0.856)	0.418 (0.782)
<i>Facebook</i>	0.189 (0.412)	0.310 (0.535)	1.682 (1.220)	0.536 (0.669)	0.397 (0.611)
<i>R²</i>	0.021	0.014	0.026	0.013	0.026
<i>N</i>	130	132	132	133	133

*p<0.1, **p<.05, *** p<0.01

Table A3: The effect of Facebook on $\Delta(\text{pos})$

The following table presents the OLS estimation of three models in which $\Delta(\text{pos})$ 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.

	$\Delta(\text{pos})$ (1)	$\Delta(\text{pos})$ (2)	$\Delta(\text{pos})$ (3)
<i>Age</i>	-0.002 (0.003)	-0.002 (0.003)	-0.002 (0.003)
<i>Gender</i>	0.038 (0.028)	0.036 (0.029)	0.038 (0.028)
<i>Education</i>	-0.009 (0.016)	-0.009 (0.017)	-0.004 (0.017)
<i>Income</i>	0.010 (0.010)	0.010 (0.010)	0.013 (0.010)
<i>Family</i>	0.018 (0.033)	0.018 (0.034)	0.018 (0.033)
<i>Facebook</i>	-0.021 (0.026)	-0.020 (0.027)	0.096 (0.108)
<i>% Friends Facebook</i>		0.000 (0.001)	
<i>Facebook X Age</i>			- 0.005 (0.004)
<i>R²</i>	0.051	0.050	0.060
<i>N</i>	133	131	132

*p<0.1, **p<.05, *** p<0.01

Table A4: The effect of Facebook on $\Delta(\text{neg})$

The following table presents the OLS estimation of three models in which $\Delta(\text{neg})$ 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.

	$\Delta(\text{neg})$ (1)	$\Delta(\text{neg})$ (2)	$\Delta(\text{neg})$ (3)
<i>Age</i>	-0.006 (0.005)	-0.006 (0.005)	-0.007 (0.005)
<i>Gender</i>	0.004 (0.038)	0.001 (0.039)	0.005 (0.038)
<i>Education</i>	-0.035 (0.023)	-0.037 (0.024)	-0.039 (0.024)
<i>Income</i>	0.015 (0.014)	0.014 (0.015)	0.013 (0.015)
<i>Family</i>	-0.105* (0.055)	-0.104* (0.056)	-0.102* (0.055)
<i>Facebook</i>	0.019 (0.036)	0.021 (0.037)	-0.079 (0.153)
<i>% Friends Facebook</i>		0.000 (0.001)	
<i>Facebook X Age</i>			0.004 (0.006)
<i>R²</i>	0.067	0.068	0.070
<i>N</i>	130	129	130

*p<0.1, **p<.05, *** p<0.01

Table A5: The estimated effect of Facebook on social comparison

Based on the estimation of Model 2, which is reported in Table 2, the following table presents the conditional direct effect of Facebook on social comparison at 5 values of the moderator age that correspond to the 10th, 25th, 50th, 75th, and 90th percentiles.

Age	Effect	se	t	p
19	0.7611	0.2361	3.2237	0.0016
20	0.6871	0.218	3.1514	0.002
23	0.4651	0.1762	2.6392	0.0093
29	0.0211	0.1862	0.1135	0.9098
35	-0.4229	0.2951	-1.4328	0.1543

Table A6: The estimated indirect effect of Facebook on happiness

Based on the estimation that appears on Table 3, the following table summarizes the indirect effect of Facebook on happiness given the different values of the two moderators (the values for age and $\Delta(\text{pos})$ moderators that correspond to the 10th, 25th, 50th, 75th, and 90th percentiles). Significant effects are shaded in gray.

