SUPERIOR COURT OF THE STATE OF CALIFORNIA
FOR THE COUNTY OF LOS ANGELES

Social Media Cases
JCCP5255
(Lead Case: 22STCV21355)

Dept. 12 SSC
Hon. Carolyn B. Kuhl
Date of Hearing: September 17, 2025

Defendants' Omnibus Motion to Exclude General Causation Opinions of Plaintiffs' Experts

Defendants' Motion to Exclude the Expert Testimony of Dr. Gary Goldfield

Defendants' Motion to Exclude the Expert Testimony of Dr. Kara Bagot

Defendants' Motion to Exclude the Expert Testimony of Arturo Bejar

Defendants' Motion to Exclude Expert Testimony of Dr. Drew Cingel

Defendants' Motion to Exclude the Expert Testimony of Dr. Anna Lembke

Defendants' Motion to Exclude the Expert Testimony of Dr. Dimitri Christakis

Defendants' Motion to Exclude the Expert Testimony of Dr. Ramin Mojtabai

Defendants' Motion to Exclude the Expert Testimony of Lotte Rubaek

Defendants' Motion to Exclude the Expert Testimony of Dr. Eva Telzer

Defendants' Motion to Exclude the Expert Testimony of Dr. Jean Twenge

Court's Ruling: The court rules on the admissibility of each of Plaintiffs' proposed expert witnesses as stated below.

Plaintiffs in these coordinated proceedings are minor users of social media platforms (or parents of those users) who allege they have suffered various types of harm as a result of the use of the platforms. Plaintiffs bring their claims against multiple Defendants that designed and operated the following social media platforms: Facebook, Instagram, Snapchat, TikTok, and YouTube. Facebook and Instagram are owned, designed, and operated by a group of Defendants who are referred to collectively in these proceedings as "Meta." Snapchat is owned, designed, and operated by Defendant Snap Inc. (Snap). TikTok is owned, designed, and operated by multiple Defendants who are referred to collectively in these proceedings as "ByteDance." YouTube is owned, designed, and operated by multiple Defendants referred to collectively in these proceedings as "Google."

In an "Omnibus Motion" and several individualized Motions, Defendants move for an order excluding the expert opinions of each of Plaintiffs' eleven proffered general causation experts (Plaintiffs' Experts), Dr. Gary Goldfield (Goldfield), Dr. Kara Bagot (Bagot), Mr. Arturo Bejar (Bejar), Dr. Drew Cingel (Cingel), Dr. Anna Lembke (Lembke), Dr. Dimitri Christakis (Christakis), Dr. Stuart Murray (Murray), Dr. Ramin Mojtabai (Mojtabai), Dr. Lotte Rubaek (Rubaek), Dr. Eva Telzer (Telzer), and Dr. Jean Twenge (Twenge). Defendants contend that Plaintiffs' Experts' opinions lack a reliable basis and are contrary to generally accepted scientific principles and literature, and otherwise fail to meet the standards for admissibility of expert testimony under California law.

Defendants argue that Plaintiffs' Experts generally fail to offer reliable opinions for two reasons. First, Plaintiffs' Experts "offer causation opinions that rely on the purported impact of content," even though Section 230 of the Communications Decency Act (47 U.S.C. § 230) and the First Amendment preclude a finding of liability for harm caused by third-party content found on Defendants' platforms. (Defs' Omn. Mot., at p. 6.) According to Defendants, Plaintiffs' Experts "consistently offer opinions that overtly rely on or fail to disaggregate the impact of third-party content on mental health—and that are universally premised on a body of scientific literature that does the same." (Defs' Omn. Mot., at p. 6.)

Second, Defendants argue that Plaintiffs' experts violate the standards of reliability set out in *Sargon Enterprises, Inc. v. University of Southern California* (2012) 55 Cal.4th 747 (*Sargon*). "These recurring flaws, which include over-extrapolating from the data, cherry-picking across and even within studies, failing to account for alternative explanations for study findings, and proffering opinions that contradict the experts' own statements in non-litigation contexts, are discussed in detail in Defendants' concurrently filed expert-specific Sargon motions." (Defs' Omn. Mot., at p. 7.)

General Principles

"If a witness is testifying as an expert, his testimony in the form of an opinion is limited to such an opinion as is:

> (a) Related to a subject that is sufficiently beyond common experience that the opinion of an expert would assist the trier of fact; and
>
> (b) Based on matter (including his special knowledge, skill, experience, training, and education) perceived by or personally known to the witness or made known to him at or before the hearing, whether or not admissible, that is of a type that reasonably may be relied upon by an expert in forming an opinion upon the subject to which his testimony relates, unless an expert is precluded by law from using such matter as a basis for his opinion."

(Evid. Code, § 801.) "A witness testifying in the form of an opinion may state on direct examination the reasons for his opinion and the matter (including, in the case of an expert, his special knowledge, skill, experience, training, and education) upon which it is based, unless he is precluded by law from using such reasons or matter as a basis for his opinion." (Evid. Code, § 802.) "Evidence Code section 801 governs judicial review of the *type* of matter; Evidence Code section 802 governs judicial review of the *reasons* for the opinion." (*Sargon*, *supra*, 55 Cal.4th at p. 771, emphasis in original.)

"[U]nder Evidence Code sections 801, subdivision (b), and 802, the trial court acts as a gatekeeper to exclude expert opinion testimony that is (1) based on matter of a type on which an expert may not reasonably rely, (2) based on reasons unsupported by the material on which the expert relies, or 3) speculative. Other provisions of law, including decisional law, may also provide reasons for excluding expert opinion testimony." (*Id.* at pp. 771-772.) "But courts must also be cautious in excluding expert testimony. The trial court's gatekeeping role does not involve choosing between competing expert opinions. ... [T]he gatekeeper's focus must be solely on principles and

methodology, not on the conclusions that they generate." (*Id.* at p. 772, internal citations and quotation marks omitted.)

"The trial court's preliminary determination whether the expert opinion is founded on sound logic is not a decision on its persuasiveness. The court must not weigh an opinion's probative value or substitute its own opinion for the expert's opinion. Rather, the court must simply determine whether the matter relied on can provide a reasonable basis for the opinion or whether that opinion is based on a leap of logic or conjecture. The court does not resolve scientific controversies. Rather, it conducts a circumscribed inquiry to determine whether, as a matter of logic, the studies and other information cited by experts adequately support the conclusion that the expert's general theory or technique is valid. [Citation.] The goal of trial court gatekeeping is simply to exclude clearly invalid and unreliable expert opinion. [Citation.] In short, the gatekeeper's role is to make certain that an expert, whether basing testimony upon professional studies or personal experience, employs in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field." (*Id.* at p. 772, internal citations and quotation marks omitted.)

The holding in *Garner v. BNSF Railway Co.* (2024) 98 Cal.App.5th 660 (*Garner*) addresses how these principles from *Sargon* apply in the case of general causation experts who opine on whether a particular substance or product is capable of causing physical harm. In *Garner*, the plaintiff alleged that his father was exposed to toxic levels of diesel exhaust and its chemical constituents. (*Id.* at p. 665.) "According to [the plaintiff], this exposure was a cause of [his father's] non-Hodgkin's lymphoma, which [the father] developed after retiring from [the defendant] and which led to his death in 2014. [The plaintiff] retained several experts to perform a cancer risk assessment and opine on whether diesel exhaust and its constituents are capable of causing cancer, including non-Hodgkin's lymphoma, and whether [the plaintiff's father's] workplace exposure to diesel exhaust in this case was in fact a cause of his cancer. At the outset of trial, however, the trial court granted [the defendant's] motions in limine to exclude [the plaintiff's] three causation experts from trial, finding that the science the experts relied on was inadequate and there was too great an analytical gap between the data and their opinions. The trial court then entered judgment in favor of [the defendant] and dismissed the case." (*Id.*)

The appellate court reversed the trial court's ruling as to the admissibility of the three experts. The ruling as to Dr. Salmon is illustrative of how this court should address Defendants' *Sargon* Motions here.

Dr. Salmon "was retained ... to provide an estimate of the excess cancer risk [the father] experienced due to his occupational exposure to diesel exhaust and its constituents, or diesel particulate matter (DPM), and whether this excess risk is more likely than not to have been a cause of his non-Hodgkin's lymphoma. Dr. Salmon calculated that someone with [the plaintiff's] DPM exposure from their employment with [the defendant] would have an estimated excess cancer risk between 2864 and 3875 excess cancers per million persons. He also opined that it was more likely than not that [the father's] diesel exhaust exposure was a cause of his lymphoma." (*Id.* at p. 677.)

The defendant in *Garner* argued that Dr. Salmon could not reliably "conclude that [the father's] exposure was more likely than not a cause of his non-Hodgkin's lymphoma," given that Dr. Salmon was "unable to point to any specific study stating that exposure to diesel exhaust causes non-Hodgkin's lymphoma." (*Id.*) The trial court agreed:

> The trial court concluded that [Dr. Salmon's conclusion was not appropriate], finding that the science Dr. Salmon relied on in reaching his opinion was "inadequate" because "there is no data, no study, and no testing linking non-Hodgkin's lymphoma and exposure to diesel exhaust." The court further found that there was "too great an analytical gap between the data" on which Dr. Salmon did rely and the opinion he proffered. The trial court seems to have agreed with [the defendant's] argument ... that [the plaintiff's] experts, including Dr. Salmon, were not permitted to opine at trial that diesel exhaust and its constituents, more likely than not, are a cause of non-Hodgkin's lymphoma, because there are no epidemiological or other scientific studies that have already stated that conclusion.

(*Id.*, internal brackets omitted.)

The appellate court concluded that the trial court's ruling reflected "a misunderstanding of the law," explaining that "there is no requirement that a causation expert rely on a specific study or other scientific publication expressing precisely the same conclusion at which the expert has arrived." (*Id.*) It is worth citing at length from *Garner* to capture the reasons for the appellate court's ruling:

> First, "publication is not the *sine qua non* of admissibility; it does not necessarily correlate with reliability ..., and in some instances well-grounded but innovative

theories will not have been published. ... Some propositions, moreover, are too particular, too new, or of too limited interest to be published." [Citations.] "Peer reviewed scientific literature may be unavailable because the issue may be too particular, new, or of insufficiently broad interest, to be in the literature." ... As Dr. Salmon explained, this is such a case because few studies of the potential link between diesel exhaust and non-Hodgkin's lymphoma have been conducted. " 'The first several victims of a new toxic tort should not be barred from having their day in court simply because the medical literature, which will eventually show the connection between the victims' condition and the toxic substance, has not yet been completed.' " [Citation.]

Second, although "epidemiology focuses on the question of general causation," it "cannot prove causation; rather, causation is a judgment for epidemiologists and others interpreting the epidemiologic data." [Citation.] Epidemiological studies merely identify *associations*, which do not equate to causation. [Citation.] It is up to the expert to "bridge the gap between association and causation" and make that informed judgment. [Citations.]

"Whether an inference of causation based on an association is appropriate is a matter of informed judgment, not scientific methodology." [Citations.] And "scientific inference typically requires consideration of numerous findings, which, when considered alone, may not individually prove the contention. In applying the scientific method, scientists do not review each scientific study individually for whether by itself it reliably supports the causal claim being advocated or opposed. Rather, as the Institute of Medicine and National Research Council noted, 'summing, or synthesizing, data addressing different linkages between kinds of data forms a more complete causal evidence model and can provide the biological plausibility needed to establish the association' being advocated or opposed." [Citations.] It was therefore appropriate for [the plaintiff's] experts to use their experience and judgment to interpret the available epidemiological and other data they reviewed in reaching their causation opinions.

Finally, in many cases where the available scientific evidence is limited or inconclusive, there will inevitably be *some* analytical gap between the underlying data and the expert's ultimate causation opinion. But *Sargon* should not

> be construed so broadly that the gatekeeper effectively supplants both the expert's reasonable scientific judgment and the jury's role. That would be at odds with *Sargon*'s emphasis on the limited role of the evidentiary gatekeeper. [Citation.] In keeping the gate, it is not the trial court's proper function to second-guess the judgment of a qualified expert who has provided a reasonable scientific explanation for his conclusions and used a scientifically accepted methodology for reaching them based on the available data, even if the data itself is inconclusive. "So long as an expert's testimony rests upon 'good grounds, based on what is known' ..., it should be tested by the adversarial process, rather than excluded for fear that jurors will not be able to handle the scientific complexities." [Citation.]

(*Id.* at pp. 678–679, internal citations, brackets and ellipses omitted; emphasis in original.)

The trial court in *Garner* had also excluded Dr. Salmon's opinions because it "took issue with Dr. Salmon's reliance on the overall excess cancer risk and his opinion that such risk is relevant to determining the risk of non-Hodgkin's lymphoma." (*Id.* at p. 679.) The appellate court rejected this ruling as having gone beyond the proper, *limited* role assigned to courts under *Sargon*:

> Dr. Salmon gave a reasonable scientific explanation for his causation opinions, including his reliance on the overall cancer risk, and he cited objective, verifiable evidence supporting his opinions. [The defendant] submitted no evidence that his reasoning or methodology was scientifically invalid. The trial court also found no fault with his methodology. The mere fact that a cause-effect relationship between exposure to diesel exhaust and non-Hodgkin's lymphoma "in particular" has not been conclusively established in the scientific literature does not render Dr. Salmon's opinions inadmissible.

(*Id.* at pp. 681-682.)

The appellate court in *Garner* also rejected the argument that Dr. Salmon's conclusions were inadmissible because a study by the International Agency for Research on Cancer (IARC) had issued a monograph that seemed to disclaim a link between diesel exhaust and lymphoma. (*Id.* at p. 682.) The court did "not agree that it is inherently unreliable for an expert to infer

causation from epidemiological studies simply because IARC or another agency has not yet done so." (*Id.* at p. 683.) The court explained:

> "whether an inference of causation based on an association is appropriate is a matter of informed judgment, not scientific methodology, as is a judgment whether a study that finds no association is exonerative or inconclusive." [Citation.] "In some cases, reasonable scientists can come to differing conclusions on whether a body of epidemiologic data justifies an inference of causation. Similarly, reasonable scientists may, in some instances, disagree on whether the absence of an association is exonerative of the agent or is merely inconclusive." [Citation.] Dr. Salmon was entitled to reach a different conclusion than that of IARC so long as it is not " 'clearly invalid and unreliable.' "

(*Id.*, internal citations, brackets, and emphasis omitted.)

Defendants rely heavily on *Onglyza Product Cases* (2023) 90 Cal.App. 5th 776 (*Onglyza*), which applied the same general principles as *Garner.* That appellate decision also recognizes that a trial court "may not weigh an expert opinion's probative value or persuasiveness" but "must still consider whether the opinion is logically sound." (*Id.* at p. 785.) Like the analysis in *Garner*, the appellate court in *Onglyza* accepted the principles that "epidemiological studies can demonstrate only association, not causation . . . [and] [r]arely, if ever, does a single study persuasively demonstrate a cause-effect relationship." (*Id.* at p. 785, internal quotations marks omitted.)

In *Onglyza,* the appellate court affirmed the trial court's exclusion of Plaintiff's expert on the subject of whether two diabetes drugs with the component saxagliptin could cause heart failure. Plaintiff's expert relied on one early study (the SAVOR study), a randomized, double-blind, placebo-controlled study, which found that saxagliptin did not increase the risk of various adverse cardiac events, but found a statistically significant correlation with increased hospitalization for heart failure. The SAVOR study's authors noted the latter finding "was unexpected and should be considered within the context of multiple testing that may have resulted in a false positive result" and that the finding "needs to be confirmed in other ongoing studies, and a class effect should not be presumed." (*Id.* at pp. 483-484.)

Plaintiff's expert admitted that SAVOR's finding of increased heart failure "could have been chance." (*Id.* at p. 786.) But the expert's report

nevertheless concluded that the finding from the SAVOR study *alone* showed a causal link between saxagliptin and heart failure. (*Id.* at p. 785.) Further, the plaintiff's expert did not consider other human observational studies, which had found no association between saxagliptin and increased risk of hospitalization for heart failure, but he did consider animal data, even though he expert conceded he did not have the qualifications to analyze the animal studies. (*Id.* at p. 782.) The court of appeal determined that the trial court had not abused its discretion in determining that the expert's analysis was logically unsound. (*Id.* at p. 786.)

The *Onglyza* opinion also found that plaintiff's expert improperly performed "the Bradford Hill analysis, an accepted methodology" for determining whether epidemiological studies indicate a causal relationship between an allegedly harmful product and an adverse health outcome. (*Id.* at p. 786-787.) The Bradford Hill analysis considers nine factors, and the appellate court found there were methodological defects in the expert's application of six of those factors, ultimately finding that the expert's opinions were unreliable and inadmissible. (*Id.* at pp. 786-789.)

