

Class 18: Social media and individuals

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Sociology 204: Social Networks
Princeton University

2/3 The Facebook deprivation experiment





Facebook has 1.84 billion *daily* active users. What is the effect of Facebook on its users?

[https://investor.fb.com/investor-news/press-release-details/2021/
Facebook-Reports-Fourth-Quarter-and-Full-Year-2020-Results/default.aspx](https://investor.fb.com/investor-news/press-release-details/2021/Facebook-Reports-Fourth-Quarter-and-Full-Year-2020-Results/default.aspx)

- ▶ We could compare Facebook users to non-Facebook users, but there might be lots of other differences.

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- ▶ Among Facebook users, we could compare “light” users to “heavy” users, but again there might be lots of other differences.

Allcott et al. run an randomized control trial (an “experiment”).



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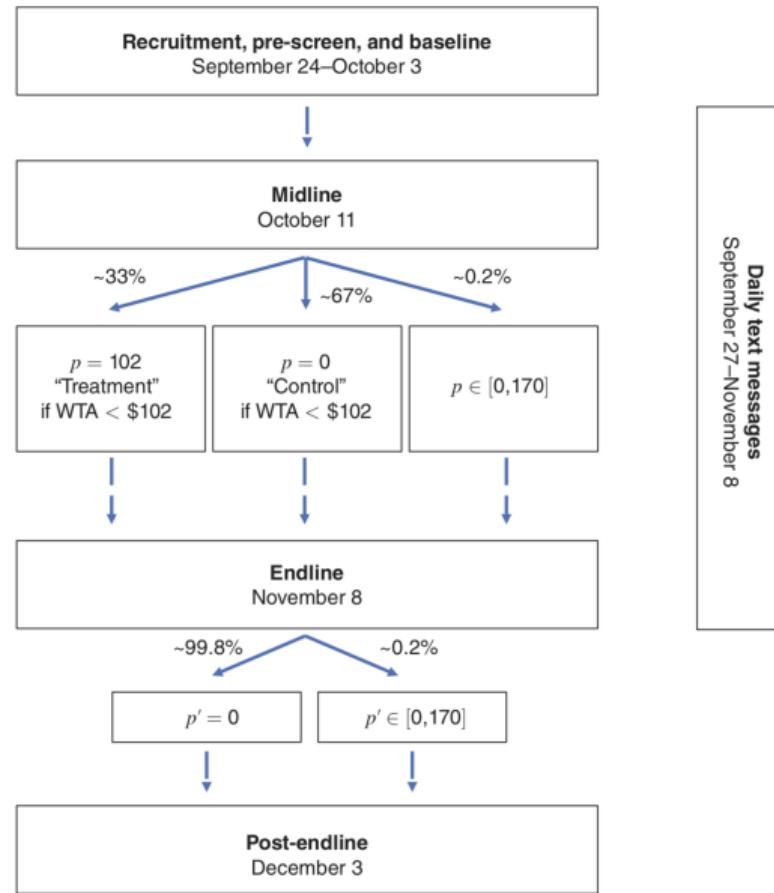
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Daily text messages
September 27–November 8

This design means that the collection of people in the treatment group are the same as

Thinking about external validity: who is in the experiment?

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TABLE 2—SAMPLE DEMOGRAPHICS

	Impact evaluation sample (1)	Facebook users (2)	US population (3)
Income under \$50,000	0.40	0.41	0.42
College	0.51	0.33	0.29
Male	0.43	0.44	0.49
White	0.68	0.73	0.74
Age under 30	0.52	0.26	0.21
Republican	0.13		0.26
Democrat	0.42		0.20
Facebook minutes	74.52	45.00	

- ▶ impact evaluation sample is younger, more educated, and uses Facebook more
- ▶ note that this experiment might not include the youngest users who might be most harmed by Facebook

Thinking about internal validity: was their differential compliance or attrition?