Age	$\Delta(\text{pos})$	Effect	Boot SE	BootLLCI	BootULCI
19	0.26	0.016	0.067	-0.087	0.209
19	0.32	-0.032	0.053	-0.161	0.064
19	0.41	-0.104	0.056	-0.256	-0.019
19	0.52	-0.191	0.090	-0.398	-0.045
19	0.6	-0.255	0.122	-0.544	-0.056
20	0.26	0.015	0.060	-0.080	0.188
20	0.32	-0.028	0.048	-0.146	0.057
20	0.41	-0.093	0.051	-0.231	-0.016
20	0.52	-0.172	0.083	-0.362	-0.039
20	0.6	-0.229	0.112	-0.487	-0.045
23	0.26	0.010	0.041	-0.051	0.135
23	0.32	-0.019	0.032	-0.105	0.036
23	0.41	-0.061	0.037	-0.159	-0.007
23	0.52	-0.112	0.063	-0.271	-0.017
23	0.6	-0.150	0.085	-0.357	-0.020
28	0.26	0.001	0.016	-0.023	0.042
28	0.32	-0.002	0.014	-0.050	0.015
28	0.41	-0.007	0.026	-0.072	0.040
28	0.52	-0.013	0.047	-0.115	0.076
28	0.6	-0.018	0.064	-0.155	0.100
35	0.26	-0.011	0.048	-0.162	0.055
35	0.32	0.021	0.040	-0.032	0.142
35	0.41	0.068	0.050	-0.006	0.193
35	0.52	0.125	0.081	-0.014	0.310
35	0.6	0.167	0.109	-0.023	0.410

Table A7: Facebook usage – The effect of age

The following table presents the effect of age on the type of usage, considering only at the sub-sample of users among the employees. In an OLS estimation, there was no effect of age on the association to Facebook, the time spent on Facebook, the account checking frequency or the overall intensity (which combines the last three aspects). Moreover, there is no significant effect of age on the measure of passive vs. active usage. The only significant effect of age is on the measure of self vs. others: young users' activities on Facebook appear to be more focused on others (liking, tagging and commenting more than posting photos and updating status). Similar results were obtained when comparing the group of 24 years old or less with the older group of participants as described in Table A8.

	Intensity	Passive vs. active	Self vs. others
<i>Age</i>	0.032 (0.042)	-0.081 (0.060)	0.017** (0.007)
<i>Gender</i>	0.462 (0.278)	0.172 (0.390)	0.017 (0.048)
<i>Education</i>	-0.076 (0.170)	-0.143 (0.239)	0.014 (0.029)
<i>Income</i>	-0.006 (0.103)	0.088 (0.148)	-0.031* (0.018)
<i>Family</i>	-0.211 (0.332)	-0.227 (0.471)	0.011 (0.057)
<i>R</i> ²	0.062	0.065	0.094
<i>N</i>	87	87	87

*p<0.1, **p<.05, *** p<0.01

Table A8: Facebook usage - Young vs. old 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).

		N	Mean	SD	t	p
Self vs. others	25 & older	31	0.528	0.243	2.001	0.048
	24 & younger	62	0.448	0.14		
Association	25 & older	32	19.250	8.144	1.001	0.320
	24 & younger	62	17.613	7.175		
Frequency	25 & older	32	3.97	0.933	-1.041	0.301
	24 & younger	62	4.18	0.915		
Facebook intensity	25 & older	30	3.298	1.196	0.77	0.443
	24 & younger	62	3.110	1.045		
Passive vs. active	25 & older	32	2.804	1.286	-1.169	0.245
	24 & younger	60	3.168	1.666		

Table A9: The results of our mediated moderation model, *after* matching

After performing the matching procedure described in Section 5.1, we estimated again our mediated moderation model outlined in Figure 1. We found a significant effect of Facebook on social comparison and significant interactions – Facebook X age and Social comparison X $\Delta(\text{pos})$ as in the original estimation (Table 5). Based on the estimation, the following table summarizes the indirect effect of Facebook on happiness given the different values of the two moderators (the values for age and $\Delta(\text{pos})$ moderators that correspond to the 10th, 25th, 50th, 75th, and 90th percentiles).

Age	$\Delta(\text{pos})$	Effect	Boot SE	z-value	P(> z)
19	0.26	0.060	0.098	0.607	0.544
19	0.32	-0.033	0.075	-0.435	0.664
19	0.41	-0.171	0.080	-2.124	0.034
19	0.52	-0.340	0.136	-2.495	0.013
19	0.6	-0.463	0.187	-2.474	0.013
20	0.26	0.054	0.089	0.607	0.544
20	0.32	-0.030	0.068	-0.435	0.664
20	0.41	-0.155	0.073	-2.126	0.034
20	0.52	-0.309	0.123	-2.500	0.012
20	0.6	-0.420	0.169	-2.480	0.013
23	0.26	0.038	0.062	0.607	0.544
23	0.32	-0.021	0.047	-0.433	0.665
23	0.41	-0.108	0.052	-2.072	0.038
23	0.52	-0.214	0.088	-2.426	0.015
23	0.6	-0.292	0.121	-2.411	0.016
28	0.26	0.010	0.019	0.521	0.603
28	0.32	-0.005	0.014	-0.391	0.696
28	0.41	-0.029	0.033	-0.867	0.386
28	0.52	-0.057	0.064	-0.893	0.372
28	0.6	-0.077	0.087	-0.894	0.371
35	0.26	-0.029	0.052	-0.553	0.580
35	0.32	0.016	0.037	0.420	0.674
35	0.41	0.082	0.068	1.207	0.227
35	0.52	0.163	0.130	1.253	0.210
35	0.6	0.222	0.178	1.248	0.212