Discussion – Defendants' "Omnibus Motion"

In addition to filing motions to exclude each of the Plaintiffs' general causation experts, Defendants have filed an "Omnibus Motion" in which they articulate two general arguments that they contend identify flaws cutting across each of the Plaintiffs' general causation experts' opinions. Defendants argue (1) that Plaintiffs' general causation experts should be excluded because they rely on and fail to disentangle the impact of potentially harmful third-party content on their opinions, and (2) that Plaintiffs' general causation experts "engage in methodologically unreliable reasoning to arrive at made-for-litigation conclusions."

The second argument must be addressed in the context of each expert's analysis and opinion. Criticisms such as whether an expert has "overextrapolated from data," "cherry-picked studies," or failed to consider alternative interpretations of the data (see Defs' Omn. Mot., at pp. 18-21) cannot be discussed in the abstract. Defendants' criticisms of Plaintiffs' experts' divergence from prior opinions for the most part go to bias rather than to the issue of whether the experts' current reasoning is methodologically reliable. But in any event, this argument, too, requires a focus on the expert's prior statement and how it relates to that expert's current opinion, which cannot usefully be considered by reference to Plaintiffs' experts as a group.

Under their first argument, Defendants contend that no expert can reach a conclusion about the effect of Defendants' social media platforms and design features on minors without considering what content the minor is consuming, and that the experts' opinions therefore violate Evidence Code section 802 and Section 230. "Plaintiffs' experts cannot offer reliable opinions about potential harms from features, separate from potential harms from content that might be published through those features." (Defs' Omn. Mot., at p. 6.) This over-generalized argument is unpersuasive for three reasons.

First, Defendants re-argue legal principles that this court already has rejected based on binding precedent. Section 230 bars a claim only if the cause of action seeks to impose liability for the provider's *publishing* decisions regarding third-party content – for example whether or not to publish and whether or not to depublish. (Ruling on Defs' Demurrer to Master Complaint, Oct. 13, 2023, at p. 19.) Here, liability for negligence cannot be based on a Defendant's decision to allow certain content to appear on its platform. However, a Defendant may be held liable for harm caused by a feature or activity that was part of the design or operation of the Defendant's social media platform if a jury finds that the Defendant was negligent in the design or operation of the social media platform and also find that the design or operation of the social media platform was a substantial factor in causing a Plaintiff's injury. (See Early Tentative Decision on Jury Instructions, Mar. 20, 2025, at pp. 2-3.)

Of course, Defendants' social media platforms could not operate without content, and much of that content is third-party content. Many of Plaintiffs' experts make the unsurprising observation that some of the third-party content minors see on social media can be harmful. Insofar as minors are harmed by content appearing on a social media platform, this court has held that Section 230 precludes liability for such harm. (Ruling on Defs' Mot to Strike, July 19, 2024, at pp. 9-11.) But even if third-party content is a "but-for" cause of the harm suffered by a plaintiff, the action is not barred by Section 230 if the cause of action does not seek to hold the provider liable for allowing that content to exist on the social media platform or failing to remove the content. (Ruling on Defs' Demurrer to Master Complaint, Oct. 13, 2023, at p. 19.) Therefore, as this court previously has ruled, Defendants may be held liable if the design or operation of Defendants' platforms themselves is a substantial factor in causing Plaintiffs' to become addicted to or otherwise engaged in social media use in a manner that causes them harm. (*Id.* at pp. 62-63.)

Second, Defendants seem to fail to recognize that it is not the role of a general causation expert to opine as to the cause of a particular, individual

plaintiff's injury. A general causation expert's role is to offer evidence that a substance or instrumentality is capable of causing a given type of harm in the general population or in some subset of the population. It is not required that a general causation expert state that the substance or instrumentality in question is the only possible cause of that type of harm. Offering opinions on whether the substance or instrumentality has caused harm in a particular plaintiff is the role of a specific causation expert who has familiarity with the facts concerning that plaintiff's exposure to the allegedly harmful substance or instrumentality and the facts concerning alternative causal factors.

Determining whether the substance or instrumentality upon which liability is premised caused a particular plaintiff's harm is also the role of the jury. Indeed, juries may determine emotional distress damages without testimony from an expert. (*See Shirvanyan v. Los Angeles Community College Dist.* (2020) 59 Cal.App.5th 82, 104.) Defendants ask rhetorically: "How, for instance, could a juror be expected to follow any instruction to disregard part of an expert's opinion when the experts themselves cannot disentangle the legally precluded portion of their opinion from the permissible parts?" (Defs' Omn. Mot, at p. 17.) Again, a general causation expert only will opine that the design or operation of a social media platform is *capable* of causing injury. Such expert is not required to opine that content cannot also cause harm. Juries are frequently called upon to decide the extent to which a plaintiff's emotional harm is caused by the defendant's actionable conduct or, instead, by other influences. For example, an employee who has been wrongfully discharged may claim that she was so depressed by the fact and circumstances of her firing that she could not go out in public for six months. But the defendant may offer evidence that the plaintiff also was going through a divorce at that time and argue that her depression was caused by circumstances for which the employer was not liable.

The requirement that a jury separate out and not award damages for any harm caused by the Defendants' publication of content if the jury finds that the negligent design or operation of Defendants' social media platform caused a plaintiff harm may not be an easy task. But it is not different in kind from a jury's responsibility for applying other legal and factual distinctions on which they are instructed in other cases.

Third, Defendant's "omnibus" argument regarding the insufficiency of existing scientific literature to provide an adequate basis for an expert opinion that social media design and operation *as such* can cause addiction or problematic use leading to mental harm in minors must be examined in light of the literature itself, not based on Defendants' generalizations. Those

granular analyses are discussed at length below in the context of individual experts' research and reasoning. Even Defendants concede that "some of [Plaintiffs' Experts] purport to identify specific features of Defendants' platforms that allegedly cause the types of harms Plaintiffs allege, independent of content." (Defs' Omn. Mot., at p. 15.) That Defendants' experts disagree with the approach and conclusions of Plaintiffs' experts is not dispositive. This court must "permit the introduction of competing principles or methods in the same field of expertise." (*Brancati v. Cachuma Village, LLC* (2023) 96 Cal.App.5th 499, 512 (*Brancati*), internal citations and quotation marks omitted.)

Moreover, many or most of the studies on which Plaintiffs' experts rely in reaching their conclusions were based on experiments that found correlations between negative health effects and social media use *regardless of the content the minors were viewing*. For example, Plaintiffs' expert Mojtabai explained in his deposition, "the majority of the results [were] found in the studies regardless of content that the participants were viewing." (Mojtabai Dep., Defs' Ex. C, at pp. 708:25—709:4.) That an expert relies on studies that do not focus on a *particular type of content*, tends to suggest that the harms are content *neutral* and thus caused by the universal design features of Defendants' platforms. These studies and Plaintiffs' experts' reliance on them is discussed in greater specificity below.

Defendants' Motion to Exclude the Expert Testimony of Dr. Gary Goldfield

Court's Ruling: The court excludes from trial any testimony by Goldfield stating the following opinion from his expert report:

> F. Defendants knew or should have known that children and youth are more vulnerable to the mental health risks presented by their social media platforms.

(Goldfield Rept., Defs' Ex. A, ¶ 1(F).) However, Defendants have failed to show that any other testimony by Goldfield—including Goldfield's testimony relying on Defendants' internal documents—should be excluded from trial.

Goldfield's causation opinions are based on two methodologies he employed. Goldfield explains as follows in his report:

> To address the potential causal role that social media and social media addiction play in mental health problems and maladaptive behaviours, two distinct, empirically and

> conceptually validated methodological approaches were applied. *First,* I conducted a systematic review of the literature spanning the past five years using pre-specified search terms following the PRISMA reporting guidelines for systematic review and meta-analyses. I elected to focus my review only on meta-analyses of observational (cross-sectional and longitudinal) and experimental studies because this a more robust quantitative and objective approach to estimating true effects compared to reviews that rely on narrative synthesis, which are more subjective in nature, thus more prone to bias. Many, but not all, meta-analytic reviews provided an evaluation of the quality of evidence and risk of bias using various validated methodologies, with most studies classified as moderate to high quality, strengthening my confidence in conclusions drawn. *Second,* based on the meta-analytic evidence presented and discussed, supplemented with additional research that I am aware of where relevant, and the studies cited in the meta-analyses, I applied a Bradford-Hill analysis. This is a validated epidemiological model designed to infer causality from correlational data based on 9 factors.

(Goldfield Rept., Def's Ex. A, ¶ 12, emphasis added.) "The Bradford Hill methodology refers to a set of criteria that are well accepted in the medical field for making causal judgments." (*Wendell v. GlaxoSmithKline LLC* (9th Cir. 2017) 858 F.3d 1227, 1235, fn. 4.) "The Bradford Hill criteria are metrics that epidemiologists use to distinguish a causal connection from a mere association. These metrics include strength of the association, consistency, specificity, temporality, coherence, biological gradient, plausibility, experimental evidence, and analogy." (*In re Zoloft (Sertraline Hydrochloride) Products Liability Litigation* (3d Cir. 2017) 858 F.3d 787, 795.)

Goldfield offers the following opinions "to a reasonable degree of scientific certainty":

> A. Defendants' social media platforms cause problematic social media use and cause or contribute to cause other mental health harms among children and youth.
>
> i. The weight and totality of the evidence examined in my systematic literature review demonstrates that Defendants' social media platforms cause or contribute to cause mental health harms to children and youth.

ii. A Bradford Hill analysis of the relevant scientific evidence further establishes that Defendants' social media platforms cause or contribute to cause mental health harms to children and youth.

B. Social media use is driven by a combination of psychological, neurological, and technological factors, including but not limited to:

i. Defendants' social media platforms exploit the brain's fundamental reward-learning processes and promote frequent engagement using low-effort, high reward stimuli (e.g., likes, comments) and intermittent, variable rewards schedules (e.g., push notifications) to promote dopamine-driven reinforcement;

ii. Defendants' social media platforms exploit the evolutionary drive for social connection and acceptance by scaling social contact, converting social approval into quantifiable metrics (e.g., like counts), gamifying social interactions (e.g., Snapstreaks), leveraging social anxiety and fear of missing out, and amplifying social pressure;

iii. Defendants' social media platforms use algorithms to aggregate personalized experiences and present it in an infinite scroll format that lacks time or stopping cues and promotes excessive continued engagement; and

iv. Defendants' social media platforms capitalize on users' limited capacity for emotional regulation and cognitive control by fostering patterns of compulsive and prolonged engagement, as users increasingly rely on social media engagement to modulate negative mood states.

C. Child and youth use of Defendants' social media platforms causes or contributes to mental health harms via numerous pathways and mechanisms, including but not limited to negative social comparisons, displacement of behaviours that are protective of mental health, exposure to harmful experiences, social-emotional contagion, neurobiological and neurocognitive changes, and digital stress.

D. Children and youth are especially vulnerable to the mental health risks presented by Defendants' social media platforms due to the profound physical, social, behavioural, and neurobiological changes taking place during this critical developmental phase.

i. Given the severe mental health risks described herein, it is my opinion that Defendants' social media platforms are not reasonably safe for children and youth. Defendants should have mitigated these dangers and should have fully

informed parents, children and youth about the risks and dangers of their platforms.

ii. Given the unique vulnerability of children and youth, Defendants' policies allowing users to join their platforms at age 13 are inappropriate, are contrary to the science, and have resulted in millions of vulnerable children and adolescents being exposed to an unreasonable risk of harm.

iii. Defendants fail to meaningfully enforce their policies regarding minimum user age.

iv. As a result of Defendants' inappropriate policies for minimum user age, as well as their failure to meaningfully enforce those policies, Defendants have exposed millions of US children to an unreasonable risk of harm.

E. Individual characteristics, including but not limited to sociodemographic, psychosocial functioning, personality traits, neurobiological factors, genetic influences, quality of social media use, digital literacy make some children and youth even more vulnerable to the mental health harms presented by Defendants' social media platforms.

F. Defendants knew or should have known that children and youth are more vulnerable to the mental health risks presented by their social media platforms.

G. Defendants' internal research and documents align with the opinions offered in this report.

(Goldfield Rept., Def's Ex. A, ¶ 1.)

Defendants argue that Goldfield's testimony should be excluded under *Sargon* for four reasons. First, Defendants argue that "Goldfield concedes that his opinions are necessarily based on users' exposure to third-party content—not features of Defendants' platforms—and thus contravene Section 230." (Defs' Goldfield Mot, at p. 6.) Second, Defendants argue that Goldfield's inexperience and "plain errors" in conducting the Bradford Hill analysis have yielded an unreliable opinion. (Defs' Goldfield Mot., at p. 6.) Third, Defendants argue that "Goldfield's underlying literature review lacks scientific integrity" because Goldfield "cherry-picks studies, ignores limitations, and reaches conclusions unsupported by the actual research—including his own prior research." (Defs' Goldfield Mot., at pp. 6-7.) Fourth and finally, Defendants argue that "Goldfield's opinions about what each Defendant 'knew or should have known' about the alleged risks of their platforms and about their age verification efforts plainly fall outside any area of his expertise." (Defs' Goldfield Mot., at p. 7.)

Defendants' first argument is not persuasive. Plaintiffs need only show that they were harmed by the design features of Defendants' platforms—they do not need to show that they were *not* harmed by third-party content as well. And as this court has noted, Defendants cannot be allowed to apply an improper but-for test that excludes liability under section 230 if the harm would not have occurred *but for* the third-party content. (*Internet Brands*, *supra*, 824 F.3d at p. 853.) Defendants cannot be allowed to dress this incorrect but-for argument in the sheep's clothing of a *Sargon* motion. (See, e.g., Defs' Goldfield Mot., at p. 10, fn. 2 ["Goldfield cannot credibly argue that a blank screen would displace sleep or other activities"].) Goldfield's statements that harm from social media cannot be completely "disentangled" from the third-party content present on social media thus does not doom Goldfield's testimony as long as Goldfield employed reliable methodologies for assessing the harm caused by the design features that affected social media users *regardless* of the third-party content viewed.

Here, Goldfield has concluded that social media *features* cause harm as a general matter. For example, Goldfield (referring to social media use as "SMU") states:

> Multiple studies have documented that several user design features of social media use elicit psychological processes that are analogous to processes implicated in both behavioural and substance addictions. This includes easy access via mobile technology, algorithm-generated personalized experience, auto-scroll that undermines self-regulation of use, notifications that entice engagement, and positively reinforcing features such as gamification and social feedback via likes and comments. Collectively, these factors were empirically demonstrated above to drive excessive or problematic usage. Experimental human neuroimaging studies have shown many of these features, such as social reinforcement in the form of likes, positive comments, stimulate the dopamine reward centers of the brain, a neural pattern of response that is also associated with higher or more intense SMU (Maza et al. 2023; Meshi et al. 2013; Mesh et al. 2015). These brain-behavioural responses are well established biological reinforcement mechanisms that drive addictive behaviour (Maza et al. 2023). Dopamine is also implicated in emotional and behavioural regulation (Salagado-Pineda et al. 2005). Moreover, there is longitudinal evidence of dose-response biological relations, whereby youth who checked their social media accounts more frequently (SMU intensity) later

> showed greater activation in dopamine reward and emotional regulation during a social anticipation task on social media ("likes"/positive comments). However, those who were not habitual SMU checkers showed the opposite pattern (Maza et al. 2023). Importantly, Maza et al. (2023) also showed that frequent SMU checking predicted greater activation in the dorsolateral prefrontal cortex, which is the area of the brain governing self-regulation and executive control (attention, impulsivity, organization, decision making), brain functions well documented to be essential for effective functioning at school, work, and life in general. Other studies reviewed above also indicate that the brain reward responses derived from aspects of social media is even stronger than neural responses registered for other rewarding stimuli such as money or palatable food (Meshi et al. 2013), highlighting the strong addictive properties of SMU. Additional research has shown longitudinal dose-response relationships between high and low social media use and detrimental anatomical (structural) changes (less gray matter), cortical thinning, and less white matter (integral for brain connectivity) in the brain in areas that govern reward and executive functions (Achterberg et al. 2022). These findings are consistent with the fMRI studies showing adverse functional brain responses to SMU exposure to positive social reinforcement (i.e. likes) which produced brain reward responses that was stronger than for potent reinforcers such as palatable food or money (Meshi et al. 2013). Although this research is still in its infancy, I have not seen a neuroimaging study on social media that has shown benign associations, although they could be present, or perhaps not as evident in the published literature due a publication bias against null findings. Nevertheless, the existing evidence converges to show that there is a neurobiological underpinning to explain why excessive and problematic SMU occurs, and these neural mechanisms likely interact with social, physical, developmental and neurobiological vulnerabilities inherent during adolescence. This potentiates the risk of harm when the brain and behavioural habits are still developing.

(Goldfield Rept., Def's Ex. A, ¶ 330.) Whether such opinions are unreliable and thus inadmissible must be addressed under Defendants' second and third arguments regarding the reliability of the Bradford Hill analysis Goldfield conducted and his literature review.