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TABLE 3—SURVEY RESPONSE AND TREATMENT COMPLIANCE RATES

Variable	Treatment mean/SD (1)	Control mean/SD (2)	<i>t</i> -test <i>p</i> -value (1) – (2)
Completed endline survey	0.99 (0.11)	0.98 (0.12)	0.54
Share of text messages completed	0.92 (0.20)	0.93 (0.18)	0.45
Completed post-endline survey	0.95 (0.23)	0.92 (0.26)	0.07
Share days deactivated	0.90 (0.29)	0.02 (0.13)	0.00
Observations	580	1,081	

- ▶ compliance was high and there was little attrition

III. Empirical Strategy

A. Pre-Analysis Plan

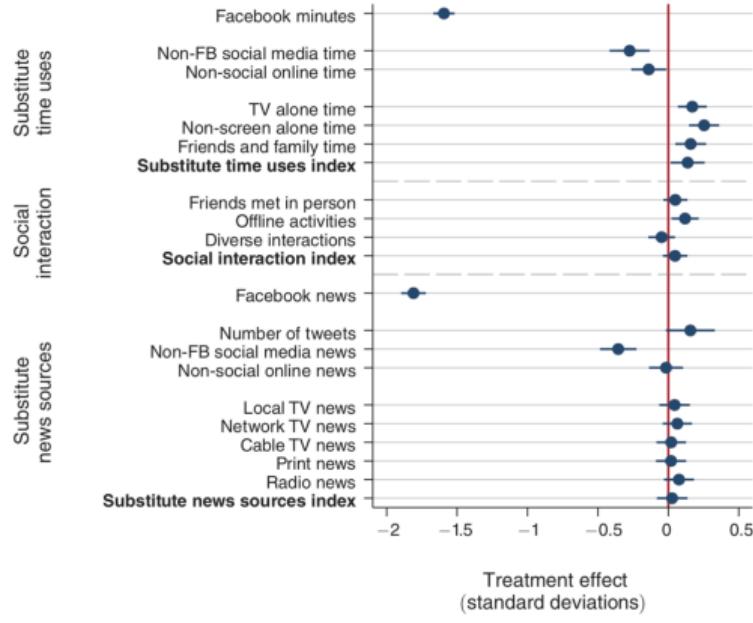
We submitted our pre-analysis plan on October 12, as this was the final day before the Treatment and Control groups could have begun to differ. We submitted a slightly updated pre-analysis plan on November 7, the day before endline, with only one substantive change: on the basis of data on reasons for non-compliance described above, we specified that our primary specifications would use IV estimates instead of intent-to-treat estimates. The pre-analysis plan specified three things. First, it specified the outcome variables and families of outcome variables

Nine families of outcome variables, focus on politics (perhaps because experiment was right before an election)

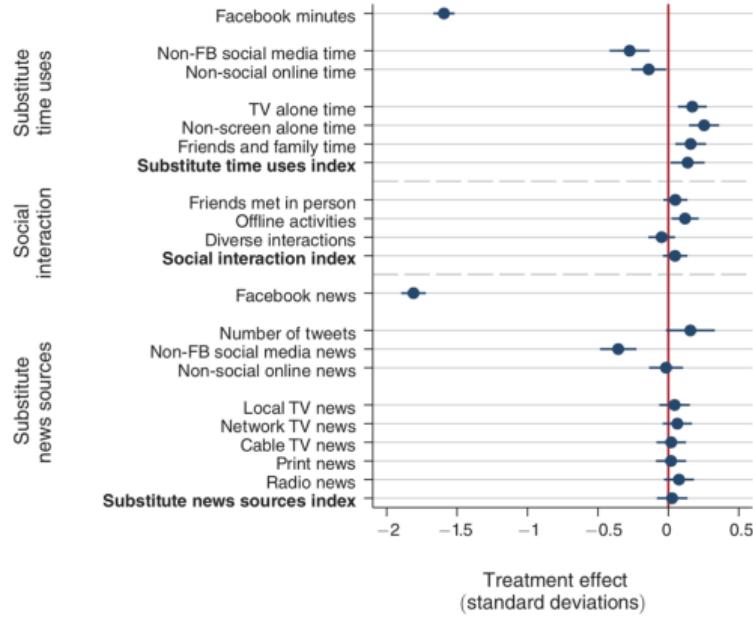
- ▶ Substitute Time Uses
- ▶ Social Interaction
- ▶ Substitute News Sources
- ▶ News Knowledge
- ▶ Political Engagement
- ▶ Political Polarization
- ▶ Subjective Well-Being
- ▶ Post-Experiment Facebook Use
- ▶ Opinions about Facebook

