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Exhibit O

**IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF CALIFORNIA**

PEOPLE OF THE STATE OF CALIFORNIA,
et al.,
Plaintiffs,

v.

META PLATFORMS, INC, Instagram, LLC,
Meta Payments, Inc., Meta Platforms
Technologies, LLC., et al.,
Defendants

IN RE: SOCIAL MEDIA ADOLESCENT
ADDICTION/PERSONAL INJURY
PRODUCTS LIABILITY LITIGATION

THIS DOCUMENT RELATES TO:
4:23-cv-05448

MDL No. 3047

Case No. 4:23-cv-05448-YGR

Judge: Hon. Yvonne Gonzalez Rogers

Magistrate Judge: Hon. Peter H. Kang

**TRIAL REPORT OF
Mitch Prinstein, Ph.D.**

May 16, 2025

III. Social media platform features encourage problematic use by youth, consistent with clinical dependency

- (35) In my experience, scientists do not typically discuss “addiction” to social media use for predominantly semantic reasons, but scientists generally do recognize that youths’ biological vulnerabilities render them particularly susceptible to “problematic social media use,” often defined in the literature as symptoms of clinical dependency to social media, including withdrawal, tolerance, excessive and uncontrolled use, causing impairment in daily tasks.³³ In particular, research has assessed problematic social media use by using the diagnostic criteria for substance use dependencies, revealing that many adolescents report an inability to stop using social media, even when they want to; expend remarkable effort to maintain access to social media; use social media to regulate their emotions; increase their use of social media to achieve the same level of pleasure; experience withdrawal symptoms following abstinence; and report significant impairment in their daily educational, social, work routines due to excessive social media use.³⁴ Note that the regions of the brain activated by social media use overlap considerably with the regions involved in addictions to illegal and dangerous substances.³⁵
- (36) As noted above, the developing brain is built to increase a desire for social rewards (that social media platforms like Instagram deliver abundantly) without the ability to show the capacities of inhibition and restraint available to adults. This suggests that youth are a biologically vulnerable population at risk for problematic use of social media. Meta documents acknowledge the concept of problematic social media use, although their definition is a bit more restrictive than definitions in the literature. Specifically, Meta researchers appear to measure problematic use as self-reported experiences of (1) “lack of control or feelings of guilt over [Facebook] use” and (2) “negative impact in at least one of the following areas: sleep, parenting, social relationships, or productivity,” with both of these issues occurring “very often” or “all the time.”³⁶ Internal Meta memos acknowledge problematic social media use, indicating that their own internal research “suggests it affects ~3% of US Facebook MAP [Monthly Active Persons]. This increases to 10% if the definition is broadened to include feelings of

³³ Maartje Boer, Gonneke W. J. M. Stevens, Catrin Finkenauer, and Regina J. J. M. Van Den Eijnden, “The Course of Problematic Social Media Use in Young Adolescents: A Latent Class Growth Analysis,” *Child Development* 93, no. 2 (2022): e168–e187. Edmund WJ Lee, Shirley S. Ho, and May O. Lwin, “Explicating problematic social network sites use: A review of concepts, theoretical frameworks, and future directions for communication theorizing,” *New Media & Society* 19, no. 2 (2017): 308–326.

³⁴ Anne J. Maheux, Kaitlyn Burnell, Maria T. Maza, Kara A. Fox, Eva H. Telzer, and Mitchell J. Prinstein, “Annual Research Review: Adolescent Social Media Use Is Not a Monolith: Toward the Study of Specific Social Media Components and Individual Differences,” *Journal of Child Psychology and Psychiatry* 66, no. 4 (2025): 440–459.