Defendants' main critique of Goldfield's Bradford Hill analysis is that it is "transdiagnostic." Defendants claim that Goldfield "lumps all harms together, failing to show that any specific harm is caused by social media use," and that Goldfield "lumps all platforms together, failing to show that any specific Defendant's platform causes any of the claimed harms." (Defs' Goldfield Mot., at p. 11, internal emphasis omitted.) As Plaintiffs point out, this is a critique of the *conclusions* that are produced by the Bradford Hill analysis, not the *methodology* employed. The fact that Defendant might argue that Goldfield's analysis, without more, fails to show that any particular social media platform caused a particular type of harm suffered by a certain Plaintiff is not a proper basis for excluding the testimony of a general causation expert under *Sargon*. This point is highlighted by the fact that Defendants, in making this argument, cite cases that involve substantive rulings by a court as to the sufficiency of allegations or evidence, not the admissibility of an expert's opinion. (See Defs' Goldfield Mot., at p. 12, citing *Bockrath v. Aldrich Chemical Co., Inc.* (1999) 21 Cal.4th 71 (*Bockrath*) [allegations of causation in the complaint were insufficient], and *Sanderson v. International Flavors and Fragrances, Inc.* (C.D. Cal. 1996) 950 F.Supp. 981, 985 (*Sanderson*) [summary judgment was granted because the plaintiff's evidence was insufficient to create a triable issue of material fact as to causation].)

Defendants' claim that the Bradford Hill analysis should be rejected because it is "transdiagnostic" is based on a single case: *In re Acetaminophen - ASD-ADHD Products Liability Litigation* (S.D.N.Y. 2023) 707 F.Supp.3d 309 (*Acetaminophen MDL*). In *Acetaminophen MDL*, the plaintiffs alleged "that the defendants violated their state law duties to warn consumers of the risk that children may develop autism spectrum disorder ('ASD') and/or attention-deficit/hyperactivity disorder ('ADHD') as a result of in utero exposure to acetaminophen." (*Id.* at p. 317.) All of the experts put forth by the plaintiffs in *Acetaminophen MDL* failed "to render discrete opinions regarding [acetaminophen exposure] and the risk of ASD and the risk of ADHD"; instead, "applied a 'transdiagnostic' analysis that sweeps into their analyses (and conclusions) ASD, ADHD and other neurodevelopmental disorders." (*Id.* at p. 334.) The court found that this "transdiagnostic analysis" "obscured instead of informing the inquiry on causation." (*Id.*)

In addressing the Bradford Hill analysis conducted by one of the plaintiffs' experts in *Acetaminophen MDL*, the court noted that the analysis was carried out with respect to a wide range of irrelevant harms, given that the plaintiffs in that case were only seeking recovery for ASD and ADHD. The court stated that it was "not clear ... that conducting a Bradford Hill analysis on multiple associations at once is informative or reliable." (*Id.* at

p. 339.) The court then suggested that such an analysis might be excluded as *irrelevant*:

> [The expert's] transdiagnostic approach raises a question of relevance. After all, this litigation is brought to obtain recovery on behalf of those who have been diagnosed with ASD or ADHD, not on behalf of anyone with, for example, a deficit in communication or self-regulation.

(*Id.*) The failure to focus the Bradford Hill analysis on ASD and ADHD was important given (1) the dearth of studies showing any connection between those medical conditions and prenatal acetaminophen exposure, and (2) ASD and ADHD were both distinct "neurological deficits" or "disorders" that were undeniably distinct from each other and from the other disorders included in the Bradford Hill analysis. The court also relied on the fact that the expert, when conducting a *separate* assessment, had chosen to separate ASD, ADHD, and other NDD studies from one another, thereby suggesting that the Bradford Hill analysis should have separated those disorders. (*Id.* at p. 341.) Importantly, the court also determined that the Bradford Hill analysis by the plaintiffs' expert was inadmissible for numerous other reasons not having to do with its "transdiagnostic" character. (*Id.* at pp. 342-354.)

The court declines to exclude Goldfield's Bradford Hill analysis based on Defendants' reliance on this sole, factually distinguishable district court case applying federal law. In their Motion, Defendants did not identify any other cases reaching a similar conclusion that "transdiagnostic" Bradford Hill analyses are always improper. In this JCCP, Plaintiffs do not allege that they suffer from just two mental health disorders, but instead allege a wide range of mental and emotional harm. That Goldfield's Bradford Hill analysis also addressed a wide range of mental and emotional harm for the purposes of the general causation analysis does not suggest an unreliable methodology. Defendants do not demonstrate that experts in the field of psychiatry or psychology always separate every different type of mental health condition when analyzing what has caused the condition or conditions.

As to harms arising from all types of social media platforms, Defendants have failed to demonstrate that their social platforms are so different from each other that it would be scientifically unreliable to investigate their mental health effects as a group. Plaintiffs allege that the relevant design features are similar across different platforms and Defendants fail to adequately counter these allegations with evidence here. For example, YouTube and Snap suggest ways in which their platforms differ from the features Goldfield defines as characterizing social media, but the

court is unable to effectively analyze these arguments because there is no evidence before the court as to what features have characterized these platforms at various times. Goldfield states that his analysis is based on a specific, fact-based definition of social media platforms that covers all of the platforms at issue here. (Goldfield Rept., Def's Ex. A, ¶ 15.) If Defendants believe that Goldfield's analysis is factually in error as to whether a Defendant's social media platform includes some or all of the features he has relied on in reaching his opinions, this criticism is a proper subject of cross examination at trial. (See, e.g., *Stollings v. Ryobi Technologies, Inc.* (7th Cir. 2013) 725 F.3d 753, 768 (*Stollings*) [The expert's analysis was based on an analysis of table saws generally, not specifically on defendant's product. The court held that the "fact that an expert's testimony contains some vulnerable assumptions does not make the testimony irrelevant or inadmissible."])

The fact that Goldfield has not conducted a Bradford Hill analysis since he was in graduate school does not justify exclusion of his expert testimony. Defendants cite no authority holding that an expert must have carried out Bradford Hill analysis at some point before being retained by counsel. And Defendants have not otherwise challenged Goldfield's significant experience in his field. Defendants have failed to show that Goldfield's Bradford Hill analysis is fundamentally flawed. (*Cf., Onglyza, supra,* [expert's Bradford Hill analysis had methodological flaws in six of the nine relevant factors].)

Defendants' third argument addresses Goldfield's literature review. Defendants fail to show that Goldfield's review of the literature was so insufficient and unreliable as to justify exclusion of Goldfield's testimony. Goldfield description of his literature review is quoted above. (Goldfield Rept., Def's Ex. A, ¶ 12.) Goldfield adds:

> The evaluation of the evidence was performed using a multisource approach, with particular emphasis on systematic reviews and meta-analyses, which provide the most robust and objective assessments of causal relationships between exposures and outcomes. These methodologies reduce bias and enhance the reliability of inferences compared to narrative synthesis. In addition to published meta-analytic reviews, a curated digital repository of high-quality studies - compiled over years of research and scholarly engagement as a senior scientist - served as a major supplementary resource. This repository includes peer-reviewed literature as well as my own experimental and observational studies.

(Goldfield Rept., Defs' Ex. A, ¶ 20.)

Defendants offer several reasons why they believe Goldfield's literature review is unreliable. Defendants cite two documents (including a study authored by Goldfield) that Defendants claim (1) contradict Goldfield's opinions, and (2) were excluded from Goldfield's review. (See Defs' Goldfield Mot., at p. 16.) Goldfield's failure to include two documents/studies that potentially conflict with his opinions does not justify exclusion of his testimony. (See, e.g., *Garner*, *supra*, 98 Cal.App.5th at pp. 682-683 [an expert's testimony was not inherently unreliable because he "ignored" a conclusion by the International Agency for Research on Cancer that may have conflicted with his opinions].) Plaintiffs explain that the prior study by Goldfield was not included because it was not a meta-analysis. (Pls' Opp., at p. 17.) The second document includes an opinion by the National Academies of Sciences, Engineering, and Medicine, that the scientific literature does not "support the conclusion that social media causes changes in adolescent health at the population level." (Defs' Goldfield Mot., at p. 16, internal quotation marks omitted.) Goldfield is not required to include every conflicting opinion in his review. But Goldfield has nonetheless testified that he reviewed the document in question and disagreed with its conclusions and methodology for multiple reasons. (Goldfield Dep., Defs' Ex. B, at 25:4-24.)

Defendants claim that Goldfield's literature review was improper because Goldfield focused on the *harms* caused by social media platforms rather than determining whether there may be any *benefits* caused by social media use. (Defs' Goldfield Mot., at p. 16.) This critique is not persuasive. Goldfield has been tasked with offering opinions on the general causation of relevant *harms*. The failure to address potential benefits does not justify exclusion of the testimony. Defendants fail to demonstrate that it is scientifically unreliable for an expert to address harms without also engaging in a cost-benefit analysis. In any event, Goldfield's literature review did include "many" studies addressing "positive psychology outcomes" associated with social media use. (Goldfield Dep., Defs' Ex. B, at 291:10—292:7.)

Defendants claim that Goldfield's literature review is unreliable because certain studies included in that review have important "limitations that prevent them from supporting [Goldfield's] conclusions." (Defs' Mot., at p. 17.) Defendants note that many of the studies were "cross-sectional" and "short-term studies." (Defs' Mot., at p. 17.) Defendants claim that certain studies rely on self-reported social media use, which is unreliable. Defendants' argument as to the quality of the literature regarding social media's potential mental and emotional harms does not justify exclusion of

Goldfield's testimony. That certain academic studies have limitations does not mean that Goldfield's wide-ranging review of numerous studies renders his opinions unreliable.

Finally, Defendants seek to exclude opinions regarding Defendants' knowledge. Defendants ask the court to "exclude Dr. Goldfield's improper lay opinions about what each Defendant 'knew or should have known' about the alleged risks of their platforms and features of those platforms, including 'age gating,' because they are not based on any expertise." (Defs' Goldfield Mot., at p. 19.) Defendants are correct. Goldfield has no special skill or expertise that would render his opinion about Defendants' knowledge helpful to the jury. However, this does not mean that the sixth section of Goldfield's Report (see Goldfield Rept., Defs' Ex. A, at pp. 154-192) should be excluded. In that section, Goldfield talks about various features of Defendants' platforms that contribute to addiction and makes the point that Defendants' internal documents align with his own opinions. Such testimony is admissible, as long as Goldfield does not testify as to his conclusions about what Defendants "knew or should have known."

Defendants' Motion to Exclude the Expert Testimony of Dr. Kara Bagot

Court's Ruling: The court excludes from trial any testimony by Bagot that seeks to opine on Defendants' *intent* when designing their platforms. However, all other opinions by Bagot are admissible.

Bagot is "board-certified adult, child and adolescent psychiatrist." (Bagot Rept., Defs' Ex. A, ¶ 2.) Bagot reaches the following conclusions:

> a. It is my opinion social media overuse and addiction causes or plays a substantial role in causing or exacerbating psychopathological harms in children and youth, including depression, anxiety and eating disorders, as well as internalizing and externalizing psychopathological symptoms.
> b. Children and adolescents are particularly vulnerable to development of addiction, as relative underdevelopment of socio-affective brain circuits can increase sensitivity to social information, impulsiveness toward rewards, as well as a preoccupation with peer evaluation.

> c. Features of social media platforms, specifically Facebook, Instagram, Snapchat, YouTube and TikTok[,] exploit vulnerabilities of adolescence as a developmental stage.
> d. Research examining online social networking behaviors in youth demonstrates short-term changes in brain activation in reward and inhibitory control regions, as well as long-term changes in neural development with early and repeated exposures to social media.

(Bagot Rept., Defs' Ex. A, ¶ 1, internal bolding omitted.) To reach these conclusions, Bagot conducted a substantial review of the scientific literature, in addition to reviewing "available internal documents from [D]efendants' platforms and depositions of [D]efendants' employees or former employees." (Bagot Rept., Defs' Ex. A, ¶ 19.)

Defendants argue that Bagot's testimony should be excluded under *Sargon* for three reasons. First, Defendants argue that Bagot's opinions "run afoul of Section 230, the First Amendment, and the Court's special jury instruction" because the studies Bagot relies on do not attempt to "isolate" harms caused by design features from harms caused by content. (Defs' Bagot Mot., at p. 7.) Second, Defendants argue that "Bagot engages unreliable methodologies to reach her litigation-driven opinions." (Defs' Bagot Mot., at p. 7.) Third, Defendants argue that some of Bagot's testimony is on topics for which Bagot has no expertise, "such as intent, development, and implementation of certain social media design features." (Defs' Bagot Mot., at p. 8.)

As to Defendants' first argument, Defendants again attempt to impose an improper Section 230 but-for test on the *Sargon* process when they fault Bagot for failing "to extricate [the] impact [of design features] from the content" on Defendants' platforms. (Defs' Bagot Mot., at p. 9.) Defendants push their point too far with arguments like the following:

> Dr. Bagot could not name any study that has attempted to identify the effects, if any, of platform features on users separate and apart from third-party content. Indeed, Dr. Bagot admitted that the features are too "intertwined" with content to understand if any studied effects could be attributed to the features rather than content. Dep. 233:11-19 (Q. "Do you know of any study where participants were exposed to the same content, same images, same videos, same posts, but the test group was exposed to different features than the control group?" A. "I can't name any offhand, but mainly because the content is sort of

> intertwined with the features."). This alone requires exclusion of her opinions.

(Defs' Bagot Mot., at pp. 9-10.) That an expert relies on studies that do not focus on a *particular type of content*, in fact tends to suggest that the harms are content *neutral* and thus caused by the universal design features of Defendants' platforms. Defendants have not shown that Bagot's literature review included articles that were not *content neutral*: in other words, Bagot used studies finding harm caused by social media platforms *regardless* of the content found on those platforms. Bagot is free to reach her opinions based on a review of content neutral studies.

Defendants' second argument is that Bagot employs an unreliable methodology. Defendants claim that Bagot has failed to employ the same level of intellectual rigor in this case as she would in her own work outside of litigation. Defendants claim that Bagot's opinions contradict her opinions from her clinical work outside of litigation. However, this critique, if true, does not directly address whether Bagot has employed unreliable methodologies to reach her current opinions. If Defendants believe that Bagot's prior opinions contradict those opinions she shares at trial, they will be able to demonstrate that fact in cross-examination. Moreover, Bagot has explained in her deposition that her opinions have changed in response to new data and vastly more research having been conducted in the interim as to the mental health effects of social media use. (Bagot Dep., Defs' Ex. B, at 149:9-17.)

Similarly, Defendants argue that the scientific literature does not support Bagot's opinion that there is now a "consensus" that social media causes mental health harms. Much of this argument involves citing prior statements by Bagot that might be used to impeach her testimony, but which do not justify an order excluding her testimony. When arguing that Bagot contradicts her own opinion regarding a "consensus," Defendants largely cite, not to published articles, but comments recorded in YouTube videos—i.e., comments offered in a context where an expert might be expected to apply less rigor. Defendants are also incorrect to the extent they argue that Bagot must identify *when* this "consensus" was reached, given that was not a necessary part of her work on this case. Defendants cite to a 2024 report by the National Academies of Sciences, Engineering, and Medicine, which Defendants claim disputes Bagot's conclusion as to this "consensus." But the fact that Defendants can point to a report that reaches a different conclusion from that reached by Bagot does not justify exclusion of Bagot's testimony.

In attacking Bagot's "consensus" opinion, Defendant refer to a 2024 study in which Bagot participated (Simonsen Decl., Ex. F) as support for their claim that Bagot herself has doubted the ability to demonstrate that social media use causes harms. However, that study was intended to look at unanswered questions and recommend future directions for research; accordingly, the general statement that "many questions remain unanswered or incompletely understood" does not mean that the authors concluded that no conclusions could be drawn at that time as to the effect of social media on adolescent brains. Nor does the statement in the 2024 study that there should be a study of "different types and patterns of excessive" social media use and how it affects "different groups of youth" and "brain mechanisms" mean that in 2024 there was no persuasive evidence that social media use causes mental harms in youth.

Defendants claim that Bagot's use of the term "social media addiction" is not consistent with Bagot's clinical work. Defendants appear to be arguing over word use. Bagot has clarified that she believes the terms "social media addiction," "social media overuse," "social media problematic use," and "social media compulsive use" are equivalent disorders. (Bagot Dep., Defs' Ex. B, at 189:5-14.) Furthermore, the fact that the Diagnostic and Statistical Manual of Mental Disorders (DSM) does not include the term "social media addiction" does not, without more, justify excluding the opinion of an expert that such a condition exists; Defendants cite no authority for a contrary conclusion. (See *Garner, supra,* 98 Cal.App.5th at p. 683 [expert's disagreement with a conclusion of the International Agency for Research on Cancer (IARC) did not make his opinion inherently unreliable].)