- ▶ Endpoint
 - ▶ Substitution
 - ▶ Well-being
 - ▶ News and politics
- ▶ Post-deactivation

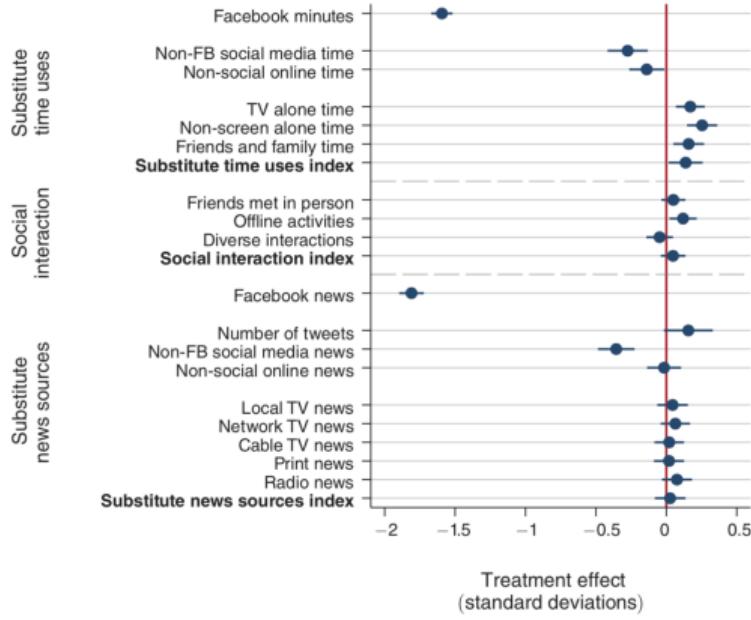
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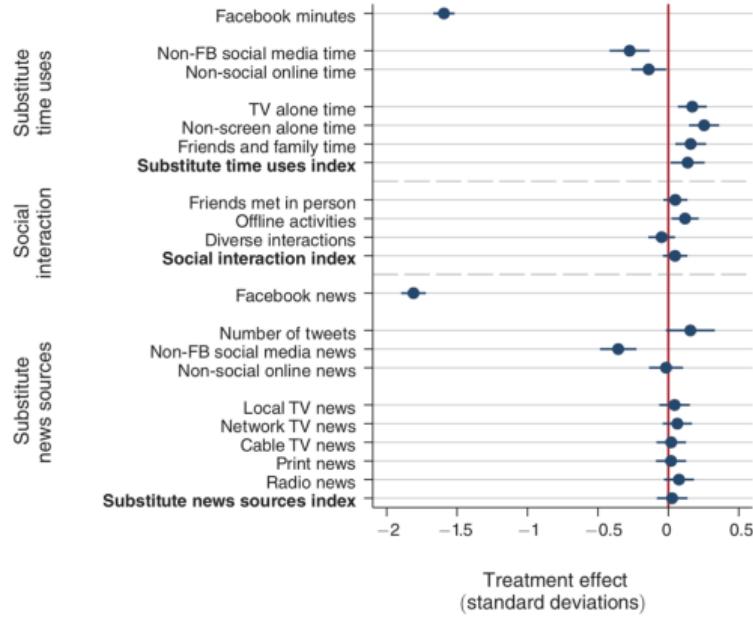
- reduced time on FB