Table A10: The estimated effect of Facebook on social comparison, *after* matching

Based on the estimation that appears above (after matching), the following table presents the conditional direct effect of Facebook on social comparison at five values of the moderator age that correspond to the 10th, 25th, 50th, 75th, and 90th percentiles.

Age	Estimate	Std.Err	z-value	P(> z)
19	1.095	0.444	2.464	0.014
20	0.993	0.401	2.476	0.013
23	0.689	0.283	2.434	0.015
29	0.183	0.202	0.908	0.364
35	-0.526	0.430	-1.224	0.221

Table A11: Estimation of the effect of Facebook on balanced Treatment and Control groups

We conducted weighted OLS analysis, regressing $\Delta(\text{pos})$ and $\Delta(\text{neg})$ on Facebook usage and demographic covariates. The specifications of the propensity score matching are shown on Table 4. The results that there is no effect of Facebook on $\Delta(\text{pos})$ and $\Delta(\text{neg})$ are aligned with our analysis before matching.

	$\Delta(\text{pos})$	$\Delta(\text{neg})$
<i>Facebook</i>	-0.027 (0.028)	0.032 (0.04)
<i>Age</i>	-0.004 (0.004)	-0.002 (0.005)
<i>Gender</i>	0.06** (0.03)	0.041 (0.042)
<i>Income</i>	0.014 (0.011)	0.021 (0.016)
<i>Education</i>	-0.009 (0.017)	-0.027 (0.024)
<i>Family</i>	0.006 (0.035)	-0.028 (0.05)
<i>R²</i>	0.089	0.051
<i>N</i>	125	125

*p<0.1, **p<.05, *** p<0.01

Table A12: Balancing of Treatment and Control groups with Mahalanobis distance function

For robustness, we conducted additional propensity score matching analysis, using nearest neighbor method with Distance = “mahalanobis” (with replacement). The table shows that after the matching the standard deviation of the mean standard between the users and non-users is small.

	Means FB Users	Before Matching			After Matching		
		Means	SD	SD Mean	Means	SD	SD Mean
		FB Non-Users	FB Non-Users	Diff.	FB Non-Users	FB Non-Users	Diff.
Age	23.842	29.65	8.969	-1.109	24.253	5.384	-0.078
Gender	1.453	1.306	0.466	0.293	1.432	0.503	0.042
Income	2.263	3.082	1.656	-0.51	2.274	1.721	-0.007
Education	4.021	4.571	0.791	-0.576	4.147	0.977	-0.132
Family	1.874	1.531	0.504	0.8192	1.853	0.36	0.05

Table A13: Estimation of the effect of Facebook on balanced Treatment and Control groups

We conducted weighted OLS analysis, regressing happiness, social comparison, $\Delta(\text{pos})$ and $\Delta(\text{neg})$ on Facebook usage and demographic covariates. The specifications of the propensity score matching are shown on Table A12. The results are, again, aligned with our main analysis model showing a significant effect of Facebook on Happiness and Social Comparison, but no effect on $\Delta(\text{pos})$ and $\Delta(\text{neg})$.