³⁵ José De-Sola Gutiérrez, Fernando Rodríguez De Fonseca, and Gabriel Rubio, “Cell-Phone Addiction: A Review,” *Frontiers in Psychiatry* 7 (2016): 175. Mark D. Griffiths, Daria J. Kuss, and Zsolt Demetrovics, “Social Networking Addiction,” *Behavioral Addictions* (2014): 119–141. Bridget Kirby, Ashley Dapore, Carl Ash, Kaitlyn Malley, and Robert West, “Smartphone Pathology, Agency and Reward Processing,” *Information Systems and Neuroscience* 43 (2020): 321–329.

³⁶ META3047MDL-044-00111865 at -1866. See also META3047MDL-020-00005380 at -5581.

guilt about Facebook use [...]. External estimates are even more wide-ranging, from ~2.8% to as high as 48%, depending on definition.”³⁷ A June 2018 Facebook-internal presentation also finds “Facebook may be rewarding and habit-forming. Therefore some people may experience genuine problems related to their Facebook use;”³⁸ and “Though there is no clinical diagnosis of Facebook addiction, there are parts of the addictive process that may be at play and contributing to common issues for people.”³⁹ An October 2020 Meta-internal assessment stated that starting in 2018, “efforts were spun up across Facebook and Instagram to understand these concerns.”⁴⁰

- (37) Several bodies of research reveal that youths’ vulnerability to problematic social media use is indeed a significant concern. For instance, research finds that youth spend a remarkable amount of time using social media, such as Instagram.⁴¹ An independent 2023 survey on adolescents finds that the median number of times participants pick up their smartphones is 51 times per day, with more than half receiving over 200 daily notifications, the majority of which come from social media apps.⁴² A 2023 survey of more than 1,500 adolescents finds that youth spent, on average, 4.8 hours per day on social media platforms.⁴³ Perhaps most concerning, however, are data indicating that over 54% of 11–13-year-old youth report they are experiencing at least one symptom of problematic social media use, consistent with the medical definition of clinical dependency, in a manner strikingly similar to

³⁷ META3047MDL-003-00190634 at -0638 (For the Facebook-internal statistics, the document references “Source: [REDACTED], & [REDACTED]. 2019).

³⁸ META3047MDL-022-00022318 (Facebook “Addiction” – A response to the public narrative based on clinical and neuroscience research) at -2321.

³⁹ META3047MDL-022-00022318 (Facebook “Addiction” – A response to the public narrative based on clinical and neuroscience research) at -2332.

⁴⁰ META3047MDL-020-00005380 at -5380 (“Starting in 2018, there was growing concern in the public (amongst media, academics, policy elites, and everyday users) that technology companies were deliberately manipulating users by designing addictive products that can harm well-being and subvert control, labelling these concerns “Facebook Addiction.” Efforts were spun up across Facebook and Instagram to more deeply understand these concerns. Initial products were launched to give people more control over their use, though efforts were defunded end of 2019 with additional opportunities still available.”).

⁴¹ In a survey of teen users, my colleagues and I found that 85% of participants moderately or severely endorsed the statement that they spent more time on social media than intended, and 61% endorsed the statement that they had tried to spend time away from social media but could not. Kaitlyn Burnell, Jessica S. Flannery, Kara A. Fox, Mitchell J. Prinstein, and Eva H. Telzer, “US Adolescents’ daily social media use and well-being: Exploring the role of addiction-like social media use,” *Journal of Children and Media* 19, no. 1 (2025): 194–212.

⁴² “Youth Statistics: Internet and Social Media,” Act for Youth, accessed April 25, 2025, <https://actforyouth.org/adolescence/demographics/internet.cfm> (“Smartphones are becoming a core component of young people’s daily lives. According to Common Sense Media, half of adolescents (age 11-17) use their smartphones for over 4.5 hours a day. The median number of times that adolescents pick up their smartphones is 51 times per day, with 44% of older adolescents (age 16-17) picking up their smartphones more than 100 times per day. Throughout the day, more than half of adolescents receive over 200 notifications from their smartphones, with 23% of notifications arriving during school hours and 5% during school night hours. The majority of daily smartphone usage comes from social media apps (42%), YouTube (19%), and mobile games (11%).”).