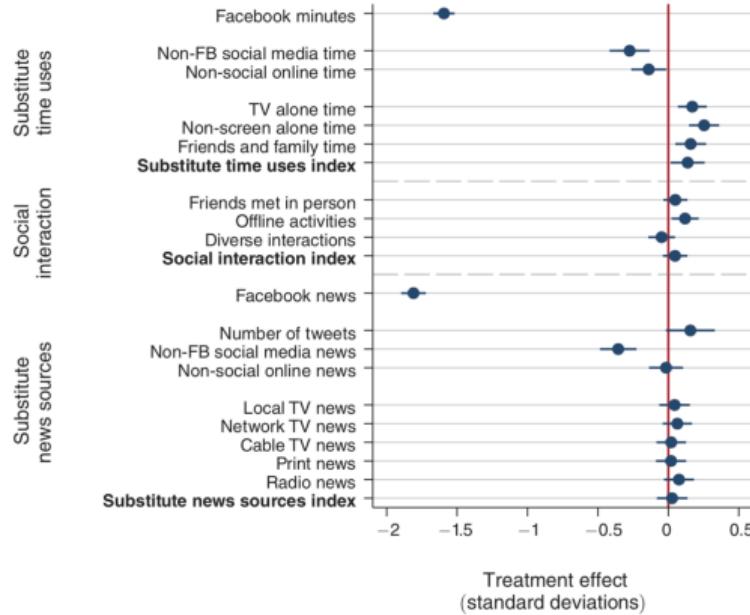
- ▶ reduced time on FB
- ▶ slightly reduced time on other social media



- ▶ reduced time on FB
- ▶ slightly reduced time on other social media
- ▶ slightly more time with offline activities



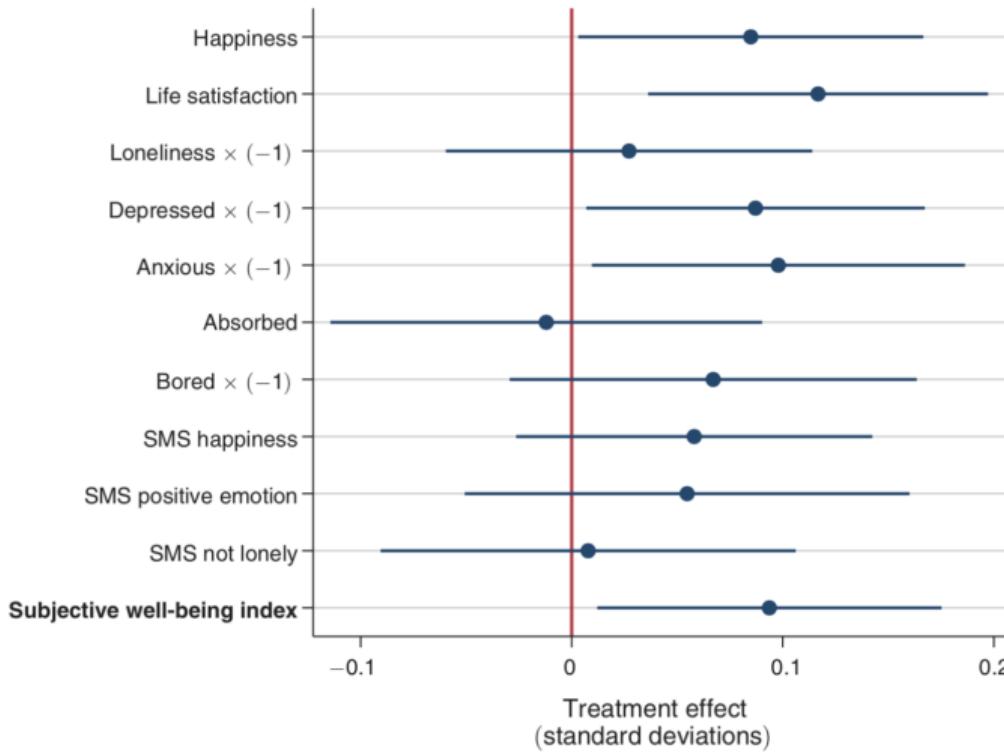
- ▶ reduced time on FB
- ▶ slightly reduced time on other social media
- ▶ slightly more time with offline activities
- ▶ didn't impact non-social media source of news