Defendants criticize Bagot's use of "scales" to measure social media addiction because those scales are not "codified." Defendants refer to the following paragraph of Bagot's Report:

> Social media addiction (SMA) or problematic social media use (PSMU) encompasses functional impairment criteria similar to those of Diagnostic and Statistical Manual 5 (DSM 5) criteria for substance-related and addictive disorders including: (a) excessive use resulting in personal neglect, (b) depression, anger, and/or stress when social media is not accessible (withdrawal), (c) the need for more time using social media, or better equipment or access (tolerance), and (d) use resulting in negative psychosocial, academic or health outcomes (Nagata, 2020; Sun, 2021). Generally, social media addiction is defined as a behavioral addiction with components of salience, mood modification,

> tolerance, withdrawal symptoms, conflict, and relapse (Kuss, 2017). As discussed above, scales validated for measurement of social media addiction are used in practice and prevalent in literature, though as of yet, are not codified.

(Bagot Rept., Defs' Ex. A, ¶ 41.) Defendants fail to cite any authority holding that an expert cannot rely on methodologies that are "used in practice and prevalent in literature" on the ground that those methodologies have yet to be "codified." This court may "permit the introduction of competing principles or methods in the same field of expertise." (*Brancati, supra*, 96 Cal.App.5th at p. 512, internal citations and quotation marks omitted.)

Defendants argue that Bagot misuses and ignores "key limitations" in the scientific literature. Defendants argue that Bagot concluded that social media use causes mental health harms by relying on articles that do not directly support that conclusion because they are either (1) cross-sectional, or (2) correlational. Bagot has explained in her deposition that no single, cross-sectional study could support an inference of causation. (Bagot's Dep., Defs' Ex. B, at 132:8-11.) But Bagot's conclusions are not based solely on a handful of cross-sectional or correlational studies. Bagot's conclusions are based on "systematic reviews, meta-analyses and cohort, case control and cross-sectional studies ... ." (Bagot Rept., Defs' Ex. A, ¶ 16.) "All studies have limitations and flaws, and it is entirely valid to interpret each study's results by taking into account these limitations and flaws. However, it is essential that the results of other studies conducted by other scientists on the same subject, that aim to correct for the limitations and flaws in prior studies, be taken into account, and the body of studies be considered as a whole." (*Cooper v. Takeda Pharmaceuticals America, Inc.* (2015) 239 Cal.App.4th 555, 589 (*Cooper*).) Moreover, Bagot explained why reliance on cross-sectional studies is appropriate here:

> The basis of my view. So it's kind of based in the body of literature. So I think I mentioned earlier there's some, like, disease states or disease outcomes where you can't – it's impossible to do sort of the gold standard of research, which is what we think of is like double blind -- like clinical research at least, double blind randomized controlled trials.
>
> And like for social media use, for example, like it's hard to blind the research participant as well as the researcher, and so there's just some types of research that cannot be done in some types of, like, exposures or disease outcomes, and so when we were are faced with those

> situations, we use things like cross-sectional studies, and we see replicability and validity of those studies, and then we use those to determine causation.

(Bagot Dep., Defs' Ex. B, at 127:6-23.) Bagot further testified that "psychological and psychiatric associations" have supported the notion that, in the absence of "things like double blind randomized controlled trials," a psychiatrist "can look to cross-sectional studies as a body of work to -- for causation of disease outcome." (Bagot Dep., Defs' Ex. B, at 130:17-24.)

Defendants fault Bagot for relying "on studies about claimed addictions or disorders unrelated to social media, such as 'internet addiction' (Zhou 2011, Hong 2013, Lin 2017, Dong 2013, Li 2014, and Wee 2014) and 'internet gaming addiction' (Han 2010a, Han 2010b, Han 2011, and Sun 2012)." (Defs' Bagot Mot., at p. 14.) But Defendants have failed to show why Bagot should be prevented from relying *in any way* on any scientific literature regarding the mental health harms related to internet use more generally. Plaintiffs contend here that Bagot's reference to "internet addiction" and "internet gaming addiction" is made "to illustrate shared neurobiological mechanisms and reinforcement processes common to behavioral addictions generally, including social media addiction." (Pls' Opp. Defs' Bagot Mot., at pp. 8-9.) For example, Bagot explains that "[r]esearch suggests neural mechanisms underlying behavioral addictions share commonalities with substance use disorders ... ." (Bagot Rept., Defs' Ex. A, ¶ 30.) In essence, Bagot analogizes social media addiction to "internet addiction" and to "internet gaming addiction," and treats all three as *behavioral* addictions. Defendants have failed to demonstrate why such an analogy would be based on unreliable methodologies. Bagot then relies on studies addressing behavioral addictions (including internet addiction and internet gaming addiction) to discuss the mental health harms involved. The same conclusion can be reached with respect to Bagot's reliance on literature regarding substance-abuse disorders and social media addiction. Bagot relies on such literature in order to conclude that behavioral addictions (like social media addiction) mimic substance addictions. (See, e.g., Bagot Rept., Defs' Ex. A, ¶ 30.)

Defendants also fault Bagot for reaching opinions that differ from those found in the studies upon which she relies. Defendants cite three such studies. (Defs' Bagot Mot., at pp. 15-16.) Defendants can point to such studies during cross-examination at trial in order to challenge Bagot's opinions before the trier of fact.

Defendants fault Bagot for relying, in paragraph 40 of her Report, on two "Sherman" studies. Defendants note that, at deposition, Bagot agreed

with Defendants that neither study "found that likes on social media caused any mental health harm to teens." (Defs' Bagot Mot., at p. 16, internal citations and quotation marks omitted.) But paragraph 40 of the Bagot Report does not refer to "likes." Instead, Bagot discusses how the four studies cited in that paragraph provide findings that "provide the basis for understanding relationships between anatomical and physiological changes in the brain and compulsive, excessive, problematic and/or disordered online behaviors including social media addiction." (Bagot Rept., Defs' Ex. A, at pp. 26-27.)

Defendants argue that Bagot's testimony should be excluded because of her failure to adequately address each Defendant's platform individually. This argument does not justify exclusion of Bagot's opinions. The fact that Defendant might argue that Bagot's opinions, without more, fail to show that any particular social media platform caused a particular type of harm suffered by a certain Plaintiff is not a proper basis for excluding the testimony of a general causation expert under *Sargon*. This helps explain why the cases cited by Defendants on this point involve substantive rulings by a court as to the sufficiency of allegations or evidence, not the admissibility of an expert's opinion. (See Defs' Bagot Mot., at p. 17, citing *Bockrath*, *supra*, 21 Cal.4th 71 [allegations of causation in the complaint were insufficient], and *Sanderson*, *supra*, 950 F.Supp. at p. 985 [summary judgment was granted because the plaintiff's evidence was insufficient to create a triable issue of material fact as to causation].)

Defendants also argue that Bagot's methodology is improper with respect to YouTube and Snapchat. With respect to YouTube, Defendants base their argument on the fact that Bagot has admitted that "there are cases in which people use YouTube other than like what we think of as social media." (Bagot Dep., Defs' Ex. B, at 350:8-10.) However, Bagot's opinion is that the *social media* features of YouTube can cause harm, just like the features of the other social media platforms. Bagot's statements support the conclusion that a given Plaintiff in this litigation would have to show that their alleged harms arose from the social media features of YouTube, rather than from watching videos on YouTube. But Bagot's opinions as to YouTube need not be excluded at trial.

As for Snapchat, Defendants claim that Bagot "fails to account for how Snapchat is actually used and does not apply basic scientific standards to her analysis." (Defs' Bagot Mot., at p. 21.) However, Bagot's Report includes a section detailing Snapchat-specific information. (Bagot's Rept., Defs' Ex. A, ¶¶ 141-150.)

Defendants contend that Bagot's testimony should be excluded because she engaged in plagiarism when writing her Report. Bagot explained at her deposition that the citation error identified by Defendants may have occurred by mistake because, in the drafting process, Bagot failed to include quotation marks and a citation on the final draft. (See Bagot's Dep., Defs' Ex. B, at 301:20—303:12.) This citation error does not justify exclusion of Bagot's testimony at trial.

Defendants' final argument regarding Bagot is that she should not be allowed to testify as to (1) Defendants' internal documents, or (2) the design features of Defendants' platforms. However, for the reasons discussed above, Bagot is qualified to testify as to whether Defendants' platform design features cause mental health harm. As part of that testimony, Bagot may review and offer testimony about documents that are directly relevant to her testimony regarding general causation, including Defendants' internal documents and facts regarding the specific design features. However, Defendants are correct to the extent they argue that Bagot cannot offer her opinions as to Defendants' *intent* or her opinion that Defendants knew or should have known that their platforms were causing harm.

Defendants' Motion to Exclude the Expert Testimony of Arturo Bejar

Court's Ruling: The court denies the Bejar Motion. However, the court clarifies that Bejar may not offer expert testimony on the question of whether use of social media platforms causes specific mental health harms. Bejar is not qualified to offer such expert testimony.

On May 16, 2025, Plaintiffs disclosed that they would be relying on the expert testimony of Bejar. (See Defs' Ex. A.) Bejar has not provided a report in connection with his expert testimony in this case. Plaintiffs described Bejar's background as follows:

> Mr. Béjar has 30 years of experience in online and social media user safety. He began working in the tech industry at the age of 15 for IBM. Mr. Béjar graduated with a degree in mathematics from King's College in 1993. In 1994, he began work at Electric Communities, a social media startup, where he focused on security issues. Mr. Béjar joined Yahoo! in 1998, where he took on a role equivalent to the Chief Security Officer of the company. He was the first engineer at Yahoo! dedicated to writing security code. His job was to

make sure that every product that Yahoo! made was safe for the people using it, which involved, among other things, implementing protections for kids and using test accounts to assess the safety of the platform and the effectiveness of safety features. Mr. Béjar joined Meta in 2009, as the company's site integrity team manager. He continued to work at Meta through 2015, and his role greatly expanded during that time to include not only site integrity, but also customer care and other teams. In coordination with Meta CEO Mark Zuckerberg, Mr. Béjar created the Protect and Care team, a cross-functional group that managed Facebook's technical security and the safety of users and served as the program's senior engineer and project leader. His work at Meta included recommending and implementing safety features on the Facebook platform, and monitoring and assessing the platform for potential safety risks and harms. This included, for example, developing and implementing a reporting framework that was used by Facebook to identify harmful activity on the platform. In this role, Mr. Béjar interfaced directly with Meta's senior leadership, including Mr. Zuckerberg and COO Sheryl Sandberg, regarding Meta's safety program. Mr. Béjar retired from Meta in 2015 to spend time with his family but continued to consult with a number of technology firms about their safety programs. In 2019, Meta requested that Mr. Béjar return as a part-time consultant to assist and advise Instagram's wellbeing team. Mr. Béjar's second stint at Meta lasted from 2019 to 2021. As part of his consulting work at Meta, Mr. Béjar performed an assessment of Instagram's safety framework to identify existing problems causing harms to users, and to develop potential solutions. That assessment included creating and conducting a large-scale user survey to identify the harms occurring to users on Instagram. Based on that survey and other investigations, Mr. Béjar developed a set of safety recommendations for Instagram, which he communicated directly to Meta's top leadership, including Mr. Zuckerberg. Mr. Béjar later testified in front of the US Senate Judiciary Committee about the harms that stem from Meta's platforms. Mr. Béjar's testimony covered both his personal knowledge and experience working at Meta and independent research and testing of Meta's platforms and safety features. Mr. Béjar was also retained by Meta's 'Oversight Board' to advise on issues of youth safety after his

> consulting stint at the company. Meta has described Mr. Béjar as having "world-class expertise" and that "[t]here are fewer than 10 people in the world meeting [Bejar's] qualifications, we estimate, most of whom are retired or employed at [Meta's] competitors."

(Defs' Ex. A, at pp. 1-2, brackets in original.)

In their initial disclosure, Plaintiffs stated that Bejar may offer testimony on numerous topics, including "[h]is personal knowledge and experience related to how design defects on Meta's platforms can cause harm to minors (e.g., age verification, reporting processes, beauty filters, public like counts, infinite scroll, default settings, private messages, reels, ephemeral content, and connecting children with adult strangers) ... ." (Defs' Ex. A, at p. 2.) Bejar may also testify as to "[h]is personal knowledge and experience of harms associated with Meta's platforms including addiction/problematic use, anxiety, depression, eating disorders, body dysmorphia, suicidality, self-harm, and sexualization ... ." (Defs' Ex. A, at p. 3.)

Plaintiffs explain that they "proffer Mr. Béjar as both a fact witness to testify about his time at Meta, and as a non-retained expert to testify about his expert views on the adequacy of Meta's safety systems." (Pls' Opp. Defs' Bejar Mot., at p. 3.) As for his potential general causation testimony, Plaintiffs state:

> ... while Mr. Béjar offers opinions that could be characterized as "general causation" opinions, those opinions fall squarely within his expertise. For example, Mr. Béjar will testify about how certain features of Meta's platforms promote excessive, compulsive, and addictive use. His testimony on that topic (which combines fact and expert testimony) is based, among other things, on decades of experience evaluating platform features to measure their impact on user behaviors.

(Pls' Opp. Defs' Bejar Mot., at p. 3.)

First, Defendants argue that Bejar has no relevant expertise to opine on whether social media platforms cause certain mental health harms. Second, Defendants argue that Bejar's methods are too unreliable to support Bejar's testimony on causation. Third, Defendants again argue that Bejar's testimony should be excluded because his opinions rely on the existence of third-party content on Instagram.

Under their first argument, Defendants contend that a general causation expert in this action must have scientific and clinical experience to determine whether something causes "addiction" or other mental health issues. Defendants state that Bejar "is simply a former Meta employee who worked on several aspects of Meta's platforms; he is not a doctor, psychologist, neurologist, clinician, statistician, epidemiologist, or any other role that would provide him sufficient experience." (Defs' Bejar Mot., at p. 10.)

"A person is qualified to testify as an expert if he has special knowledge, skill, experience, training, or education sufficient to qualify him as an expert on the subject to which his testimony relates. Against the objection of a party, such special knowledge, skill, experience, training, or education must be shown before the witness may testify as an expert." (Evid. Code, § 720, subd. (a).) Here, Bejar appears set to testify principally as a *fact* witness regarding his experiences working for Meta, specifically, Meta's design practices regarding safety and Meta's knowledge of the inadequacy of the safety features. Defendants' *Sargon* arguments thus do not apply to most of Bejar's testimony.

Plaintiffs nonetheless admit that they intend to offer some testimony by Bejar in his capacity as an expert witness testifying as to general causation. Plaintiffs state:

> For example, Mr. Béjar will explain how infinite scroll, "likes," and the nature and frequency of notifications are all designed to, and do, encourage excessive use. (Id. at 140:3-23.) Mr. Béjar bases this opinion on, among other things, his review of Meta's data about usage, the frequency of notifications a child receives, and the amount of time a child spends on the platform. (JCCP Dep. at 86:23- 87:4, 90:5-9.) Mr. Béjar utilized that data when building safety interventions for the company. (*Id.* at 85:11–86:4.) He has experience researching and testing interventions to limit excessive and problematic use and, therefore, he has a clear understanding of how those interventions—which Meta has refused to employ—could reduce excessive use. (*Id.* at 85:17-18, 87:2-4, 149:11–22.)

(Pls' Opp. Bejar Mot., at p. 11.) Defendants here have not sought to exclude testimony by Bejar that Meta's platforms were designed to and in fact do encourage "excessive use." Bejar is qualified to provide expert testimony on this question to the extent his testimony were to move beyond

fact testimony regarding his experiences at Meta to his opinions regarding causation of excessive use by specific design features. Bejar has substantial experience with social media platform design and with social media platforms' efforts (or lack thereof) to make social media use safer.

Defendants are correct, however, that Bejar cannot offer testimony to show that social media use leads to certain mental health conditions. Plaintiffs do not claim that his testimony will be used in this way. But if Bejar were to attempt to do so at trial, Defendants would be justified in stating proper objections. There are certain opinions offered in Plaintiffs' disclosure letter that cannot be provided by Bejar at trial as expert testimony. Bejar cannot testify *as an expert* as to "harms associated with Meta's platforms, including addiction/problematic use, anxiety, depression, eating disorders, body dysmorphia, suicidality, self-harm, and sexualization." (Defs' Ex. A, at p. 3.) However, Bejar can testify as to his observations at Meta regarding "problematic use" and to conclusions reached about features associated with such use. He also can testify as to observations at Meta regarding Meta's discussions of addiction or potential addiction. The latter are percipient, not expert testimony.