	Happiness	Social Comparison	$\Delta(\text{pos})$	$\Delta(\text{neg})$
<i>Facebook</i>	-0.266** (0.132)	0.455*** (0.169)	0.015 (0.026)	0.039 (0.037)
<i>Age</i>	-0.009 (0.018)	-0.068*** (0.023)	-0.005 (0.004)	-0.005 (0.005)
<i>Gender</i>	-0.085 (0.145)	-0.371** (0.186)	0.043 (0.029)	0.016 (0.041)
<i>Income</i>	0.047 (0.053)	0.096 (0.068)	0.018* (0.011)	0.020 (0.015)
<i>Education</i>	-0.035 (0.084)	0.099 (0.108)	-0.008 (0.017)	-0.025 (0.024)
<i>Family</i>	-0.059 (0.171)	-0.319 (0.219)	0.009 (0.034)	-0.042 (0.048)
<i>R²</i>	0.043	0.153	0.067	0.048
<i>N</i>	128	128	128	128

*p<0.1, **p<.05, *** p<0.01

Table A14: Students & 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	-0.052** (0.021)	0.014 (0.016)
Gender	0.098 (0.111)	-0.014 (0.084)
Education	-0.022 (0.077)	-0.007 (0.058)
Income	0.005 (0.056)	0.055 (0.042)
Family	-0.579*** (0.210)	0.026 (0.158)
Students	0.203 (0.123)	0.014 (0.093)
R ²	0.055	0.022
N	252	253

*p<0.1, **p<.05, *** p<0.01

Table A15: Facebook usage – Employees and students

The following table presents a number of measures of intensity and type of Facebook usage, for the two sub-samples of users: employees and students who are under 29 (such that the average age of the two sub-samples is similar: 21.975 for the employees and 22.335 for the students). All measures are based on the answers to Section F.

It appears that the students use Facebook more intensely than the employees in the following manners: They have stronger association with Facebook (question 3), they spend more time on Facebook (question 5, minutes per day), they check their account more frequently (question 4) and their overall intensity of usage (which combine the last three aspects) is higher.

The students are also more active according to the measure of *passive vs. active*: Question 6 includes nine questions, some reflect active usage (e.g. connecting) and some reflect passive activities (e.g. learning). The measure of passive vs. active is: $(q1+q2+q3+q4+q5+q6)/(q7+q8+q9)$, namely higher score indicates that the user is more passive. However, the balance between self-focused and others-focused activity (or initiate vs. reactive) is the same for the two samples as indicated by the measure of *self vs. others*. This measure was created from the five answers to question 7 in Section F: $(q1+q2)/(q3+q4+q5)$.

		N	Mean	SD
<i>Association</i>	Employees	79	17.962	7.535
	Students	165	21.442	6.885
<i>Time</i>	Employees	78	44.64	76.297
	Students	165	101.64	141.577
<i>Frequency</i>	Employees	79	4.2	0.883
	Students	165	5.08	0.933
<i>Facebook intensity</i>	Employees	78	3.162	1.101
	Students	165	3.803	0.993
<i>Passive vs. active</i>	Employees	78	3.117	1.592
	Students	165	2.55	0.979
<i>Self vs. others</i>	Employees	78	0.467	0.169
	Students	165	0.462	0.164

Table A16: Differences in Facebook usage – Employees and students – Regression analysis

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	Active vs. passive	Self vs. others
<i>Age</i>	0.013 (0.032)	0.010** (0.004)	0.08 (0.005)
<i>Gender</i>	-0.031 (0.139)	0.013 (0.018)	0.036 (0.022)
<i>Education</i>	0.045 (0.095)	0.014 (0.013)	0.025* (0.015)
<i>Income</i>	0.013 (0.071)	0.008 (0.009)	-0.020* (0.011)
<i>Family</i>	-0.198 (0.293)	0.021 (0.039)	-0.005 (0.047)
<i>Students</i>	0.645*** (0.154)	0.048** (0.020)	-0.007 (0.025)
<i>R</i> ²	0.079	0.066	0.066
<i>N</i>	237	237	237

*p<0.1, **p<.05, *** p<0.01

Table A17: The moderating effect of $\Delta(\text{neg})$

Table A17 presents the estimation of a variation on the main model described in the paper, where $\Delta(\text{neg})$ replaces $\Delta(\text{pos})$ as a moderator of the effect of social comparison on happiness. We found that $\Delta(\text{neg})$ plays the same role as $\Delta(\text{pos})$ and the indirect effect of Facebook on happiness is significant only for the 50th and lower age groups. The indirect effect is somewhat weaker when $\Delta(\text{neg})$ moderates the effect of social comparison on happiness, compared to $\Delta(\text{pos})$. The estimated effects appear on Table A18.