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All of these are measured in terms of standard deviation units in the control group

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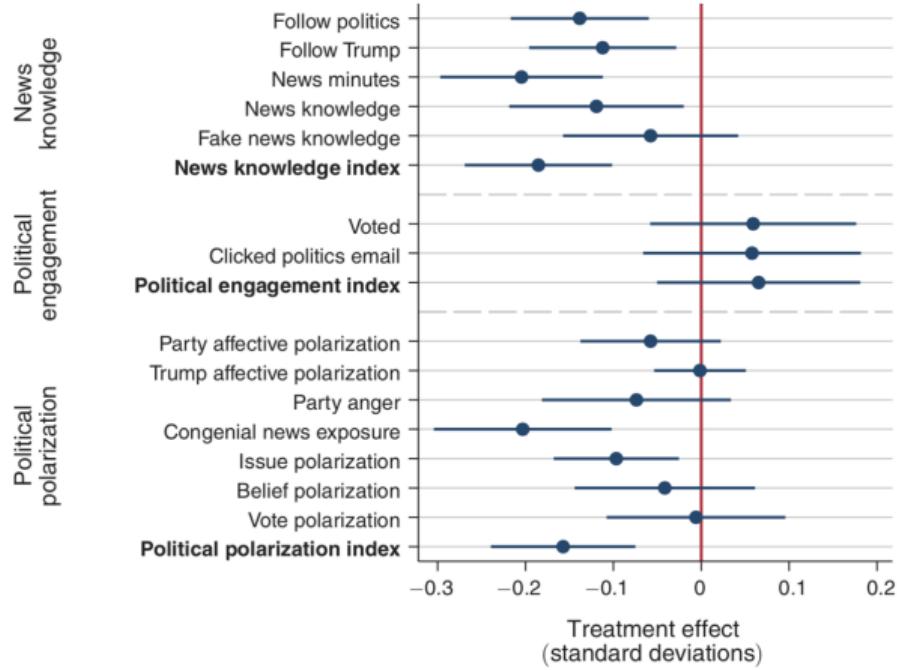
- ▶ “small” improvements in most measures

Are these subjective well-being effects large or small? As one benchmark, we can consider the effect sizes in their original units, focusing on the measures with the largest effects. *Happiness* is the average response to two questions (for example, “Over the last 4 weeks, I think I was …”) on a scale from 1 (not a very happy person) to 7 (a very happy person). The Control group endline average is 4.47 out of a possible 7, and deactivation caused an average increase of 0.12. *Life satisfaction*