⁴³ Jonathan Rothwell, “Teens Spend Average of 4.8 Hours on Social Media Per Day,” Gallup, October 13, 2023, <https://news.gallup.com/poll/512576/teens-spend-average-hours-social-media-per-day.aspx>.

document, features such as notifications, time-bound content, and auto-play have been identified by Meta researchers as triggers for problematic use.⁵⁹

- (43) Meta claims it has introduced tools aimed at curbing problematic use or limiting time spent on Instagram. These tools may offer the appearance of attempts to assist youth, but they are insufficient given the powerful biological processes that drive youths' dependency on social media, as discussed by Meta staff in the excerpts highlighted above. Rather, these tools are more akin to "tissue-paper barriers" that may appear to be meaningful, but do not actually offer meaningful resistance for youth to continue engagement on the platform. Note that a 2022 Meta document states that less than one-third of one percent of youth meaningfully used these tools to reduce Instagram use.⁶⁰
- (44) Youths' biological vulnerability to technology and social media, and their resulting frequent use of these platforms, can also alter youths' neural development since our brains develop in response to the environment we live in. Recent studies have revealed that technology and social media use may be associated with changes in functional brain development.⁶¹ For instance, research with colleagues at UNC using annual fMRI brain scans revealed that more frequent use of adolescents' devices (i.e., predominantly for social media) was associated with unique development of brain regions, including hyperreactivity to social cues and diminished activation of youths' inhibitory responses. In short, results found that high social media may have promoted brain development in a way that may make adolescents more inclined to focus on social rewards (e.g., attention from peers) and altered self-control.⁶²

recommendations, and social graphs. And everytime one of our teen users finds something unexpected their brains deliver them a dopamine hit.”).

META3047MDL-003-00191207 at -1215 (“**Teen brains are much more sensitive to dopamine**, one of the reasons that the risk of drug addiction is higher for adolescents and it’s the same thing that keeps them scrolling and scrolling. Due to the immature brain, **they have a much harder time stopping** even though they want to -- our own production foundation research has shown teens are unhappy with the amount of time they spend on our app.”) (emphasis in original).

⁵⁹ META3047MDL-020-00005380 at -5384. The October 2020, “Problematic Use Overview” was compiled by Jennifer Guadagno, previously Director of UX Research, Social Impact, at Meta and [REDACTED], a Quantitative UX Researcher at Meta.

⁶⁰ According to Meta engineers in 2022, teens had not meaningfully adopted Meta’s Take a Break tool (0.165%) or Meta’s Alternative Topic Nudges tool (0.137%). META3047MDL-047-01170167.

⁶¹ Anne J. Maheux, Kaitlyn Burnell, Maria T. Maza, Kara A. Fox, Eva H. Telzer, and Mitchell J. Prinstein, “Annual Research Review: Adolescent Social Media Use Is Not a Monolith: Toward the Study of Specific Social Media Components and Individual Differences,” *Journal of Child Psychology and Psychiatry* 66, no. 4 (2025): 440–459.

⁶² “High” social media use being defined as >15 “pickups” a day. Maria T. Maza, Kara A. Fox, Seh-Joo Kwon, Jessica E. Flannery, Kristen A. Lindquist, Mitchell J. Prinstein, and Eva H. Telzer, “Association of habitual checking behaviors on social media with longitudinal functional brain development,” *JAMA Pediatrics* 177, no. 2 (2023): 160–167.

Trial Report of Mitch Prinstein, PhD

The undersigned hereby certifies their understanding that they owe a primary and overriding duty of candor and professional integrity to help the Court on matters within their expertise and in all submissions to, or testimony before, the Court. The undersigned further certifies that their report and opinions are not being presented for any improper purpose, such as to harass, cause unnecessary delay, or needlessly increase the cost of litigation.



Mitch Prinstein, PhD

May 16, 2025

Date