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Exhibit P

**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 BRADLEY ZICHERMAN, MD

May 16, 2025

- loss or disruption of significant relationships or educational opportunities because of social media use.”¹¹

- (24) There have been countless research studies on the topic of social media addiction,¹² and there are numerous validated tools for the measurement of problematic social media use.¹³ A PubMed search query for “social media addiction” returns a result of over 10,000 research articles.¹⁴ A PubMed search query for “social media addiction measurement tool” returns a result of over 300 research articles.¹⁵ For my own research, I have relied on a screen usage assessment validated through the Adolescent Brain Cognitive Development (ABCD) study.¹⁶ The ABCD screen usage assessment consists of multiple separate surveys to capture different domains of screen usage. The different surveys I have adapted in my research include the Screen Usage Questionnaire, Sleep and Screen Usage Questionnaire, Mobile Phone Usage Questionnaire, Social Media Addiction Questionnaire, and the Video Game Addiction Questionnaire.
- (25) Despite the APA’s and researchers’ acknowledgement of the concerns regarding technology addiction and more specifically, social media addiction, they have not yet been officially recognized as disorders within the APA’s Diagnostic and Statistical Manual of Mental Disorders (DSM). The DSM

¹¹ “Health Advisory on Social Media Use in Adolescence,” American Psychological Association, accessed April 29, 2025, <https://www.apa.org/topics/social-media-internet/health-advisory-adolescent-social-media-use>.

¹² See, e.g., Alfonso Pellegrino, Alessandro Stasi, and Veera Bhatiasavi, “Research Trends in Social Media Addiction and Problematic Social Media Use: A Bibliometric Analysis,” *Frontiers in Psychiatry* 13 (2022): 1017506. Daria Kuss and Mark D. Griffiths, “Online Social Networking and Addiction—A Review of the Psychological Literature,” *International Journal of Environmental Research and Public Health* 8, no. 9 (2011): 3528–3552. Maria Chiara D’Arienzo, Valentina Boursier, and Mark D. Griffiths, “Addiction to Social Media and Attachment Styles: A Systematic Literature Review,” *International Journal of Mental Health and Addiction* 17 (2019): 1094–1118. Mark Griffiths, Daria Kuss, and Zsolt Demetrovics, “Social Networking Addiction: An Overview of Preliminary Findings,” *Behavioral Addictions* (2014): 119–141.

¹³ See, e.g., Sarah Domoff, Kristen Harrison, Ashley N. Gearhardt, Douglas A. Gentile, Julie C. Lumeng, and Alison L. Miller, “Development and Validation of the Problematic Media Use Measure: A Parent Report Measure of Screen Media ‘Addiction’ in Children,” *Psychology of Popular Media Culture* 8, no. 1 (2019): 2–11. Oriana Perez, Tatyana Garza, Olivia Hinder, Alicia Beltran, Salma M. Musaad, Tracey Dibbs, Anu Singh et al, “Validated Assessment Tools for Screen Media Use: A Systematic Review,” *PLOS One* 18, no. 4 (2023): 0283714. Ilaria Cataldo, Joël Billieux, Gianluca Esposito, and Ornella Corazza, “Assessing Problematic Use of Social Media: Where Do We Stand and What Can Be Improved?” *Current Opinion in Behavioral Sciences* 45 (2022): 101145. D. Hipp, E. C. Blakley, N. Hipp, P. Gerhardstein, B. Kennedy, and Tracy Markle, “The Digital Media Overuse Scale (dMOS): A Modular and Extendible Questionnaire for Indexing Digital Media Overuse,” *Technology, Mind, and Behavior*, 4 (3: Fall 2023).

¹⁴ “Search Results: Social Media Addiction,” Stanford Medicine Lane Medical Library, accessed May 8, 2025, <https://lane.stanford.edu/search.html?q=social+media+addiction&source=all-all&facets=recordType%3A%22pubmed%22>. The search returns more than 2,000 research articles when searching for the exact phrase “social media addiction,” <https://lane.stanford.edu/search.html?q=%22social+media+addiction%22&source=all-all&facets=recordType%3A%22pubmed%22>.

¹⁵ “Search Results: Social Media Addiction Measurement Tool,” Stanford Medicine Lane Medical Library, accessed May 8, 2025, <https://lane.stanford.edu/search.html?q=social+media+addiction+measurement+tool&source=all-all&facets=recordType%3A%22pubmed%22>.