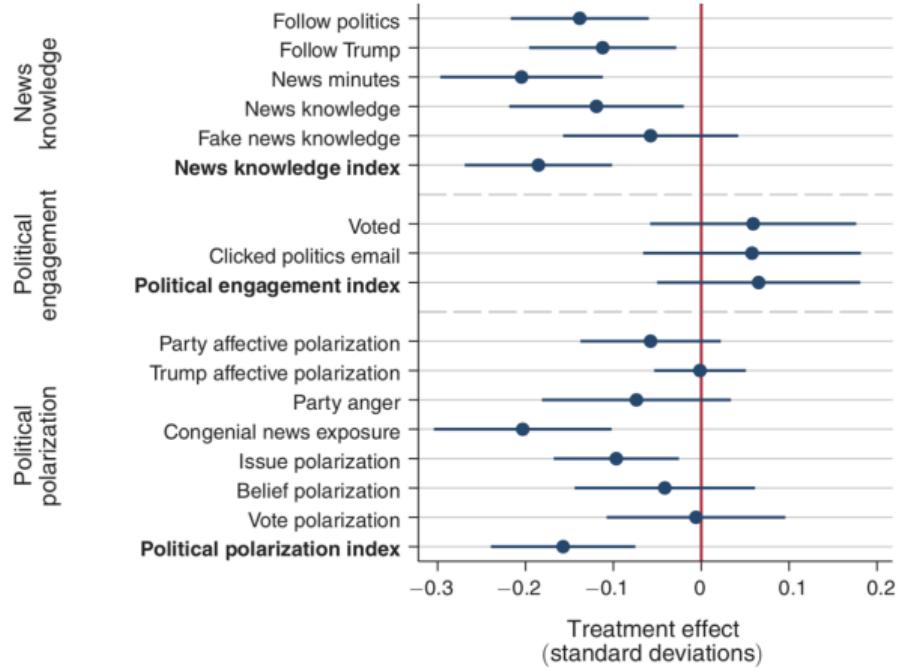
As a second benchmark, a meta-analysis of 39 randomized evaluations finds that positive psychology interventions (i.e., self-help therapy, group training, and individual therapy) improve subjective well-being (excluding depression) by 0.34 standard deviations and reduce depression by 0.23 standard deviations (Bolier et al. 2013). Thus, deactivating Facebook increased our subjective well-being index by about 25–40 percent as much as standard psychological interventions.

I was way less stressed. I wasn't attached to my phone as much as I was before. And I found I didn't really care so much about things that were happening [online] because I was more focused on my own life ... I felt more content. I think I was in a better mood generally. I thought I would miss seeing everyone's day-to-day activities ... I really didn't miss it at all.

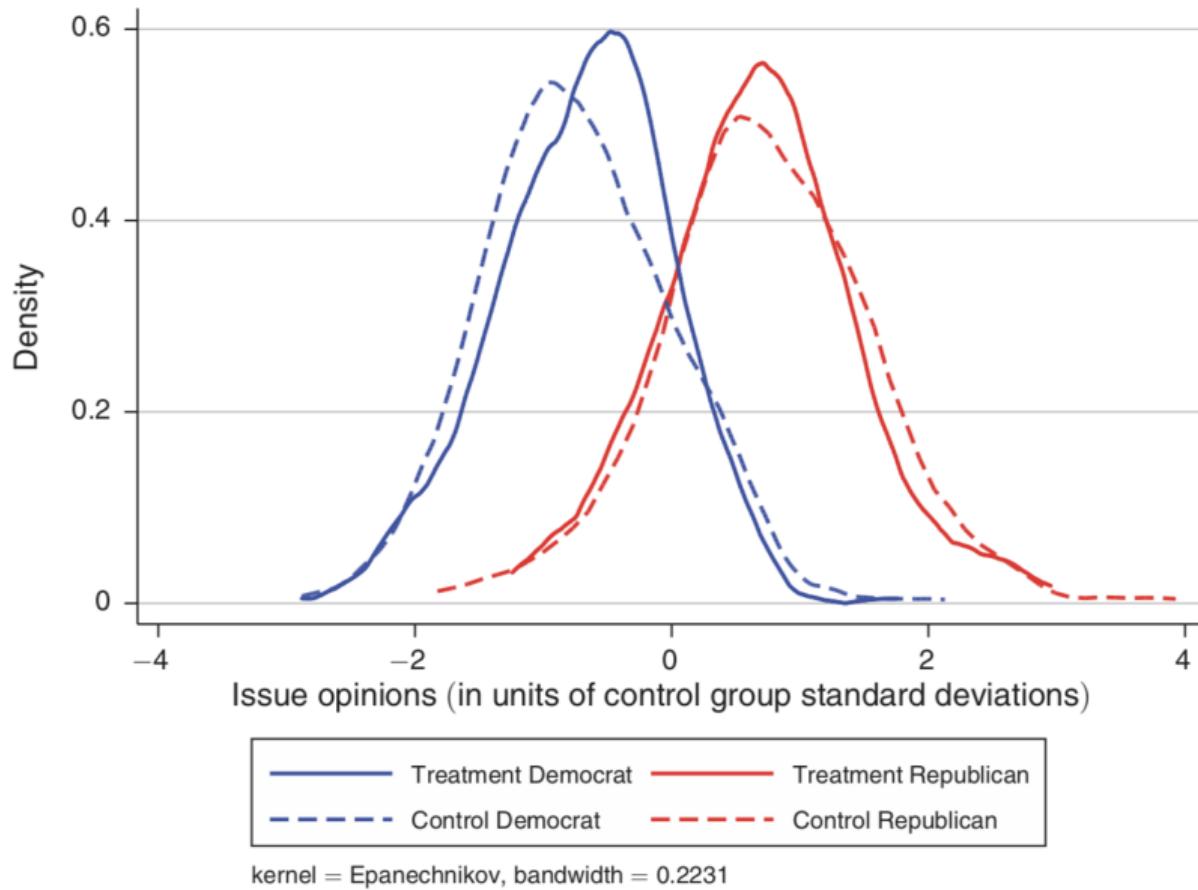
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- less news knowledge

