

Supplement: Effect Size Calculations for The Fundamental Flaws of The Only Meta-Analysis of Social Media Reduction Experiments, Part 1

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We now include both the simple average for the effect size and the average effect sizes with studies weighted by sample size and confidence intervals.

Note that we are using Ferguson's *erroneous sample sizes and effect size calculations* in this post, which means that the weighted averages and confidence intervals are incorrect. The reason we do not fix the errors in this post is to make the point that even without making any changes to Ferguson underlying data, Ferguson's data still undermines his own conclusion that his meta review finds that "reducing social media time has NO impact on mental health."

Multi-Week Field Experiments		
Citation	Length of Study	Cohen's D
Brailovskaia et al., 2020	2 weeks reduction	0.154
Brailovskaia et al., 2022	2 weeks reduction	.0
Faulhaber et al., 2023	2 weeks reduction	0.484
Thai et al., 2021	3 weeks reduction	0.576
Thai et al., 2023	3 weeks reduction	0.275
Hunt et al., 2018	3 weeks reduction	0.232
Hunt et al., 2021	3 weeks reduction	0.374
Hall et al., 2019	1-4 weeks reduction	-0.007
Allcott et al., 2020	4 weeks reduction	0.09
Collis & Eggers, 2022	~10 weeks (1 semester) reduction	-0.138

The simple average effect size of the ten studies is .20.

When we weight the studies by sample size, we find an effect size of +0.16 with a confidence interval of +0.06 to +0.26)

Short Term Field Experiments		
Citation	Length of Study	Cohen's D
One Week Studies		
Deters & Mehl, 2013	Increasing frequency of status updates on FB for 1 week <i>(Neither a lab experiment nor a SM time experiment; this study compares different uses of SM and includes no measure of time on SM and no outcome other than loneliness.)</i>	-0.207
Kleefield dissertation	1 week reduction	-0.277
Lambert et al., 2022	1 week reduction	0.797
Mahalingham et al., 2023	1 week reduction	0.175
Tromholt, 2016	1 week reduction	0.31
Vally & D'Souza, 2019	1 week reduction	-0.361
van Wezel et al., 2021	1 week reduction	-0.123
Less Than One-Week Studies		
Vanman et al., 2018	5 days reduction	-.135

Gajdics & Jagodics, 2022	1 day <i>(no phone in school. This is not actually a social media reduction study)</i>	-.364
Mitev et al., 2021	1 day (2 experimental studies) reduction	-.036
Przybylski et al., 2021	1 day (3 experimental studies) reduction	-.152

The simple average effect size of the six one week studies is **.04**. The simple average of the four less than one week studies was **-.17**

When we weight the studies by sample size and include confidence intervals, we find:

Seven one week studies: **d = .08** (-.21, .37)

Four less than one week studies: **d = -0.17 (-0.28, -0.05)**

Social Media Exposure Studies		
Citation	Design	Cohen's D
Ozimek & Bierhoff, 2019 S1	Exposure to FB 5 min	0.57
Ward 2017 dissertation	Exposure to FB or IG 10 min	-0.298
Sagioglou & Greitemeyer, 2014 S2	Exposure to FB 20 min	0.262
Tartaglia & Bergagna, 2022	Exposure to FB 20 min	0.254
Yuen et al., 2019	Exposure to FB 20 min	0.18
Lepp & Barkley, 2022	Exposure to SM 30 min	-0.365

The simple average effect size of the seven exposure studies is **.06**.

When we weight the studies by sample size and include confidence intervals, we find $d = .12$ (**-.09, .34**)

Instructions for computing weighted averages and confidence intervals

Weighted averages and confidence intervals were computed using Jamovi, in an effort *to mirror the methods used by Ferguson in his meta-analysis*. You can download our dataset [here](#).

The following steps were taken, using the attached data:

1. Install the MAJOR module (meta-analysis tool). Select the “Correlation Coefficients” tab.
2. Drag “r (with errors)”¹ into the Correlations slot, “N (with errors)” into Sample Sizes, and “Study” into Study Label. (This is to ensure that we are conducting analysis on Ferguson’s initial data, regardless of possible errors.) Leave the Moderator slot empty.
3. Change Model Estimator to “Maximum-Likelihood”, and change Model Measures to “Fisher’s r-to-z transformed correlation coefficient”.
4. Copy the statistics from the Random-Effects Model into this [effect size converter](#). Convert “Estimate”, “CI Lower Bound”, and “CI Upper Bound”. The numbers should be copied into “Fisher’s z (z’)”, and the results from “Cohen’s d ” should be extracted.

To conduct analysis on subgroups, use the filters in the file:

1. To replicate Ferguson’s findings, with all studies pooled together, do not apply any filters.
2. To analyze Multi-week field studies, apply Filter 1. (`Duration > 13`)
3. To analyze One-week field studies, apply Filter 2. (`Duration == 7`)
4. To analyze Less than one week field studies, apply Filter 3. (`Duration < 7 and Cat != "L"`)
5. To analyze Lab studies, apply Filter 4. (`Cat == "L"`)

¹ To do this by scratch, you will need to convert each study’s Cohen’s d into a Pearson’s correlation.