As for their second main argument, Defendants contend that Bejar's "testing" is unreliable because it is "plainly incapable of measuring causation, let alone supporting a reliable causal conclusion." (Defs' Bejar Mot., at p. 13, internal footnotes omitted.) Defendants claim that "Mr. Béjar did not purport to measure any mental health outcomes from his testing—just his observations of what he saw." (Defs' Bejar Mot., at p. 14.) Defendants' second argument is well taken, assuming Bejar attempted to testify as to his opinion that social media use causes mental health harms. As explained above, Bejar is not qualified to offer such opinions.

Bejar's testing, which he conducted after he left Meta in 2021, was purportedly meant "to test whether Meta's safety features worked as advertised." (Pls' Opp. Bejar Mot., at p. 4.) Bejar has concluded that Meta's safety features were ineffective, an opinion which, as Plaintiffs note, is not challenged as inadmissible in Defendants' Bejar Motion. Moreover, Bejar has testified, and Defendants have not challenged, that the testing of Meta's features was based on Bejar's "30-plus years of experience of testing safety features and security features" for internet companies (including Meta), and that the testing was of the type that Bejar would have performed when testing features when employed by an internet technology company. (Bejar MDL Dep., Defs' Ex. B, at 200:9-11; see also Bejar MDL Dep., Defs' Ex. B, at 1008:14-22.) Bejar explained:

> Testing scenarios are common practice of security and safety practitioners. I have been doing them since literally my first month at Yahoo. I have done them for Mark Zuckerberg.
>
> The exercise of looking at something and coming up with a way of testing it in the product and then capturing the result of that is something that I created a team at Yahoo to do.
>
> And I could go on, but this is kind of just really standard practice of security practitioners when it comes to testing products in ways that are responsive to the way that the product behaves.

(Bejar JCCP Dep., Defs' Ex. C, at 282:19—283:5.) In essence, Bejar used his knowledge and expertise of social media platforms to test whether Instagram's safety features actually worked. Bejar relies on this testing to conclude that Meta's statements regarding safety were "misleading." (See, e.g., Bejar MDL Dep., Defs' Ex. B, at 428:8-17.) The fact that Bejar's testing is not supported by any academic practice or literature does not change the undisputed fact that Bejar applied industry practice testing to Instagram's design features.

Finally, the court does not accept Defendants' argument that Bejar's testimony should be excluded based on Section 230. Bejar seeks to offer testimony about the design features employed by Meta, how those design features led to excessive use and safety concerns, and that Meta knew that the design features posed these concerns but failed to remedy them or provide adequate warnings. Such testimony is proper under Section 230. Moreover, as Plaintiffs point out, insofar as Plaintiffs are pursuing a claim of false and misleading statements about safety, content can be considered as evidence because the cause of action is not based on the content but on a promise as to safety of content.

Defendants' Motion to Exclude Expert Testimony of Dr. Drew Cingel

Court's Ruling: The court denies the Cingel Motion.

Cingel is "an Associate Professor and Graduate Program Advisor in the Department of Communication at the University of California, Davis (UC Davis), where [he is] additionally a member of the Human Development Graduate Group." (Cingel Rept., Defs' Ex. A, at p. 4.) Cingel has

"researched children, adolescents, and the media for over 15 years," and has "researched and published extensively on [the topic of adolescent development, social media use, and mental health] over the past 13 years." (Cingel Rept., Defs' Ex. A, at p. 4.)

Cingel seeks to provide 16 opinions as part of his expert testimony. (Cingel Rept., Def's Ex. A, at pp. 9-13.) Cingel opines that: (1) adolescents are susceptible to negative mental health effects from social media use; (2) adolescents' developmental stage makes social media especially attractive and they therefore use it in high rates; (3) multiple aspects of Defendants' social media platform designs take advantage of multiple aspects of adolescent development, promoting more time spent on the platform, excessive use of the platform, negative social comparisons, and displacement from time that could be spent building important developmental capacities; (4) certain identified design features of Defendants' platforms take advantage of multiple aspects of adolescent development; (5) Defendants' design choices take advantage of multiple developmental susceptibilities, making it even more difficult for the adolescent user to curtail use; (6) research of social media use and adolescent mental health has consistently shown over the past 15 years that many adolescents are susceptible to negative mental health effects stemming from their social media use, indicating that social media substantially contributes to adverse adolescent mental health; (7) social media use has been consistently linked to anxiety, depression, self-esteem, affect, distraction, weight dissatisfaction, overemphasis on muscularity in boys, low body esteem and/or body negativity, eating disorders, anxiety, depression, suicide and suicidal ideation, and general poor mental health; (8) social media has been consistently linked to poor mental health outcomes among adolescents more than any other form of media; (9) research using general measures of time spent on social media show a relatively consistent link to adverse mental health, and yet, more nuanced measures of a type of social media use, problematic use, shows a stronger link with poor mental health – and social media is designed to promote this type of use; (10) when analyzed at the individual user level, results consistently show that a sizable group of adolescents are susceptible to negative effects of social media use on mental health; (11) when reviewed in totality, the available evidence, including but not limited to existing literature on the mental health effects of social media on adolescents, demonstrates that social media substantially contributes to negative mental health effects for substantial numbers of adolescents; (12) Defendants' own studies, analyses, and discussion of the harms of their products to adolescent mental health are consistent with the literature and provide further support for Cingel's opinions; (13) though the Defendants studied and commented on problematic use by their adolescent users, they

continued to utilize designs that take advantage of developmental susceptibilities to encourage problematic social media use by adolescents; (14) when individuals within the Defendant companies noted concerns with the companies' designs and user mental health, Defendants consistently made design choices that prioritized time spent on the platform (with implications for company revenue) over child and adolescent mental health; (15) Defendants' focus on increasing user engagement, while ignoring growing concerns of negative effects on mental health, increased the risk of more users developing a problematic relationship with social media; and (16) Defendants failed to act reasonably in multiple respects. (Cingel Rept., Def's Ex. A, at pp. 9-13.)

Cingel states that he used the following methodology to reach his conclusions:

> First, a substantial portion of my analysis and findings is based on my education, training, and experience, together with research and literature reviews and analyses that I, along with members of my research lab, have conducted over the previous fifteen years. To ensure that I was including the most up-to-date research areas germane to my opinions, I conducted multiple systematic keyword searches over the past two years. Given the focus on adolescents, I ensured that all keyword searches included the words 'adolescents', 'youth', or 'children'. I then systematically changed the outcome variable of interest, including (but not limited to) 'depression', 'anxiety', 'suicidal ideation', and 'body image'. I also systematically changed the keyword for the method, including (but not limited to) 'experiment', 'survey', 'longitudinal', 'meta-analysis', and 'ecological momentary assessment'. I copied the links of each research study. I then went through each study to confirm that it was about (1) adolescents, (2) social media use, (3) and mental health. This removed some studies that featured young adult samples, measures of smartphone use, and variables that are not indications of mental health. I also reviewed other scientific literature and publications and materials from this litigation including documents, depositions and exhibits. In reaching my opinions and conclusions as set forth in this report, I considered the weight and totality of the evidence.

(Cingel Rept., Defs' Ex. A, at p. 13.)

Defendants seek to exclude Cingel's testimony for five main reasons. *First*, Defendants argue that Cingel's opinions are improper under Section 230 and the First Amendment because they "target publishing content." (Defs' Cingel Mot., at p. 6.) *Second*, Defendants argue that Cingel, who is neither a psychologist/psychiatrist nor an expert in software development, lacks the expertise to opine on either (1) whether social media causes particular mental health harms, or (2) whether Defendants acted reasonably in developing their platforms. *Third*, Defendants argue that Cingel's use of the concepts "excessive use," problematic use," and "addiction," is improper because "Cingel's personal views of what might be excessive, problematic, or addictive use not only defy common sense, but are inconsistent and untethered from peer-reviewed evidence and generally accepted methodology." (Defs' Cingel Mot., at p. 7.) *Fourth*, Defendants argue that Cingel's methodology is unreliable because (1) Cingel relies on cross-sectional studies, and (2) Cingel fails to differentiate between Defendants. *Fifth*, Defendants argue that Cingel cannot opine as to Defendants' intent by reviewing internal company documents because (1) he has no expertise in reviewing company documents and in "corporate decision-making", and (2) he "applies no discernable methodology." (Defs' Cingel Mot., at p. 7.)

As for their first argument, Defendants admit that Cingel has identified specific, purportedly harmful design features on Defendants' platforms. (Defs' Cingel Mot., at p. 9.) Cingel includes substantial analysis of particular design features found on Defendants' platforms in order to conclude that Defendants "platforms ... take advantage of multiple aspects of adolescent development: adolescents' less developed self-regulation, social development, brain development, pubertal development, identity development, and adolescent egocentrism." (See, e.g., Cingel Rept., Defs' Ex. A, at pp. 28-52.)

Defendants argue that "the body of scientific literature on which [Cingel] relies fails to distinguish supposed 'harms' caused by third-party content from harms supposedly caused by features that publish such content." (Defs' Cingel Mot., at p. 9.) Defendants, restating the incorrect but-for cause test, argue that Cingle is unable to conclude that harm could arise without the content. For the reasons given in connection with other Plaintiffs' Experts, Defendants' first argument must be rejected. The fact that Cingel may have opined that content on social media platforms *also* causes harm (see Defs' Cingel Mot., at p. 11) does not somehow mean that Cingel is prevented from opining on the harms caused by design features. Furthermore, that Cingel previously stated that there needs to be more research on these questions (see Defs' Cingel Mot., at p. 11) does not mean that Cingel has determined that no conclusions can be drawn regarding the effect of social media functionality on minors.

In support of their first argument, Defendants focus on the possibility that filter design features could cause harm. Defendants focus on a single study relied upon by Cingel (Kleemans et al. (2018)), and argue that this study refers to harm caused by viewing content created by third parties using a filter design feature, not to harm caused by using the filter design feature. But Cingel does not rely on this study alone in reaching his conclusions. Cingel states as follows in his report:

> Taken together, these findings suggest reciprocal relationships, where the ability to manipulate one's photos (which is clearly prompted when using Instagram and Snapchap, for example) leads to increased taking and posting of appearance-related content (Rousseau, 2021). Manipulating one's own images relates to poorer body image among some adolescents and young adults (Beos et al., 2021), and viewing others' manipulated images causes poorer body image immediately following exposure (Kleemans et al., 2020), and is also related to some eating disorders (Lonergan et al., 2020). As noted, the defendants' platforms lack any design feature that would identify which images are altered. This has resulted in billions of manipulated images without any indication that they have been altered or manipulated, with resultant effects on body image.

(Cingel Rept., Defs' Ex. A, at p. 61.) Here, the relevant opinion that the *use* of a filter is harmful is based on articles that are not addressed by Defendants in their papers when discussing Section 230: (Rousseau, 2021); and (Beos et al., 2021). Moreover, Defendants' liability can be premised on design decisions made by Defendants to enhance the message of particular content without violating Section 230. (*See Lemmon v. Snap, Inc.* (9th Cir. 2021) 995 F.3d 1085 (Section 230 did not bar liability premised on a filter that added to a photograph or video the speed at which a photograph was taken.)

Defendants' second argument is that Cingel is unqualified to render expert opinions regarding adolescent development and platform design. This argument must be rejected. "It is well settled that an expert's qualifications must be established with respect to the subject matter of his testimony. The fact that the purported expert may be qualified in one field vaguely related to another does not mean that he is qualified in that other field." (*California Shoppers, Inc. v. Royal Globe Ins. Co.* (1985) 175 Cal.App.3d 1, 66-67, cited by Defendants at Defs' Cingel Mot., at p. 12.)

The way in which a social media platform's design causes general mental health harms in minor users is not a subject "vaguely related" to Cingel's field of expertise: it is the very field in which Cingel has focused his studies for over a decade. "A person is qualified to testify as an expert if he has special knowledge, skill, experience, training, or education sufficient to qualify him as an expert on the subject to which his testimony relates." (Evid. Code, § 720, subd. (a).) "Expertise, in other words, is relative to the subject, and is not subject to rigid classification according to formal education or certification. [Citation.] Rather, an expert's qualifications can be established in any number of different ways, including a showing that the expert has the requisite knowledge of, or was familiar with, or was involved in, a sufficient number of transactions involving the subject matter of the opinion." (*ABM Industries Overtime Cases* (2017) 19 Cal.App.5th 277, 294, internal citations and quotation marks omitted.) Cingel, with his years of experience studying the effects of social media use on adolescents, is qualified to offer testimony on that topic. He is, for example, the co-editor of the journal *Media Psychology.* If Defendants believe that Cingel's lack of a medical degree undermines his opinions, then they will be free to mention that fact at trial.

Defendants' third argument is that Cingel improperly relies on the "undefined concepts," "excessive use," "problematic use," and "addiction." Defendants fault Cingel for failing "to define the amount or type of use that purportedly causes mental health issues." (Defs' Cingel Mot., at p. 13.) Defendants rely on the fact that Cingel has testified that even as little as two minutes of social media use per day might be harmful if that use occurs at a time that would interfere with sleep. (See Defs' Cingel Mot., at p. 13.) Defendants again rely on this testimony in their Reply. (Defs' Reply ISO Cingel Mot., at p. 7.) Defendants extrapolate from this deposition testimony to make the argument that Cingel believes even one or two minutes of social media use is "excessive use" or "problematic use."

Defendants' argument is not well taken. It is worth observing that Defendants' own internal documents refer to "problematic use" of social media. In any event, Defendants cannot show that it is improper for Cingel to conclude that short periods of social media use at night can be harmful because it interferes with sleep. For example, Cingel has noted in his Report that "[a] large-scale survey of British adolescents shows [how social media use can cause harm]; social media use was related to online harassment, *poor sleep*, lower self-esteem and lower body image, and these negative relations were stronger among adolescent females (Kelly et al., 2018)." (Cingel's Rept., Defs' Ex. A, at p. 62, emphasis added.) Elsewhere, Cingel specifically defined "problematic social media use" to refer "to a context of social media use, one characterized by a relationship with social media that

involves *displaced sleep due to use*, a feeling of inability to cease social media use, impaired relationships with parents and/or peers due to over-use, among others (Banyai et al., 2017)." (Cingel's Rept., Defs' Ex. A, at p. 78, emphasis added.) Defendants do not address Cingel's reliance on these articles to reach the conclusion that social media use can lead to "problematic social media use" by interfering with sleep.

Defendants are correct that Cingel, who is not a psychologist, cannot offer an opinion as to the nature and specific definition of a medical diagnosis of a mental health condition. But this fact does not prevent Cingel from providing general causation opinions as to the ability of social media use to lead to negative mental health effects more generally. (*See Shirvanyan v. Los Angeles Community College Dist.* (2020) 59 Cal.App.5th 82, 104 ["There is no fixed standard for the evidence needed to support a finding of emotional distress damages."].)

As part of their third argument, Defendants argue that Cingel's opinions are improper because he fails to acknowledge any potential benefits of social media use. Defendants take issue with Cingel's *conclusion* that social media use does not produce any benefits. Defendants may challenge this conclusion at trial. But, as explained in connection with testimony by Goldfield, an expert's failure to address the potential benefits of social media use does not justify exclusion of that expert's testimony regarding the relevant question at trial: to wit, can the platforms cause *harm*. Contrary to Defendants' position here, Cingel was not required to take into account whether certain teachers "use YouTube in class to help them teach" in order to properly assess the mental health harms associated with individual use of social media. (Cingel Dep., Defs' Ex. B, at 164:11-12; see Defs' Reply ISO Cingel Mot., at p. 7 [relying on this testimony].)

Defendants' fourth main argument is presented in two parts. First, Defendants argue that Cingel draws causal conclusions from evidence that cannot show causation. Defendants claim that Cingel draws his causal conclusions from cross-sectional studies that, when viewed alone, do not support those conclusions. Defendants note that, in some cases, the authors expressed reservations as to whether the study clearly established cause. Defendants offer the following example:

> Emblematic is Dr. Cingel's characterization of a study involving Icelandic adolescents "who overused multiple social media platforms." Dep. 166:13-168:2. Dr. Cingel described the study as having found that those individuals "were more likely to experience depressive symptoms and panic disorder over the course of the following two years."

> But the study's authors explicitly warned that "it is not known if this relationship is causal" and "the effect size of these relationships suggest they may not be of clinical relevance." Id. (Thorisdottir (2020)) ... .

(Defs' Cingel Mot., at p. 15.)

Cingel's Report cites to Thorisdottir (2020) (along with numerous other studies) to support his limited opinion that "researchers have *linked* adolescent social media use to physical symptoms of anxiety." (Cingel Rept., Defs' Ex. A, at p. 54, emphasis added.) Later, Cingel relies on Thorisdottir (2020) when stating that "longer-term longitudinal designs (often with a lag in data collection points over one year) increasingly have found negative associations between social media use and adolescent mental health, similar to between-subjects designs." (Cingel Rept., Defs' Ex. A, at p. 65.) Cingel's reliance on studies like Thorisdottir (2020) accords with his conclusion that "[a]lthough there are limitations to cross-sectional designs, they are still valuable, as they can speak to *the consistency of findings* between social media use and adverse mental health outcomes." (Cingel Rept., Defs' Ex. A, at p. 55, emphasis added.) Defendants have failed to provide sufficient evidence to show that it is scientifically unreliable to rely, in conjunction with other evidence, on a large set of research (rather than a lone study) showing a consistent link between social media use and adverse mental health outcomes in reaching the conclusion that social media use causes those adverse mental health outcomes.

