

Supplementary Materials for:

The Impact of Facebook on Social Comparison and Happiness:

Evidence from a Natural Experiment

1. Do Facebook users and non-users differ in their experiences?

We examine the 15 answers of Facebook users and non-users to Section E in the questionnaire – own activities and experiences (pos1-pos10 and neg1-neg5). 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 S14a (Pos1-Pos5)

	Pos1	Pos2	Pos3	Pos4	Pos5
Age	0.132 (0.113)	-0.015 (0.022)	-0.014 (0.021)	-0.034 (0.110)	0.005 (0.115)
Gender	0.814 (1.160)	-0.458** (0.228)	0.300 (0.217)	-0.109 (1.139)	0.531 (1.203)
Education	1.313* (0.699)	-0.142 (0.137)	0.333** (0.131)	0.439 (0.686)	1.453** (0.724)
Income	-0.325 (0.453)	-0.043 (0.085)	-0.037 (0.081)	0.006 (0.425)	0.83 (0.446)
Family	0.284 (1.437)	0.035 (0.282)	-0.089 (0.270)	-0.641 (1.413)	-0.400 (1.472)
Facebook	-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<.05, *** p<0.01

Table S14b (Pos6-Pos10)

	Pos6	Pos7	Pos8	Pos9	Pos10
Age	-0.13 (0.009)	-0.002 (0.010)	0.309 (2.771)	0.001 (0.079)	-0.046 (0.031)
Gender	-0.008 (0.089)	0.079 (0.106)	11.846 (28.931)	-0.367 (0.819)	0.412 (0.324)
Education	-0.001 (0.055)	-0.010 (0.065)	-21.080 (17.323)	0.193 (0.493)	0.523 (0.195)
Income	0.025 (0.034)	0.013 (0.040)	-6.271 (10.670)	-0.011 (0.306)	0.076 (0.121)
Family	-0.051 (0.109)	0.136 (0.130)	-20.376 (35.708)	-1.035 (1.016)	0.065 (0.403)
Facebook	0.055 (0.087)	-0.072 (0.103)	-34.698 (27.784)	1.195 (0.794)	0.169 (0.315)
R ²	0.033	0.026	0.038	0.032	0.066
N	123	125	133	135	135

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

Table S14c (Neg1-Neg5)

	Neg1	Neg2	Neg3	Neg4	Neg5
Age	-0.010 (0.041)	-0.001 (0.053)	-0.007 (0.122)	0.008 (0.067)	-0.005 (0.061)
Gender	-0.490 (0.427)	0.165 (0.551)	0.948 (1.254)	-0.103 (0.688)	0.777 (0.629)
Education	-0.286 (0.256)	-0.154 (0.334)	0.831 (0.757)	0.116 (0.414)	0.542 (0.378)
Income	-0.023 (0.161)	-0.058 (0.207)	0.157 (0.471)	-0.244 (0.258)	-0.058 (0.236)
Family	-0.527 (0.541)	-0.178 (0.684)	0.32 (1.560)	-0.655 (0.856)	0.418 (0.782)
Facebook	0.189 (0.412)	0.310 (0.535)	1.682 (1.220)	0.536 (0.669)	0.397 (0.611)
R ²	0.021	0.014	0.026	0.013	0.026
N	130	132	132	133	133

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

2. The moderating effect of $\Delta(\text{neg})$

Table S15a presents the estimation of a variation of 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 S15b.

Table S15a

	Social comparison	Happiness
Facebook	2.120*** (0.706)	-0.076 (0.118)
Age	-0.043* (0.022)	
Facebook X Age	-0.074*** (0.025)	
Gender	-0.189 (0.175)	-0.227* (0.126)
Education	0.166 (0.110)	-0.057 (0.074)
Income	0.091 (0.067)	0.058 (0.041)
Family status	-0.505** (0.251)	0.163 (0.158)
Social comparison		-0.043 (0.160)
$\Delta(\text{neg})$		2.059 (1.317)
Social comparison X $\Delta(\text{neg})$		-0.322 (0.342)
R ²	0.138	0.177
N	130	130

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

Table S15b

The following are the conditional effect of Facebook on Happiness, at 5 values of age and at 5 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

3. 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.

Table S16a

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

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

Table S16b

The following table presents the estimated effects based on the above model. 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	0.41	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

4. Students & employees' happiness and social comparison score

Considering only Facebook users, we compare the 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).

Table S17

	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