	Social comparison	Happiness
<i>Facebook</i>	2.120*** (0.706)	-0.076 (0.118)
<i>Age</i>	-0.043* (0.022)	
<i>Facebook X Age</i>	-0.074*** (0.025)	
<i>Gender</i>	-0.189 (0.175)	-0.227* (0.126)
<i>Education</i>	0.166 (0.110)	-0.057 (0.074)
<i>Income</i>	0.091 (0.067)	0.058 (0.041)
<i>Family status</i>	-0.505** (0.251)	0.163 (0.158)
<i>Social comparison</i>		-0.043 (0.160)
<i>$\Delta(\text{neg})$</i>		2.059 (1.317)
<i>Social comparison X $\Delta(\text{neg})$</i>		-0.322 (0.342)
<i>R²</i>	0.138	0.177
<i>N</i>	130	130

*p<0.1, **p<.05, *** p<0.01

Table A18: Estimation of the effects for values of the moderators $\Delta(\text{neg})$ and Age

Based on the estimation in Table A17, the following are the conditional effect of Facebook on Happiness, at five values of age and at five values of the moderator $\Delta(\text{neg})$ that correspond to the 10th, 25th, 50th, 75th and 90th percentiles. The symbol * indicates that the effect is significant at the 5% level.

Age	$\Delta(\text{neg})$	Effect	Boot SE	BootLLCI	BootULCI
19	0.18	-0.072	0.077	-0.254	0.054
19	0.28	-0.095*	0.063	-0.263	-0.005
19	0.41	-0.124*	0.063	-0.277	-0.026
19	0.52	-0.150*	0.080	-0.328	-0.023
19	0.64	-0.177*	0.108	-0.410	-0.012
20	0.18	-0.064	0.070	-0.237	0.047
20	0.28	-0.085*	0.057	-0.238	-0.003
20	0.41	-0.111*	0.058	-0.252	-0.022
20	0.52	-0.134*	0.073	-0.294	-0.019
20	0.64	-0.159*	0.098	-0.375	-0.010
23	0.18	-0.042	0.048	-0.180	0.029
23	0.28	-0.055	0.041	-0.167	0.000
23	0.41	-0.072*	0.042	-0.179	-0.008
23	0.52	-0.087*	0.053	-0.213	-0.005
23	0.64	-0.103*	0.070	-0.275	-0.002
28	0.18	-0.004	0.026	-0.098	0.028
28	0.28	-0.006	0.026	-0.076	0.038
28	0.41	-0.007	0.030	-0.069	0.050
28	0.52	-0.009	0.035	-0.086	0.058
28	0.64	-0.010	0.042	-0.106	0.066
35	0.18	0.048	0.061	-0.025	0.228
35	0.28	0.064	0.054	-0.007	0.228
35	0.41	0.084	0.057	0.000	0.242
35	0.52	0.101	0.069	-0.006	0.273
35	0.64	0.119	0.087	-0.009	0.339

Table A19: Examining the role of $\Delta(\text{neg})$ and $\Delta(\text{pos})$ as moderators

The following table presents the estimation of a richer model, where both $\Delta(\text{neg})$ and $\Delta(\text{pos})$ moderate the effect of social comparison on happiness.

	Social Comparison	Happiness
<i>Age</i>	-0.044* (0.022)	
<i>Gender</i>	-0.167 (0.178)	-0.153 (0.124)
<i>Education</i>	0.178 (0.111)	-0.048 (0.072)
<i>Income</i>	0.090 (0.067)	0.068 (0.040)
<i>Family</i>	-0.505 (0.251)	0.171 (0.153)
<i>Facebook</i>	2.099*** (0.708)	-0.079 (0.114)
<i>Facebook X Age</i>	-0.073*** (0.027)	
<i>Comparison</i>		0.3484 (0.219)
$\Delta(\text{neg})$		1.353 (1.299)
<i>Comparison X $\Delta(\text{neg})$</i>		-0.079 (0.344)
$\Delta(\text{pos})$		2.808* (0.147)
<i>Comparison X $\Delta(\text{pos})$</i>		-1.133 (0.427)
R^2	0.136	0.255
N	129	129

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table A20: Estimation of the effects for values of the moderators $\Delta(\text{neg})$, $\Delta(\text{pos})$ and Age

The following table presents the estimated effects based on the model in Table A19. The symbol * indicates that the effect is significant at the 5% level.