The court also rejects Defendants' argument that Cingel, who is an expert in media and its effect on children, is unable to offer expert opinion based on his own experience regarding specific design features. Defendants fault Cingel for opinions as to "ephemeral content" because Cingel does not cite to a specific scientific article addressing the adverse mental health outcomes associated with "ephemeral content." However, Cingel's testimony is not so limited. Cingel's testimony as to ephemeral content is based on (1) his review of Defendants' documents and (2) Cingel's expertise and review of the literature regarding how certain aspects of adolescent development can be taken advantage of by features of media. (See, e.g., Cingel's Rept., Defs' Ex. A, at p. 50.)

The second part of Defendants' fourth main argument is that Cingel impermissibly "lump[s] all Defendant platforms together in his opinions, rather than differentiating based on different features and functions of the platforms." (Defs' Cingel Mot., at p. 17.) As explained with respect to other Plaintiffs' Experts, this argument is best understood as stating Defendants' belief that Cingel's testimony would be insufficient on its own to prove that

any Defendant caused specific harm to a Plaintiff. (See, e.g., Defs' Reply ISO Cingel Mot., at p. 11 ["Plaintiffs have the burden to prove general causation, and that cannot occur without party-specific evidence"].) This argument is not an appropriate basis for excluding Cingel's testimony. Moreover, Cingel has described the features he asserts cause harm. (See, e.g., Cingel Rpt. ¶¶ 59-70.) Defendants can provide evidence at trial that those features are not included in their platforms. They have not done so here.

Defendants' fifth and final argument is that Cingel has no basis to opine on company documents. Defendants take the position that reliance on Defendants' internal documents to address issues regarding Defendants' social media platforms is improper because those internal documents are not "peer reviewed or independently validated by scientists." (Defs' Cingel Mot., at p. 19.) Defendants also suggest that Cingel lacks the expertise to review Defendant' internal documents.

The court disagrees with this argument. Defendants present no basis for the conclusion that a general causation expert assessing the harms arising from a defendant's product is unable to rely on the defendant's documents discussing that product and its functioning. Defendants, in essence, argue that an expert must not be able to review the evidence that is directly relevant to the case. That is not the law. Cingel "may testify about his review of [Defendants'] corporate documents ... for the purpose of explaining the basis for his opinions, assuming those opinions are otherwise admissible." (*Zetz v. Boston Scientific Corporation* (E.D. Cal. 2022) 644 F.Supp.3d 684, 703 (*Zetz*).) Defendants have not shown that any of Cingel's opinions are otherwise inadmissible. And Defendants have failed to show that Cingel, who has years of experience studying social media companies and their effect on their users, lacks the expertise to review a social media company's internal documents.

Defendants' Motion to Exclude the Expert Testimony of Dr. Anna Lembke

Court's Ruling: The court denies the Lembke Motion.

Lembke is "Professor of Psychiatry and Addiction Medicine, Chief of the Addiction Medicine Dual Diagnosis Clinic, Medical Director of Addiction Medicine, and Program Director of the Addiction Medicine Fellowship, in the Department of Psychiatry and Behavioral Sciences at Stanford University

School of Medicine." (Lembke Rept., Defs' Ex. A, at p. 2.) Lembke has "been licensed to practice medicine in the State of California from 1995 to the present." (Lembke Rept., Defs' Ex. A, at p. 2.) In 2021, Lembke published a book on addiction called *Dopamine Nation: Finding Balance in the Age of Indulgence* (*Dopamine Nation*). (Lembke Rept., Defs' Ex. A, at p. 4.) *Dopamine Nation* "explores the neuroscience and treatment of addiction, including the problem of digital media." (Lembke Rept., Defs' Ex. A, at p. 4.)

Lembke holds the following five opinions:

> 1. Addiction is a chronic, relapsing, and remitting brain disease as evidenced by continued, compulsive use of a substance or engagement in a behavior despite harmful consequences.
> 2. Social media addiction has been accepted and validated as a psychiatric condition by recognized authorities and peer-reviewed literature.
> 3. Addictive social media exploit our innate need for human connection by increasing access, quantity, potency, novelty, and uncertainty of social rewards, leading to brain and behavioral changes consistent with addiction. Young people are especially vulnerable to these harms.
> 4. Defendants exploit behavioral reward mechanisms with their addictive and unsafe social media products targeted at kids. Defendants' own documents provide evidence that their social media products are addictive.
> 5. Addiction to social media can adversely affect youth mental health, particularly among those with co-occurring psychiatric disorders. Conversely, limiting social media use can improve youth mental health. While some users may benefit from social media, such benefit does not negate the harm caused to a substantial population of users.

(Lembke Rept., Defs' Ex. A, at p. 2, internal bolding omitted.) In forming these opinions, Lembke has relied on her own experience, numerous academic studies, Defendants' internal documents, and deposition testimony.

Defendants raise four main arguments against admission of Lembke's testimony. First, Defendants argue that Lembke's opinions and methodologies are unable to separate harms resulting from third-party content and harms resulting from design features. Second, Defendants argue that Lembke's opinion that social media use can lead to addiction rests

on unsupported, limitless, and untested concepts not generally accepted in the scientific community. Third, Defendants argue that Lembke lacks the expertise to opine as to Defendants' internal documents. And fourth, Defendants argue that Lembke's opinions are not reliable as to any single Defendant because Lembke has failed to distinguish between Defendants' platforms.

Defendants' first argument as to Lembke must be rejected for the same reasons discussed above with respect to other Plaintiffs' Experts. Defendants fault Lembke for stating that it is " 'unlikely' " that "there could be social media 'addiction' in the absence of content." (Defs' Lembke Mot., at p. 11.) As explained in connection with other Plaintiffs' Experts, Defendants improperly seek to apply the rejected but-for test by way of a *Sargon* motion to exclude testimony. The fact that third-party content is a but-for cause of Plaintiffs' harm (or even the sole cause of *some* of a Plaintiff's harm) does not mean that Plaintiffs are unable to show that design features *also* caused harm. Lembke does discuss how certain features make social media platforms addictive. The fact that Lembke admits that third-party content causes harm supports the reliability of her opinions, as it demonstrates that she considered the available evidence and literature. Defendants will be able to attempt to demonstrate the limits of Lembke's opinions at trial.

Defendants begin their second main argument by arguing that Lembke's definition of "social media addiction" lacks scientific support and diagnostic validity. Defendants point out that "Lembke admits that neither the DSM-5 nor the ICD-11 recognizes 'social media addiction' (or any variant of it)." (Defs' Lembke Mot., at p. 14.) But, as explained in connection with the Bagot Motion, the fact that the DSM-5 or ICD-11 do not include the term "social media addiction" does not, without more, justify excluding the opinion of an expert that such a condition exists; Defendants cite no authority requiring a contrary conclusion. If Lembke's opinions differ from those offered by a respected codified source, then Defendants can use that fact in cross-examination. Moreover, if Lembke's reference to "social media addiction" differs from her prior opinions on the matter, then Defendants can raise those prior opinions during cross-examination.

In making this argument, Defendants repeatedly criticize Lembke's opinions by citing testimony Lembke gave in multi-district litigation concerning opioid addiction. (See, e.g., Defs' Lembke Mot., at pp. 14-15.) The snippets of testimony cited by Defendants are from 2021 and 2022, and they are statements by Lembke as to how she defines addiction in the context of substance abuse, which was the only type of addiction relevant to the opioid litigation. Defendants incorrectly state that Lembke's testimony

affirmed that addiction *only* applies to substances, not behaviors. Defendants mischaracterize the nature and relevance of the testimony. Furthermore, Defendants' proposed inference that Lembke's opinions about behavioral addiction were contrived for this litigation is contradicted by the fact that, at the time of her testimony in the opioid litigation, Lembke already had published or was about to publish an entire book about addiction that includes discussion of the neuroscience and treatment of behavioral addiction, including problematic use of digital media. (Lembke Rept., Defs' Ex. A, at p. 4.)

Next, Defendants argue that Lembke's methods for arriving at her definition of "social media addiction" lack any grounding in the science. Defendants criticize Lembke's use of the so-called "4 Cs": control, compulsion, craving, and consequences. Lembke discusses the 4 Cs as follows in her Report:

> The Social Media Disorder (SMD) Scale, a 9-item, psychometrically sound instrument based on the nine DSM-5 criteria for internet gaming disorder, is described in a published article by van den Eijnden, RJ.J.M., Lemmons, J.S., & Valkensburg P.M. (2016).
>
> i. Van den Eijnden was a co-author on a larger follow-up study in which van den Eijnden and co-authors concluded: "The social media disorder scale appears to be suitable for measuring and comparing problematic social media use among young adolescents across many national contexts."
>
> ii. Based on the reliance upon the Social Media Disorder Scale in the peer-reviewed literature and by a recognized authoritative source in the WHO [World Health Organization] as described below, the Social Media Disorder Scale (SMDS) is a valid, scientifically accepted method to diagnose social media addiction.
>
> iii. Although I do not rely on the Social Media Disorder Scale itself in my own clinical practice, I rely on the same factors listed in the Social Media Disorder Scale. As noted, all recognized methods for diagnosis of addiction/use disorder/problematic use, incorporate similar assessment criteria ("the 4 Cs").

(Lembke's Rept., Defs' Ex. A, at p. 9, internal emphasis and footnotes omitted.) Lebmke further explains:

> d. The DSM-5 denotes 11 different criteria to capture the patterns of behavior that are used to diagnose addiction.

> The DSM-5 itself does not use the term addiction. Instead, it uses the term use disorder, as in alcohol use disorder, opioid use disorder, nicotine use disorder, etc.8 Such terminology aligns with current views of the condition as a brain disease, while minimizing labels that stigmatize patients and create barriers to seeking treatment. Other sources may identify a different number of criteria, or may be worded differently, but such standards generally include the central aspects of addiction/use disorder.
> e. A short-hand way to remember these criteria is the "4 C's": Control, compulsion, craving, and consequences, especially continued use despite consequences, as well as tolerance and withdrawal. Not all of these criteria need to be present to meet the threshold for addiction.
>
> i. Control: Out-of-control use, for example using more than intended, or an inability to cut back use when necessary.
>
> ii. Compulsion: Mental preoccupation with using against a conscious desire to abstain.
>
> iii. Craving: Physiologic and/or mental states of wanting.
>
> iv. Consequences: Physical, mental, social, legal, economic, interpersonal, and other problems that arise as a result of use, yet which still do not deter use, including opportunity costs – other things not being done as a result of addictive behaviors.
>
> v. Tolerance: Needing more over time to get the same effect, or finding that a given dose is no has the same effect.
>
> vi. Withdrawal: Experiencing physical and mental distress in the absence of use.

(Lembke's Rept., Defs' Ex. A, at pp. 6-7, internal emphasis and footnotes omitted.)

Defendants criticize Lembke for using her own "shorthand" instead of a peer-reviewed and published diagnostic protocol. However, Lembke's "4 Cs" is simply a simplified explanation of the DSM-5's diagnostic criteria. Defendants do not argue that or otherwise explain how the "4 Cs" improperly strays from the DSM-5's guidance. Moreover, as Plaintiffs point out, Lembke's definition of social media addiction as a type of behavioral addiction is also based on a definition by the American Society of Addiction Medicine. (Lembke's Rept., Defs' Ex. A, at pp. 7-8.)

In claiming to criticize Lembke's *methods* for using the term "social media addiction," Defendants take issue with certain *conclusions* Lembke

offered in deposition. Defendants claim that "Lembke concedes that [the 4 Cs] could be applied to diagnose most any type of pleasurable behavior as an 'addiction,' including watching pimple-popping videos on YouTube (id. at 90:4-9), watching outtakes of American Idol (id. at 88:1-4), or reading Victorian fiction novels (id. at 85:22-86:12)." (Defs' Lembke Mot., at p. 16, citing Lembke Dep., Defs' Ex. B.) Defendants misrepresent the testimony. For example, take Defendants' claim that Lembke testified that people can become addicted to watching "pimple-popping videos on YouTube. The exchange during the deposition was as follows:

> Q. Okay. But someone could -- is it -- I'm just asking, is it possible? Is it possible that someone could become addicted to watching Mr. Pimple Popper videos?
> ...
> THE WITNESS: People can certainly *get addicted to watching videos that are delivered on a platform that's designed to be addictive*.
> ...
> Q. So –
> A. So people can get addicted to watching videos on YouTube.
> Q. Can they get addicted to particular types of videos?
> A. *The content is not as important*.
> Q. So in your -- your testimony is you can't get addicted to watching one particular type of video; is that right?
> ...
> THE WITNESS: Yeah, that's not what I said.
> Q. Can you get addicted to watching one particular type of video on YouTube, for instance?
> ...
> THE WITNESS: Typically what happens when people get addicted to YouTube is they'll get drawn in by a certain type of video, but very quickly the medium will overtake the significance of the content itself. And they'll find themselves down a rabbit hole where they're watching a video that they never planned or intended to watch, *because the content is less important than the recursive feedback loop and the design features that engage them on that platform.*

(Lembke's Dep., Defs' Ex. B, at 90:2—91:11, emphasis added.) By way of another example, Lembke had reservations as to whether someone could become addicted to "Victorian fiction novels," and merely stated that it was "possible." Of course, Plaintiffs' counsel's objection that the question "Can people become addicted to Victorian fiction novels?" was speculative when

asked of a person who has not studied that question was a proper objection that would properly be sustained. In any event, Lembke's point is that the way in which particular content is *presented* is what can make that content addictive.

Defendants also take issue with Lembke's definition of "addiction" because it does not require a significant harm component. This argument is based on testimony by Lembke that things like "anxiety" and "irritability" *may* in some cases be sufficient "harm" to justify a diagnosis of "addiction." (See Defs' Lembke Mot., at p. 16, citing Lembke Dep., Defs' Ex. B, at 200:17-201:22.) Immediately after the portion of the testimony cited by Defendants came the following exchange:

> Q. So can I give you a hypothetical, and you let me know what you think of it? Say I run 3 miles a day every other day for several months. I run on Monday. But due to work, I can't run on Wednesday. I would really like to run, but I just can't do it. I then get irritable at the start of -- of work because I didn't get to run on that Wednesday. Am I addicted to running?
> ...
> THE WITNESS: *I would not make the diagnosis of addiction based on what you've told me.*
> ... Q. Okay. Why not?
> A. Lots and lots of reasons. There's no evidence of compulsive, out-of-control use. You haven't told me anything about harmful consequences as a result of your running.
> Q. Irritability can be a harmful consequence; right?
> A. It can be. But it's -- *it's not in and of itself sufficient*; right?
> *It's the constellation of these symptoms. I also need a sense of how pervasive and how severe the irritability would be.*

(Lembke Dep., Defs' Ex. B, at 202:2—203:1, emphasis added.) Lembke's opinions thus cannot be characterized as including the belief that "virtually any activity that causes pleasure while leading to a mood change or spending time away from others rises to the level of an addiction." (Defs' Lembke Mot., at p. 16.) Defendants' frequent misrepresentations of deposition testimony (or other evidence) does not inspire confidence in their credibility on *Sargon* issues.

Defendants next argue that Lembke's addiction theory rests upon an unsupported and untested hypothesis about the amount of dopamine

released when using social media. Defendants fault Lembke for failing to undertake or rely upon a study that measured how much dopamine is released in the brain when an individual uses social media. Lembke has explained that "there is no brain scan or blood test to diagnose addiction. [Addiction diagnosis is based on] phenomenology, which is these patterns of behavior that are highly recognizable and highly consistent with the same patterns of behavior that we see when people get addicted to drugs and alcohol." (Lembke Dep., Defs' Ex. B, at 119:8-13.) Lembke's conclusions regarding social media use and dopamine are drawn from her knowledge of dopamine release more generally and by analogy. For example, Lembke explains the basic function of dopamine in addiction more generally:

> Reinforcing substances and behaviors temporarily increase dopamine firing in the brain's reward pathway. In order to accommodate the higher levels of dopamine release, the brain adapts by downregulating its own endogenous dopamine and its own endogenous dopamine receptors. This process is called neuroadaptation. With the repeated use of the substance or behavior, vulnerable individuals can enter a chronic dopamine deficit state, wherein the threshold for experiencing pleasure goes up, and the threshold for experiencing pain goes down. Addicted individuals then need the substance or behavior not to feel good, but simply to escape the pain of withdrawal.