¹⁶ Jason M. Nagata, Christopher M. Lee, Jacqueline O. Hur, and Fiona C. Baker, “What We Know About Screen Time and Social Media in Early Adolescence: A Review of Findings From the Adolescent Brain Cognitive Development Study,” *Current Opinion in Pediatrics* (2025): 1–8.

is a standardized classification of mental disorders used by mental health professionals in the United States. The current edition is the DSM-V, published in 2013.¹⁷ Social media was only in its infancy at the time of the DSM-V release. Meta acquired Instagram in 2012,¹⁸ just one year prior to the latest DSM release. However, the DSM-V does list Internet Gaming disorder as a condition warranting further study.¹⁹ In my professional opinion, although the DSM-VI has an unknown release date, it is likely that the DSM-VI will have new official diagnoses for various technology addictions.

- (26) While there may not be an official DSM-V diagnosis for technology addictions including social media addiction at this time, based on the fact that there is a significant body of research to date,²⁰ and based on my own clinical work experience, I believe it is appropriate and necessary to consider technology addictions in line with and similar to other addiction disorders listed in the DSM-V. In my professional experience, I believe social media addiction resembles other previously established behavioral addiction disorders and substance addiction disorders. Therefore, I believe it is appropriate to extrapolate from the established DSM criteria for addiction disorders as outlined below to determine whether a patient suffers from a social media addiction.²¹
- (27) In this context, it is also important to note that the World Health Organization's International Statistical Classification of Diseases and Related Health Problems (ICD) has a diagnostic code for Gaming disorder (6C51) and a diagnostic code for Other Specified disorder due to addictive behaviors (6C5Y). Research has supported the inclusion of problematic use of the internet for activities such as social media within this latter diagnostic code.²² Psychiatric treatment in the United

¹⁷ American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition. Arlington, VA, American Psychiatric Association, 2013. A revised version of the DSM-V was published in 2022 (DSM-5-TR). American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision. Washington, DC, American Psychiatric Association, 2022. *See also* "Diagnostic and Statistical Manual of Mental Disorders (DSM-5-TR)," American Psychiatric Association, accessed April 29, 2025, <https://www.psychiatry.org/psychiatrists/practice/dsm>.

¹⁸ "Facebook to Acquire Instagram," Meta Newsroom, April 9, 2012, <https://about.fb.com/news/2012/04/facebook-to-acquire-instagram/>.

¹⁹ American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition. Arlington, VA, American Psychiatric Association, 2013: Section III: Conditions for Further Study.

²⁰ *See, e.g.*, Mohamed Basel Almourad, John McAlaney, Tiffany Skinner, Megan Pleya, and Raian Ali, "Defining Digital Addiction: Key Features From the Literature," *Psilogija* 53, no. 3 (2020): 237–253. Kerstin Paschke, Maria Isabella Austermann, and Rainer Thomasius, "ICD-11-Based Assessment of Social Media Use Disorder in Adolescents: Development and Validation of the Social Media Use Disorder Scale for Adolescents," *Frontiers in Psychiatry* 12 (2021): 661483. Tania Moretta and Elisa Wegmann, "Toward the Classification of Social Media Use Disorder: Clinical Characterization and Proposed Diagnostic Criteria," *Addictive Behaviors Reports* 21 (2025): 100603.

²¹ Kerstin Paschke, Maria Isabella Austermann, and Rainer Thomasius, "ICD-11-Based Assessment of Social Media Use Disorder in Adolescents: Development and Validation of the Social Media Use Disorder Scale for Adolescents," *Frontiers in Psychiatry* 12 (2021): 661483. Tania Moretta and Elisa Wegmann, "Toward the Classification of Social Media Use Disorder: Clinical Characterization and Proposed Diagnostic Criteria," *Addictive Behaviors Reports* 21 (2025): 100603.

²² Matthias Brand, Hans-Jürgen Rumpf, Zsolt Demetrovics, Astrid Müller, Rudolf Stark, Daniel L. King, Anna E. Goudriaan et al, "Which Conditions Should be Considered as Disorders in the International Classification of Diseases (ICD-11) Designation of "Other Specified Disorders Due to Addictive Behaviors" *Journal of Behavioral Addictions* 11, no. 2 (2022): 150–159.