Age	$\Delta(\text{neg})$	$\Delta(\text{pos})$	Effect	Boot SE	BootLLCI	BootULCI
19	0.17	0.26	0.028	0.088	-0.099	0.259
19	0.17	0.32	-0.020	0.079	-0.165	0.145
19	0.17	0.41	-0.091	0.082	-0.325	0.028
19	0.17	0.52	-0.178*	0.109	-0.524	-0.031
19	0.17	0.6	-0.242*	0.137	-0.683	-0.056
19	0.28	0.26	0.022	0.073	-0.082	0.236
19	0.28	0.32	-0.026	0.061	-0.163	0.096
19	0.28	0.41	-0.097*	0.064	-0.283	-0.008
19	0.28	0.52	-0.184*	0.096	-0.463	-0.046
19	0.28	0.6	-0.248*	0.126	-0.603	-0.070
19	0.4	0.26	0.015	0.068	-0.089	0.206
19	0.4	0.32	-0.032	0.054	-0.167	0.061
19	0.4	0.41	-0.104*	0.057	-0.257	-0.019
19	0.4	0.52	-0.191*	0.090	-0.408	-0.047
19	0.4	0.6	-0.255*	0.122	-0.572	-0.068
19	0.52	0.26	0.009	0.077	-0.124	0.214
19	0.52	0.32	-0.039	0.065	-0.191	0.074
19	0.52	0.41	-0.110*	0.067	-0.274	-0.009
19	0.52	0.52	-0.198*	0.096	-0.410	-0.041
19	0.52	0.6	-0.261*	0.126	-0.547	-0.053
19	0.64	0.26	0.002	0.097	-0.178	0.223
19	0.64	0.32	-0.046	0.087	-0.256	0.103
19	0.64	0.41	-0.117	0.088	-0.331	0.017
19	0.64	0.52	-0.204*	0.112	-0.452	-0.028
19	0.64	0.6	-0.268*	0.138	-0.578	-0.045
20	0.17	0.26	0.025	0.079	-0.086	0.236
20	0.17	0.32	-0.017	0.071	-0.151	0.128
20	0.17	0.41	-0.081	0.074	-0.301	0.024
20	0.17	0.52	-0.160*	0.099	-0.475	-0.027
20	0.17	0.6	-0.216*	0.125	-0.625	-0.050
20	0.28	0.26	0.020	0.065	-0.074	0.210
20	0.28	0.32	-0.023	0.055	-0.148	0.085
20	0.28	0.41	-0.087*	0.058	-0.255	-0.005
20	0.28	0.52	-0.165*	0.087	-0.424	-0.040
20	0.28	0.6	-0.222*	0.116	-0.549	-0.059
20	0.4	0.26	0.014	0.061	-0.079	0.181
20	0.4	0.32	-0.029	0.049	-0.149	0.056
20	0.4	0.41	-0.093*	0.052	-0.232	-0.017
20	0.4	0.52	-0.171*	0.083	-0.387	-0.045
20	0.4	0.6	-0.228*	0.112	-0.527	-0.059
20	0.52	0.26	0.008	0.069	-0.112	0.190
20	0.52	0.32	-0.035	0.059	-0.167	0.067
20	0.52	0.41	-0.099*	0.061	-0.246	-0.009
20	0.52	0.52	-0.177*	0.088	-0.375	-0.036
20	0.52	0.6	-0.234*	0.116	-0.505	-0.047
20	0.64	0.26	0.002	0.087	-0.161	0.207
20	0.64	0.32	-0.041	0.079	-0.229	0.092
20	0.64	0.41	-0.105	0.080	-0.300	0.013
20	0.64	0.52	-0.183*	0.102	-0.408	-0.025
20	0.64	0.6	-0.240*	0.126	-0.519	-0.039
23	0.17	0.26	0.016	0.053	-0.054	0.168
23	0.17	0.32	-0.011	0.048	-0.113	0.084
23	0.17	0.41	-0.053	0.052	-0.201	0.014
23	0.17	0.52	-0.103*	0.072	-0.330	-0.007
23	0.17	0.6	-0.140*	0.092	-0.421	-0.015
23	0.28	0.26	0.013	0.044	-0.047	0.146
23	0.28	0.32	-0.015	0.037	-0.115	0.050
23	0.28	0.41	-0.056*	0.041	-0.181	-0.002
23	0.28	0.52	-0.107*	0.065	-0.302	-0.015
23	0.28	0.6	-0.144*	0.087	-0.388	-0.018
23	0.4	0.26	0.009	0.041	-0.048	0.137
23	0.4	0.32	-0.019	0.033	-0.110	0.036