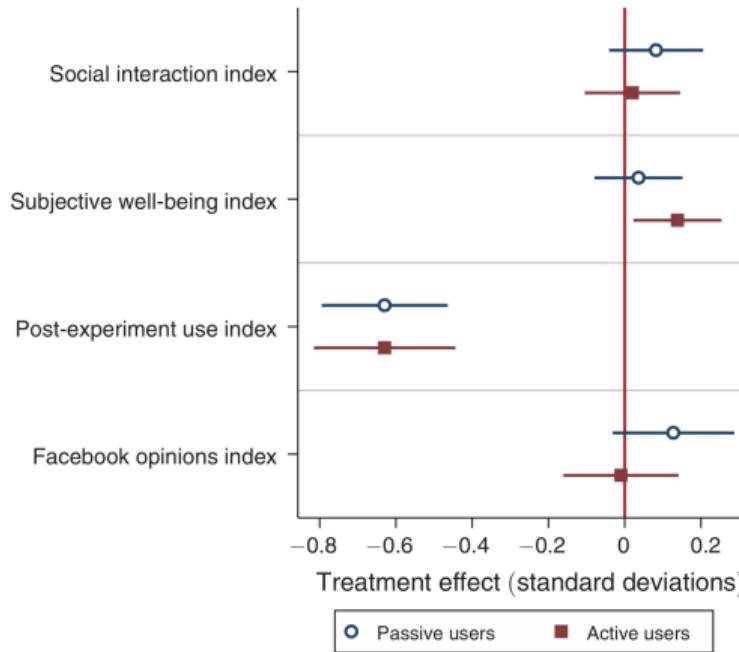


- ▶ less news knowledge
- ▶ less political polarization



Heterogenous treatment effects: are the treatment effects the same for everyone?

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- ▶ Effects are similar for active and passive users

Can't learn about heterogeneity from self-experimentation

F. Experimenter Demand Effects

Most of our outcomes are self-reported, and it would have been difficult to further conceal the intent of the randomized experiment. This raises the possibility of experimenter demand effects, i.e., that survey responses depend on what participants think the researchers want them to say. To test for demand effects, the endline survey asked, “Do you think the researchers in this study had an agenda?” Table 5 presents the possible responses and shares by treatment group.