(Lembke Rept., Defs' Ex. A, at p. 13.) Defendants have not shown that Lembke is unable to reliably analogize between different addictive behaviors with respect to the function of dopamine. It is not necessary for Lembke to have relied on a non-existent study that employed brain-imaging technology to measure the release of dopamine in an individual's brain during his/her use of social media platforms.

Defendants' third main argument is that Lembke should be prohibited from opining as to Defendants' internal company documents. For reasons already given in connection with other Plaintiffs' Experts, an expert is not categorically precluded from examining and testifying as to a defendants' internal documents simply because the expert is not an expert in "internal company documents." Nor have Defendants shown that Lembke will "opine that Defendants have acknowledged that their platforms are addictive" or otherwise provide testimony as to Defendants' knowledge or intent. (Defs' Lembke Mot., at p. 19 [providing no citation to the record in support of this factual claim].) Instead, Lembke's opinion as to Defendants is that they "exploit behavioral reward mechanisms with their addictive and unsafe social media products targeted at kids," and that "Defendants' own documents

provide evidence that their social media products are addictive." (Lembke Rept., Defs' Ex. A, at p. 2, internal bolding omitted, italics added.) Lembke may properly offer this testimony based on her expertise, research, and review of Defendants' documents.

Finally, the court is not persuaded by Defendants' argument that Lembke's testimony is inadmissible because she purportedly fails to adequately assess Defendants' platforms on an individual basis. Lembke's Report addresses each Defendant individually. For example, Defendants are simply incorrect in contending that Lembke fails to adequately address the features of Snapchat. (See, e.g., Lembke Rept., Defs' Ex. A, at pp. 48-58.) Lembke notes that Snapchat "looks very similar to other defendants' platforms with similar addictive design features, like the endless scroll, the autoplay, the notifications, the posts, comments, shares, likes, and then the addition of other Snapchat-specific features, like the Streaks, the BFFs, the trophies, things like that. The filters, the Bit emojis." (Lembke Dep., at 362:1-7.)

Moreover, from her analysis of Defendants' platforms, she concludes that the "platforms are more alike than different." (Lembke Dep., Defs' Ex. B, at 13:1-8.) Lembke thus addressed how all of the social media platforms caused addiction in similar ways. Defendants have failed to show why such a conclusion would not be scientifically reliable. As noted with respect to other Plaintiffs' Experts, Defendants' fourth argument is really about the sufficiency of the evidence to prove liability as to any one Defendant; it is not an argument that justifies exclusion of an expert's testimony.

Defendants' Motion to Exclude the Expert Testimony of Dr. Dimitri Christakis

Court's Ruling: The court denies the Christakis Motion.

Christakis describes his experience as follows:

> I am the George Adkins Professor of Pediatrics and an adjunct Professor in Psychiatry and in Health Services at the University of Washington. I have been studying children and media for 27 years (including social media since it was launched) and have secured millions of dollars in federal and foundation grants as a principal investigator or co-investigator. I have served as a mentor to over 15 junior

faculty and post-doctoral students who also study children and media. In addition to clinical and teaching duties, I am a prolific researcher. I have published over 275 peer reviewed scholarly articles including over 80 related to children and media. My current h Index (measure of scholarly impact) is 102 (>60 = "Exceptional"). I am the editor in chief of JAMA Pediatrics, the world's leading pediatric scientific journal with an impact factor of 24.7.

(Christakis Rept., Defs' Ex. A, at p. 5.)

Christakis offers the following opinions:

1. Problematic social media use and addiction are disorders defined in part by the compulsive use of social media. They are well recognized in the scientific community and peer-reviewed literature.
2. Pre-teens and teens are particularly vulnerable to the problematic use of social media and its resulting negative health outcomes. Pre-teens are the most vulnerable to effects from social media, including problematic use, addiction, mental health harms, and inappropriate contact from adults.
3. A review of the available meta-analyses and other relevant literature establishes that social media causes or contributes to addiction, problematic usage, anxiety, depression, body dysmorphia, eating disorders, sleep deprivation, suicide, and self-injury.
4. Specific design features of Facebook, Instagram, Snap, YouTube, and TikTok work in concert to promote both the addictive nature of social media and its associated harms. Platform features and platform algorithms create and amplify mental health problems for pre-teens and teens.
5. Defendants' (Meta, Snap, TikTok, and YouTube) internal studies and documents show the harmful effects of their social media platforms, including addiction and negative mental health outcomes. The documents also reveal that the resources Defendants put towards mitigating these harmful effects were weighed against user engagement and the risk of subsequent loss of revenue. Perhaps as a consequence, Defendants only instituted minimal change prior to the initiation of this litigation.

6. Regardless of any safety changes, the ongoing research and literature shows that children and teenagers continue to be harmed by social media use.
7. In other instances, Defendants had internal data regarding potential harms and the ability to further investigate those harms, but did not do so.
8. Despite Defendants' internal data showing that their social media sites are addictive, promote problematic use, and result in an increased risk of anxiety, depression, suicidality, sleep deprivation, body dysmorphia, and eating disorders, as well as other mental health issues, Defendants did not provide meaningful information about these harms to parents or children.
9. For parents and children to make an informed decision regarding the risks/benefits of social media, social media companies need to fully disclose the nature and risk of harms to them.
10. Social media has also changed the school environment. The same addictive design features of social media that drive user engagement result in its use during the school day. The school environment has been negatively impacted by the mental health problems social media causes in kids, and by increases in distraction and behavioral issues linked to social media use.
11. Because of the increased risk of harm to children and adolescents, in my opinion, social media platforms, as designed, are not reasonably safe for children. At a minimum, informed parental consent should be required for use of social media under the age of 16.
12. Due to the risks to children, effective age verification and parental controls are necessary.
13. Due to the risks to children, including the risk of addiction, better user controls are necessary.

(Christakis Rept., Defs' Ex. A, at pp. 3-5.)

Christakis describes his methodology for arriving at his opinions as follows:

> I approached my evaluation by drawing upon my multidisciplinary expertise as a Professor of Pediatrics, Psychiatry, and Health Services, which combines both medical training and public health education. My analysis employs a systematic review of meta-analyses of existing

> literature, individual studies where relevant, and internal industry documents and studies done by some of the Defendants. My systematic approach evaluated the "strength of the evidence," which aligns with clinical frameworks used in pediatric practice, while incorporating epidemiological principles from the public health field. Throughout my academic career and clinical practice, I have routinely evaluated research based on this methodology.
>
> In forming my opinions regarding the potential causal relationship between social media platform use and adolescent mental health outcomes, I have relied upon my medical training, training in public health and epidemiology, my clinical experience, and my own research into media as well as an extensive review of academic literature. I have also reviewed and considered internal documents from the Defendants and depositions of current and former employees of the Defendants that were provided to me.

(Christakis Rept., Defs' Ex. A, at pp. 6-7.)

Defendants raise four main arguments in support of their request to exclude Christakis' testimony. *First*, Defendants argue that Christakis' opinions impermissibly rely on content and publishing activity. *Second*, Defendants argue that Christakis' conclusions that problematic and addictive usage of social media causes mental harms are based on unreliable methodology. *Third*, Defendants argue that Christakis' testimony on Defendants' company documents should be excluded. And *fourth*, Defendants argue that Christakis offers opinions on which he has no expertise. In addition to these four arguments, Defendants suggest that Christakis' testimony should be excluded because he is interested in promoting this litigation. However, such an argument goes to *bias*, which is an issue that should be considered by the jury; Christakis' potential bias or motives do not justify exclusion pursuant to Defendants' *Sargon* Motion.

Defendants first argument is based on a misreading of Section 230 as well as an inaccurate portrayal of Christakis' opinions. Plaintiffs need only show that they were harmed by the design features of Defendants' platforms—they do not need to show that they were *not* harmed by third-party content as well. And as this court has noted, Defendants cannot be allowed to apply an improper but-for test that excludes liability under section 230 if the harm would not have occurred *but for* the third-party content. (*Internet Brands*, *supra*, 824 F.3d at p. 853.) This improper but-for argument does not justify exclusion of this expert's opinion under *Sargon.* (See Defs' Christakis Mot., at p. 10 [criticizing Christakis for concluding that

" 'there is no content devoid of features on social media sites' "], citing Christakis Dep., Defs' Ex. B, at 227:24-25.) Moreover, the fact that Christakis concedes that content on social media platforms *also* causes harms does not undermine his testimony, but rather demonstrates that he has considered other potential causes of harm. And Christakis provides his opinions regarding how design features themselves lead to harm *regardless of* content. (See, e.g., Christakis Rebuttal Rept., McConnel Decl., Ex. 1, at p. 11 ["all content on social media is only experienced within the context of features that have been engineered to increase engagement"].) Whether a Plaintiff in this litigation is harmed by design features or instead *solely* by third-party content is ultimately a question for the jury to decide.

The court addresses Defendants' citation to a two-page editorial written by Christakis in 2019. Defendants argue that Christakis relies on content because, in the 2019 editorial, Christakis stated that " 'content drives any observed effects.' " (Defs' Christakis Mot., at p. 6, citing Simons Decl., E.x C.) Christakis' two-page editorial makes the point that research based solely on time spent on various devices is incomplete because "[i]t is not as simple as time spent on a device or activity but rather *how that time is spent* that matters." (Simonsen Decl., Ex. C, at p. 1, emphasis in original.) In that context, the editorial states: "Media usage as a predictor variable belies the reality that *content* drives any observed effects." (Simonsen Decl., Ex. C, at p. 1, emphasis in original.) This statement, made in an editorial, not in the rigorous context of a peer-reviewed study, is a reiteration of Christakis' view that content does cause harm; but it does not purport to explain the totality of the effect of social media in one sentence, and does not conflict with his opinions on the effect of *design features* (not merely time spent on various devices) regardless of content.

Defendants' second argument regarding Christakis' methodologies consists of two parts. First, Defendants argue Christakis' opinion that there is a "consensus around social media addiction and mental health harms" is "contradicted" by the sources cited by Christakis and by Christakis' out-of-court work. The fact that an expert cites to studies that draw different conclusions from the one he reaches may be a sign that the expert has adequately surveyed the competing theories in the scientific literature. (*Onglyza Product Cases* (2023) 90 Cal.App.5th 776, 787 (*Onglyza*) [stating that an expert should not "disregard[] inconsistent data from other ... studies"].) Defendants' reliance, for example, on a report by the National Academy of Sciences and on a single statement by Christakis found on YouTube (see Defs' Christakis Mot., at p. 11), when viewed in the context of Christakis wide-raging review of the scientific literature and available evidence, simply does not justify a finding that Christakis' methodologies are

unreliable. (The court notes that comments made in an informal discussion on a YouTube video might be expected to have less academic rigor than an expert report.) Defendants are free to impeach Christakis at trial by citing such evidence. Moreover, Defendants critique of the "consensus" statement is in fact a disagreement with Christakis' *opinion*, not a demonstration that Christakis' methodologies are unreliable. Finally, even if Christakis were prevented from stating the word "consensus," this would not justify excluding his opinions from his Report as outlined above. In any event, Christakis' so-called "consensus" statement is appropriately based on review of the relevant literature, which has not been adequately challenged by Defendants. (See, e.g., Christakis' Rebuttal Rept., McConnel Decl., Ex. 1, at p. 25.) For example, Christakis states:

> Recently, the American Psychiatric Association has recognized "technology addiction" as "excessive and compulsive use of the internet or online activities [that] can lead to negative consequences in various aspects of an individual's life." "Social media addiction" is recognized as its own condition, characterized as "involv[ing] problematic and compulsive use of social media; an obsessive need to check and update social media platforms, often resulting in problems in functioning and disrupted real-world relationships." The APA further recognizes that "children and adolescents are particularly vulnerable to technological addiction because their brains are still developing" and "excessive problematic use of social media" has the potential to develop into a behavioral addiction for children and adolescents.

(Christakis' Rept., Defs' Ex. A, at p. 42, brackets in original; internal footnotes omitted.)

The second part of Defendants' argument on methodology is that there is a "fundamental gap" between Christakis' opinions and the evidence on which he relies to find causation. Defendants contend that "none of the studies on which Dr. Christakis relies was designed to study the core issue on which he opines: whether certain features of Defendants' platforms cause mental health harms." (Defs' Christakis Mot., at p. 12, internal emphasis omitted.)

In support of this argument, Defendants note first that Christakis has been unable to rule out "reverse causation": i.e., that depressed and anxious minors are simply more likely to use social media. Christakis states as follows in the section of his Report cited by Defendants:

> As can be seen in the above figure [which lists results of a "recent *Morbidity and Mortality Weekly Report* from the Department of Health and Human Services analyz[ing] cross sectional Youth Risk Behavior Survey data of U.S. high school students], "frequent" social media use was associated with a 35% increased risk of "persistent feeling of sadness," a 21% increased risk of "seriously considering attempting suicide," and a 16% increased risk of "making a suicide plan." All of those associations were "statistically significant." The authors acknowledge that these associations are cross-sectional and therefore causality cannot be established. It could credibly be asserted that the causality is reversed and that "persistent feelings of sadness" beget social media usage for example. Or more likely, that there is a dyadic, mutually reinforcing relationship where searching for self-harm videos (because one is considering it) leads to content that induces viewing more of it and increasing the likelihood of doing it.

(Christakis' Rept., Defs' Ex. A, at p. 218.) Thus, in his Report, Christakis recognizes that a certain cross-sectional study *could* lead someone to *credibly assert* that the results of *that study* do not establish that social media causes mental health harms. But Christakis' acknowledgment that another expert could reach a different conclusion than he has as to this study does not justify exclusion of his opinions. Christakis' recognition of some of the limitations of one of the studies he relied on is instead a subject for cross-examination.

Defendants next fault Christakis for relying on studies that do not specifically study the effects of Defendants' platforms, but instead address "overall screen time" or social media platforms more generally. Defendants claim that Christakis cannot rely on a study addressing time spent on Defendants' platforms because "Christakis has disclaimed reliance on time spent as a measure of harm." (Defs' Christakis Mot., at p. 13.) This argument mischaracterizes Christakis' opinions. In the very deposition testimony cited by Defendants, Christakis has merely stated that "time alone" is not "sufficient to categorize the experience as harmful or harmless." (Christakis Dep., Defs' Ex. B, at 196:20—197:4.) Defendants fail to identify any statement by Christakis that time spent on a platform is irrelevant to his analysis. It is unclear why Defendants would base their argument on such a clear misreading of the evidence. Defendants similarly mischaracterize the evidence by claiming that Christakis relies on "data measuring smartphone use generally (not social media use specifically)."

(Defs' Christakis Mot., at p. 13.) Defendants refer to a study that did attempt to measure how "likes or status updates on Facebook" interrupted sleep. (Simonsen Decl., Ex. M, at p. 5.)

Defendants critique Christakis for relying on studies that themselves rely on self-reported social media use. However, Defendants have failed to show that social scientists and healthcare professionals do not rely on self-reporting when carrying out studies. Defendants have not shown that the inclusion of such studies in Christakis' literature review renders Christakis' methods scientifically unreliable.

Defendants fault Christakis for relying on studies that include non-Defendant social media platforms. In making this argument, Defendants cite no evidence that would establish that other social media platforms are so inherently different from Defendants' platforms that they "are not reasonably comparable" to Defendants' platforms." (*Olive v. General Nutrition Centers, Inc.* (2018) 30 Cal.App.5th 804, 819.) And Christakis has offered a reasonable opinion as to why social media platforms can be studied together:

> Consider two substances which are commonly accepted to be harmful to health: alcohol and cigarettes. Significant studies have been conducted establishing that exposure to alcohol and cigarettes can increase the risk of certain cancers, heart disease, and premature death. As such, the U.S. Surgeon General and other public health officials caution Americans against consumption of these substances. There is no need for the warnings to be specific to the various types of alcohol or brands of cigarettes. The underlying mechanisms that lead to these harms are the same regardless of small differences between each product (e.g. "light" cigarettes were no safer than regular ones it turns out). In much the same way, given the similarities between the saliant features of social media platforms and the mechanisms by which they lead to harms discussed below, it is reasonable and appropriate to extrapolate findings from one site to another. In epidemiologic terms this is called the principle of generalizability, which allows scientists and clinicians to make meaningful policy and treatment recommendations without requiring time consuming, expensive, and unnecessary studies. Whether one compulsively watches TikTok, Instagram, or YouTube, the effects are analogous. The truth is, as competitive as [the social media] landscape is, the internal documents

> clearly evidence that they all seized on any feature that others deployed effectively to increase engagement and time on the platform and emulated it.

(Christakis Rebuttal Rept., McConnel Decl., Ex. 1, at pp. 17-18.) Christakis may offer opinions as to social media platforms more generally, as Defendants have been unable to show that this court should exclude his conclusion that social media platforms are sufficiently similar in the way they harm minors. If Defendants believe Christakis' opinions are insufficient to prove liability as to any individual Defendant, they may so argue at trial.