III. Social media use is particularly problematic for teens and youth due to their underdeveloped brains

- (35) It is well established through research that the brain does not fully develop until the age of 25 in most individuals.²⁶ The last structure in the brain to fully develop is the prefrontal cortex. The prefrontal cortex is responsible for executive functioning: the ability to support goal-directed behavior through cognitive control. In other words, the prefrontal cortex underlies the ability to plan, focus attention, juggle tasks, prioritize appropriately, and control impulses.²⁷ Adolescence is a time when the executive function boundaries are tested. It is notoriously a time of risk-taking behaviors, substance use experimentation, and rebelling against authority.²⁸ The sub-optimal reasoning and decision making of an adolescent is a result of their stage of cognitive development and is largely influenced by the lag time in development of the prefrontal cortex.²⁹ While it may be expected that adolescents act in similar ways to adults, the prefrontal cortex of an adolescent and adult brain remain quite different. The adolescent prefrontal cortex has not yet undergone synaptic pruning and full myelination, two processes that help to improve cognition, reduce impulsivity and risk-taking, and promote emotional regulation.³⁰ The prefrontal cortex of an adolescent brain ultimately looks quite different through MRI and other imaging modalities compared to the prefrontal cortex of an adult.³¹
- (36) Dopamine is a neurotransmitter considered to be at the core of the brain's reward system, determining the reward value of experiences such as food, sex, and social interactions.³² Upon exposure to rewarding stimuli, the mesolimbic system releases dopamine into specific target nuclei.³³ Evidence suggests that a shared mechanism in the brain underlies all addictions, whether substance-related or

²⁶ Mariam Arain, Maliha Haque, Lina Johal, Puja Mathur, Wynand Nel, Afsha Rais, Ranbir Sandhu, and Sushil Sharma, "Maturation of the Adolescent Brain," *Neuropsychiatric Disease and Treatment* 9 (2013): 449–461.

²⁷ Mariam Arain, Maliha Haque, Lina Johal, Puja Mathur, Wynand Nel, Afsha Rais, Ranbir Sandhu, and Sushil Sharma, "Maturation of the Adolescent Brain," *Neuropsychiatric Disease and Treatment* 9 (2013): 449–461. Naomi Friedman and Trevor Robbins, "The Role of Prefrontal Cortex in Cognitive Control and Executive Function," *Neuropsychopharmacology* 47, no. 1 (2022): 72–89. Earl Miller, and Jonathan Cohen, "An Integrative Theory of Prefrontal Cortex Function," *Annual Review of Neuroscience* 24, no. 1 (2001): 167–202. Adele Diamond, "Executive Functions," *Annual Review of Psychology* 64, no. 1 (2013): 135–168.

²⁸ Laurence Steinberg, "A Social Neuroscience Perspective on Adolescent Risk-taking," *Developmental Review* 28, no. 1 (2008): 78–106. B.J. Casey and Kristina Caudle, "The Teenage Brain: Self Control," *Current Directions in Psychological Science* 22, no. 2 (2013): 82–87.

²⁹ Laurence Steinberg, "Cognitive and Affective Development in Adolescence," *Trends in Cognitive Sciences* 9, no. 2 (2005): 69–74. Sarah-Jayne Blakemore, "Imaging Brain Development: The Adolescent Brain," *NeuroImage* 61, no. 2 (2012): 397–406.

³⁰ Linda Patia Spear, "Adolescent Neurodevelopment," *Journal of Adolescent Health* 52, no. 2 (2013): S7–S13.

³¹ B.J. Casey, Rebecca Jones, and Todd Hare, "The Adolescent Brain," *Annals of the New York Academy of Sciences* 1124 (2008): 111–126.

³² Robert G. Lewis, Ermanno Florio, Daniela Punzo, and Emiliana Borrelli, "The Brain's Reward System in Health and Disease," *Circadian Clock in Brain Health and Disease: Advances in Experimental Medicine and Biology*, vol 1344. Springer, 2021: 57–69.

³³ Debasmita De, Mazen El Jamal, Eda Aydemir, and Anika Khera, "Social Media Algorithms and Teen Addiction: Neurophysiological Impact and Ethical Considerations," *Cureus* 17, no. 1 (2025).

Trial Report of Bradley Zicherman, MD

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.

A handwritten signature in dark ink, appearing to read 'B. Zicherman M.D.', is positioned above a horizontal line.

Bradley Zicherman, MD

May 16, 2025

Date