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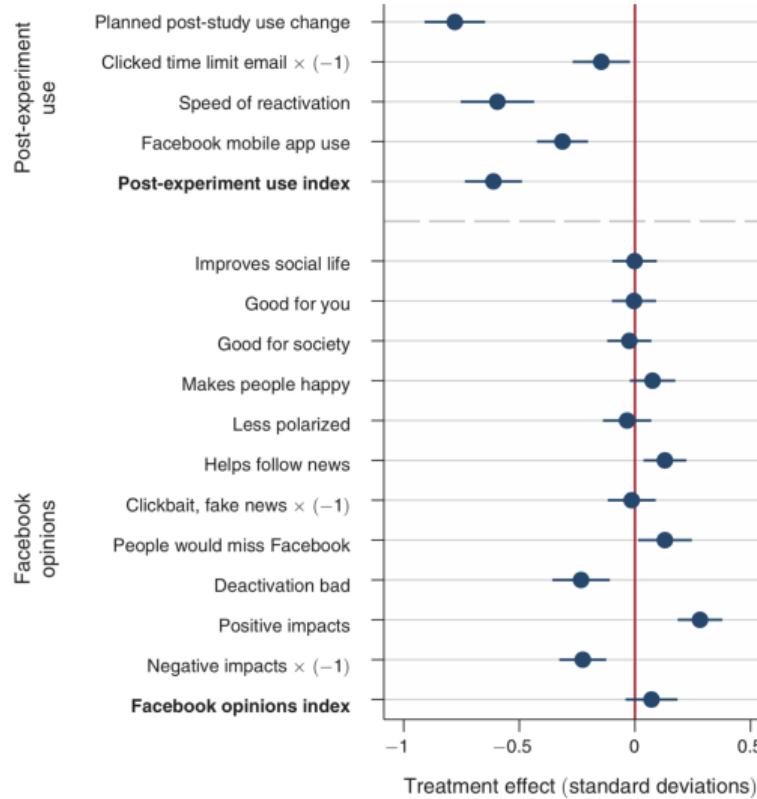
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- ▶ single-blind experiments
- ▶ unblinded experiments
- ▶ self experiments

- ▶ Endpoint
 - ▶ Substitution
 - ▶ Well-being
 - ▶ News and politics
- ▶ Post-deactivation



- ▶ wanting to use FB less in the future (about 20% reduction in time used)
- ▶ more awareness of the good and bad aspects of FB

Mindfully Scrolling: Rethinking Facebook After Time Deactivated

Nancy K. Baym¹, Kelly B. Wagman²,
and Christopher J. Persaud³

Social Media + Society
April-June 2020: 1–10
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Baym et al. describe changes in two areas:

- ▶ Awareness:
- ▶ Behavior:

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- ▶ Awareness: Automaticity, FB's value
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- ▶ Awareness: Automaticity, FB's value
- ▶ Behavior: Tweaking settings to avoid certain things, not structural reform

In Facebook's case, the ecological definition offered by Lindenmayer et al. (2011, p. 15887), may be a more apt metaphor. They define a **landscape trap** as

that wherein entire landscapes are shifted into a state in which major functional and ecological attributes are compromised. These shifts in a landscape lead to feedback processes that either maintain an ecosystem in a compromised state or push it into a further regime shift in which an entirely new type of vegetation cover develops. Landscape traps are large-scale ecological phenomena that arise through a combination of altered spatial characteristics of a landscape coupled with synergistic interactions among multiple human and natural disturbances. Thus, changes in the frequency and spatial contagion of large-scale disturbances are the key interacting factors driving entire landscapes into an undesirable and potentially irreversible state (i.e., landscape trap).

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- ▶ The landscape has shifted because of both intentional and unintentional action
- ▶ There is an important difference between one person deactivating FB and everyone deactivating FB

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- ▶ Being off FB for one month leads to 1) reduced online activity and increased offline activity 2) reduced factual news knowledge and political polarization 3) increased subjective well-being and 4) caused a large persistent reduction in post-experiment Facebook use
- ▶ Being off FB for one month also leads to new awareness about the good and bad aspects of FB

Now it is your turn: self-experimentation and social media