23	0.4	0.41	-0.060*	0.038	-0.165	-0.009
23	0.4	0.52	-0.111*	0.063	-0.279	-0.016
23	0.4	0.6	-0.148*	0.085	-0.380	-0.020
23	0.52	0.26	0.005	0.046	-0.070	0.129
23	0.52	0.32	-0.023	0.039	-0.113	0.041
23	0.52	0.41	-0.064*	0.043	-0.175	-0.004
23	0.52	0.52	-0.115*	0.066	-0.274	-0.015
23	0.52	0.6	-0.151*	0.087	-0.362	-0.019
23	0.64	0.26	0.001	0.058	-0.104	0.139
23	0.64	0.32	-0.026	0.052	-0.152	0.059
23	0.64	0.41	-0.068	0.055	-0.204	0.009
23	0.64	0.52	-0.118*	0.074	-0.287	-0.010
23	0.64	0.6	-0.155*	0.093	-0.376	-0.016
28	0.17	0.26	0.002	0.021	-0.028	0.060
28	0.17	0.32	-0.001	0.019	-0.064	0.028
28	0.17	0.41	-0.005	0.029	-0.099	0.035
28	0.17	0.52	-0.010	0.048	-0.139	0.067
28	0.17	0.6	-0.013	0.064	-0.170	0.088
28	0.28	0.26	0.001	0.017	-0.028	0.047
28	0.28	0.32	-0.001	0.015	-0.056	0.018
28	0.28	0.41	-0.005	0.026	-0.080	0.037
28	0.28	0.52	-0.010	0.047	-0.117	0.067
28	0.28	0.6	-0.013	0.063	-0.159	0.091
28	0.4	0.26	0.001	0.016	-0.026	0.040
28	0.4	0.32	-0.002	0.013	-0.051	0.015
28	0.4	0.41	-0.006	0.026	-0.068	0.040
28	0.4	0.52	-0.010	0.047	-0.110	0.073
28	0.4	0.6	-0.014	0.063	-0.149	0.095
28	0.52	0.26	0.001	0.018	-0.036	0.040
28	0.52	0.32	-0.002	0.016	-0.059	0.019
28	0.52	0.41	-0.006	0.028	-0.076	0.041
28	0.52	0.52	-0.011	0.048	-0.119	0.079
28	0.52	0.6	-0.014	0.064	-0.154	0.101
28	0.64	0.26	0.000	0.023	-0.050	0.045
28	0.64	0.32	-0.002	0.022	-0.069	0.028
28	0.64	0.41	-0.006	0.031	-0.092	0.041
28	0.64	0.52	-0.011	0.051	-0.132	0.078
28	0.64	0.6	-0.014	0.066	-0.164	0.103
35	0.17	0.26	-0.019	0.063	-0.205	0.074
35	0.17	0.32	0.013	0.058	-0.082	0.159
35	0.17	0.41	0.062	0.065	-0.022	0.246
35	0.17	0.52	0.122	0.092	-0.002	0.359
35	0.17	0.6	0.165	0.117	0.001	0.476
35	0.28	0.26	-0.015	0.052	-0.170	0.057
35	0.28	0.32	0.018	0.045	-0.057	0.135
35	0.28	0.41	0.066	0.053	-0.002	0.208
35	0.28	0.52	0.126	0.084	-0.001	0.327
35	0.28	0.6	0.169	0.110	-0.001	0.418
35	0.4	0.26	-0.011	0.050	-0.158	0.058
35	0.4	0.32	0.022	0.041	-0.037	0.142
35	0.4	0.41	0.071	0.050	0.000	0.203
35	0.4	0.52	0.130	0.081	-0.005	0.321
35	0.4	0.6	0.174	0.108	-0.011	0.410
35	0.52	0.26	-0.006	0.058	-0.167	0.092
35	0.52	0.32	0.027	0.050	-0.045	0.168
35	0.52	0.41	0.075	0.057	0.000	0.239
35	0.52	0.52	0.135	0.085	0.000	0.326
35	0.52	0.6	0.178	0.111	-0.010	0.424
35	0.64	0.26	-0.001	0.073	-0.185	0.140
35	0.64	0.32	0.031	0.067	-0.065	0.208
35	0.64	0.41	0.080	0.072	-0.009	0.302
35	0.64	0.52	0.140	0.095	0.002	0.372
35	0.64	0.6	0.183	0.118	0.000	0.463