Defendants then argue that Christakis has "cherry-picked" the literature and ignored key limitations in the sources he cites. This argument is curious, given that, as explained above, Defendants also fault Christakis for (1) citing studies that are inconsistent with his opinions, and (2) acknowledging the limits of certain studies he cites. As they do with other Plaintiffs' Experts, Defendants argue that a certain conclusion by Christakis is unreliable because they believe *one of* the numerous bases for Christakis' conclusion does not *completely* support Christakis' opinion. For example, Defendants contend that "a non-peer-reviewed editorial by Starcevic and Aboujaoude" (See Simonsen Decl., Ex. P) does not adequately support Christakis' conclusion that receiving likes reinforces addictive behaviors. (See Christakis Rept., Defs' Ex. A, at pp. 94-95.) But Christakis relies on several sources for his conclusion that "likes" can cause social media addiction. (Christakis Rept., Defs' Ex. A, at pp. 94-95.)

Defendants' third main argument is that Christakis' testimony on company documents should be excluded. Defendants claim that "Christakis should not be permitted to simply narrate company documents and offer conclusions about what he thinks they show." (Defs' Christakis Mot., at p. 19.) Defendants present no basis for the conclusion that a general causation expert assessing the harms arising from a defendant's product is unable to rely on the defendant's documents discussing that product and its functioning. Defendants, in essence, argue that an expert must not be able to review the evidence that is directly relevant to the case. That is not the law. Christakis "may testify about his review of [Defendants'] corporate documents ... for the purpose of explaining the basis for his opinions, assuming those opinions are otherwise admissible." (*Zetz*, *supra*, 644 F.Supp.3d at p. 703.) Defendants have not shown that any of Christakis' opinions are otherwise inadmissible. Experts studying or opining on the efficacy or potential side-effects of a particular drug would consult available records and internal analyses of the drug manufacturer. Likewise, Plaintiffs' Experts' analysis of the potential "side-effects" of social media use logically would consider Defendants' available records on the subjects of the

operational effects and safety of Defendants' platforms and interactions with minors. Furthermore, Defendants have failed to show that Christakis, who has years of experience studying social media companies and their mental health effect on their users, lacks the expertise to review a social media company's internal documents.

Defendants' final argument is that Christakis offers opinions on topics for which he has no expertise. In reality, Defendants seek to show that Christakis does not know the exact way in which certain design features function on Defendants' platforms (or on other platforms, like Netflix). Defendants argue that "an expert cannot be permitted to offer the opinion that 'features' of Defendants' platforms cause mental health harms when he cannot explain even basic contours of those features, or how they vary across platforms." (Defs' Christakis Mot., at p. 20.) Defendants' arguments may be presented at trial in cross-examination to challenge Christakis' testimony, but they do not justify exclusion of those opinions. Christakis is qualified to testify as a pediatrician having studied media and social media's effects on minors. The fact that Christakis is not a computer scientist with detailed knowledge of the functionality and design of Defendants' design features does not prevent him from testifying as to mental health harms from the standpoint of the user's experience of the features on Defendants' platforms.

The court similarly rejects Defendants' position that Christakis is unqualified to offer opinions on "parental controls, safety features, and age gating." (Defs' Christakis Mot., at p. 19.) As Plaintiffs explain, Christakis is not going to "offer any opinions on specific alternative designs for these controls." (Pls' Opp. Christakis Mot., at p. 15.) Christakis' views flow from his conclusions that social media use by minors should be limited and that existing controls are not sufficient because they allow for easy access to social media for minors. Moreover, it is important to note that Christakis has "been the lead author of several [American Academy of Pediatrics] guidelines on children and media," which strongly suggests that Christakis is qualified to opine on whether safety features have sufficiently protected minors. (See Christakis Rept., Defs' ex. A, at p. 6.)

Defendants' Motion to Exclude the Expert Testimony of Dr. Ramin Mojtabai

Court's Ruling: The Mojtabai Motion is denied.

Mojtabai is "a Professor and Vice Chair of Research at the Department of Psychiatry and Behavioral Sciences of Tulane University School of Medicine in New Orleans, Louisiana." (April Mojtabai Rept., Defs' Ex. A, at p. 2.) Mojtabai is "also a licensed physician with Board Certification by the American Board of Psychiatry and Neurology." (April Mojtabai Rept., Defs' Ex. A, at p. 2.) Mojtabai describes his research experience as follows:

> My research expertise is in behavioral health services as well as psychiatric epidemiology and outcomes research. My behavioral health services research has examined the impact of different policies, including the US Affordable Care Act implemented in 2014, on the use of behavioral health services. I have also examined the patterns and time trends in mental health problems in the US and in other countries. I have been a prolific researcher with 338 publications listed in PubMed that have garnered over 26,000 Google Scholar citations and an H-Index of 82, meaning that 82 of my papers have been cited at least 82 times each. My research has been published in high impact journals such as the *New England Journal of Medicine, American Journal of Epidemiology, Social Psychiatry and Psychiatric Epidemiology, Epidemiology and Psychiatric Sciences, JAMA Psychiatry, Pediatrics and American Journal of Public Health*, among others. I have also led or co-led nine R01 grants, one R34 grant and a Mentored Scientist Research Award (K01) from the US National Institute of Health and several other grants from private foundations and the pharmaceutical industry, totaling millions of dollars.

(April Mojtabai Rept., Defs' Ex. A, at p. 2, italics in original.)

Mojtabai offers the following opinions:

> 1. Problematic social media use and social media addiction are substantial contributing causes of adverse mental health outcomes, including depressive and anxiety symptoms, body image disturbance, eating disorders, and suicidality, in children, adolescents, and young people.
> 2. Children, adolescents, and young people are more vulnerable to problematic social media use and addiction than adults. Individuals with pre-existing mental health problems are especially vulnerable to harms resulting from social media use.

> 3. Multiple features built into the design of social media platforms are conducive to their excessive and problematic use by youth, and these features increase the risk of addictive use of the app and other adverse mental health outcomes. These include "incentive salience" (highly pleasurable stimuli such as receiving "likes" or positive comments on posts), the "immersive" nature of these media, and the "algorithmic" nature of some of the social media apps.
> 4. Both a greater degree of exposure to social media platforms and the nature of the use (e.g., addictive use, social comparison, FOMO) contribute to the adverse mental health effects of social media in children and adolescents.
> 5. Problematic social media use causes adverse mental health outcomes in children and adolescents in part by fomenting negative social comparison and sleep problems.
> 6. Given the ubiquity of social media use and the large amount of time that youth spend on these media at the cost of other activities, the population burden of associated mental health problems is significant.

(April Mojtabai Rept., Defs' Ex. A, at p. 1.)

To reach these opinions, Mojtabai "considered relevant available literature, documents produced by defendants and [his] knowledge and experience as an expert in the fields of psychology, epidemiology and psychiatry." (April Mojtabai Rept., Defs' Ex. A, at p. 1.) Mojtabai "conducted a systematic review of literature." (April Mojtabai Rept., Defs' Ex. A, at p. 10.) "In addition, [Mojtabai] reviewed numerous meta-analyses and primary studies including cross-sectional, longitudinal, and experimental studies that examined the association between various aspects of social media use (e.g., number of hours of use, frequency of use, problematic or addictive use) and associated harms, including anxiety, insomnia, significant depressive symptoms/disorder, suicidal ideations, eating disorders and body image disturbance." (April Mojtabai Rept., Defs' Ex. A, at p. 11.)

Defendants raise several arguments in the Mojtabai Motion. First, Defendants argue that Mojtabai's opinions are impermissibly based on Defendants' publication of third-party content. However, as discussed repeatedly above, Plaintiffs need only show that they were harmed by the design features of Defendants' platforms—they do not need to show that they were *not* harmed by third-party content as well. And as this court has noted, Defendants cannot be allowed to apply an improper but-for test that excludes liability under section 230 if the harm would not have occurred *but*

for the third-party content. (*Internet Brands*, *supra*, 824 F.3d at p. 853.) As Mojtabai stated (when agreeing with Defense counsel), "the majority of the results [were] found in the studies *regardless of content that the participants were viewing*." (Mojtabai Dep., Defs' Ex. C, at pp. 708:25—709:4, emphasis added.) Mojtabai's statements that social media use is "intimately related" to the third-party content present on social media thus does not doom Mojtabai's testimony as long as Mojtabai employed reliable methodologies for assessing the harm caused by the design features that affected social media users *regardless* of the third-party content viewed—like the studies upon which he relies. Moreover, Mojtabai also examines the individual design features on Defendants' platforms.

Defendants' second main argument is that Mojtabai's "jigsaw" methodology is unreliable. Defendants seize on the following exchange during Mojtabai's deposition:

> Q. Yeah. And what you have to do is instead, you have to look at the quality and rigor of each individual study to make an assessment about whether or not that study is appropriate to include in a causal analysis, correct?
> A. You have to look at that as well as the totality of the research. So individual -- there are individual studies that are very small, and they do not find a finding. There are studies that have a limitation in one aspect; they have strengths in other aspects. That's why we do a meta-analysis. We combine the studies that have limitations, are done by different people, and we look at the consistency of the evidence across longitudinal and individual correlational studies and as well as experimental studies. We put them all together. It's a -- it's like a jigsaw puzzle; you fill it in.

(Mojtabai Dep., Defs' Ex. C, at p. 495:1-23.) From this testimony, Defendants gather that Mojtabai has created a "bespoke 'jigsaw' methodology." (Defs' Mojtabai Mot., at p. 12.) This argument, based on one word from Mojtabai's deposition, is not well taken. Mojtabai has reached his opinions by relying on a wide range of multiple different studies and study types. Defendants have not shown in the Mojtabai Motion that relying on such a literature review is scientifically unreliable or different from what experts in the field would normally do. Mojtabai has stated that he "used the same the methods [here as he uses] in [his] own research and clinical practice and applied these methods with the same rigor." (Mojtabai Rept., Defs' Ex. A, at p. 10.) Defendants do not show otherwise. (See *Garner, supra,* 98 Cal.App.5th at pp. 678-679, [epidemiology cannot prove causation, but causation is a matter of scientific judgment and may be based

on numerous findings each of which alone may be insufficient to prove causation; experts use experience and judgment to interpret epidemiological and other data to reach causation opinions].)

In arguing that Mojtabai's reliance on certain studies is unreliable, Defendants mischaracterize Mojtabai's testimony. Defendants cite Mojtabai's testimony purportedly to support the following sentence: "Meta-analyses, however, are only as good as the underlying studies; they cannot fix the limitations of the individual studies included in a meta-analysis." (Defs' Mojtabai Mot., at p. 10, citing Mojtabai Dep., Defs' Ex. C, at 257:9-17.) In reality, Mojtabai testified as follows:

> Q. Right. But the meta-analysis of cross-sectional data doesn't fix the limitations that the -- each individual cross-sectional study has that's included in the meta-analysis, right?
> ...
> A. It doesn't fix that study's limitation, but the results you get from a meta-analysis would be more reliable than what you would get from an individual study, or from tallying the individual studies, saying, okay, this one said yes, this one said no.

(Mojtabai Dep., Defs' Ex. C, at 257:9-22.) In other words, a meta-analysis is *not* "only as good as the underlying studies." Such mischaracterizations of testimony and of other evidence again do not inspire great confidence in the credibility of Defendants' positions.

As they do with other Plaintiffs' Experts, Defendants criticize Mojtabai for relying on cross-sectional studies, given that cross-sectional studies, *when viewed alone*, do not establish causation. Defendants do not show that a finding of causation is scientifically unreliable when based on a review of *multiple* cross-sectional studies—let alone that a causation finding is scientifically unreliable when based on a mix of different types of studies. This is a topic for cross-examination, but does not justify exclusion of Mojtabai's testimony.

Defendants take issue with Mojtabai's Bradford Hill analysis because it does not separate (1) individual disorders, and (2) individual social media platforms. Defendants accuse Mojtabai of carrying out an improper "transdiagnostic Bradford Hill analysis." This argument is best understood as a critique of the *conclusions* that are produced by the Bradford Hill analysis, not the *methodology* employed. The fact that Defendant might argue that Mojtabai's analysis, without more, fails to show that any

particular social media platform caused a particular type of harm suffered by a certain Plaintiff is not a proper basis for excluding the testimony of a general causation expert under *Sargon*. Again, this is why the cases cited by Defendants on this point involve substantive rulings by a court as to the sufficiency of allegations or evidence, not the admissibility of an expert's opinion. (See Defs' Mojtabai Mot., at p. 18, citing *Bockrath*, *supra*, 21 Cal.4th 71 [allegations of causation in the complaint were insufficient], and *Sanderson*, *supra*, 950 F.Supp. at p. 985 [summary judgment was granted because the plaintiff's evidence was insufficient to create a triable issue of material fact as to causation].)

Defendants' claim that the Bradford Hill analysis should be rejected because it is "transdiagnostic" again is based on a single case: *Acetaminophen MDL*, *supra*,707 F.Supp.3d 309. As explained above, in *Acetaminophen MDL*, the plaintiffs alleged "that the defendants violated their state law duties to warn consumers of the risk that children may develop autism spectrum disorder ('ASD') and/or attention-deficit/hyperactivity disorder ('ADHD') as a result of in utero exposure to acetaminophen." (*Id.* at p. 317.) All of the experts put forth by the plaintiffs in *Acetaminophen MDL* failed "to render discrete opinions regarding [acetaminophen exposure] and the risk of ASD and the risk of ADHD"; instead, "applied a 'transdiagnostic' analysis that sweeps into their analyses (and conclusions) ASD, ADHD and other neurodevelopmental disorders." (*Id.* at p. 334.) The court found that this "transdiagnostic analysis" "obscured instead of informing the inquiry on causation." (*Id.*)

In addressing the Bradford Hill analysis conducted by one of the plaintiffs' experts, the court noted that the analysis was carried out with respect to a wide range of irrelevant harms, given that the plaintiffs in *Acetaminophen MDL* were only seeking recovery for ASD and ADHD. The court stated that it was "not clear ... that conducting a Bradford Hill analysis on multiple associations at once is informative or reliable." (*Id.* at p. 339.) The court then suggested that such an analysis might be excluded as irrelevant:

> [The expert's] transdiagnostic approach raises a question of relevance. After all, this litigation is brought to obtain recovery on behalf of those who have been diagnosed with ASD or ADHD, not on behalf of anyone with, for example, a deficit in communication or self-regulation.

(*Id.*) The failure to focus the Bradford Hill analysis on ASD and ADHD was important given (1) the dearth of studies showing any connection between those medical conditions and prenatal acetaminophen exposure, and (2)

ASD and ADHD were both distinct "neurological deficits" or "disorders" that were undeniably distinct from each other and from the other disorders included in the Bradford Hill analysis. The court also relied on the fact that the expert, when conducting a *separate* assessment, had chosen to separate ASD, ADHD, and other NDD (i.e., neurodevelopmental disorders) studies from one another, thereby suggesting that the Bradford Hill analysis should have separated those disorders. (*Id.* at p. 341.) Importantly, the court also determined that the Bradford Hill analysis by the plaintiffs' expert was inadmissible for numerous other reasons not having to do with its "transdiagnostic" character. (*Id.* at pp. 342-354.)

As concluded also above, the court will not exclude an expert's Bradford Hill analysis because of Defendants' reliance on this district court case decided under federal law which is distinguishable from the facts here and which is not binding on this court. Defendants cite no other cases in the Mojtabai Motion reaching a similar conclusion that "transdiagnostic" Bradford Hill analyses are always improper. In this JCCP, Plaintiffs do not allege that they suffer from just two mental health disorders, but instead allege a wide range of mental and emotional harm. That Mojtabai's Bradford Hill analysis also addresses a wide range of mental harms for the purposes of the general causation analysis does not suggest an unreliable methodology. Defendants do not demonstrate that experts in the fields of psychiatry or psychology always separate different types of mental health conditions when analyzing causation.

As to harms arising from all types of social media platforms, Defendants have failed to demonstrate that their social media platforms are so different from each other that it would be scientifically unreliable to investigate their mental health effects as a group. Plaintiffs allege that the relevant design features are similar across different platforms and Defendants fail to adequately counter these allegations with evidence in support of these motions. Mojtabai, after having reviewed the relevant evidence and scientific literature, has concluded:

> While several studies have focused on specific social media apps, the design and features employed by social media platforms to increase user engagement are very similar. Due to the degree of similarity, there are many commonalities in terms of effects as well, and addictive use, FOMO and repeated, unsolicited targeting by algorithms and notifications are common across the different platforms, justifying a global approach to social media.

(May Mojtabai Rept., Defs' Ex. B, at p. 75.) Moreover, the limitations of the Bradford Hill analysis can be addressed at trial through the introduction of competing evidence and through cross-examination. If Defendants believe that the Bradford Hill analysis is insufficient evidence to demonstrate that a particular platform caused a particular type of harm, then they will be free to so demonstrate at trial. (See, e.g., *Stollings*, *supra*, 725 F.3d at p. 768.)

Defendants also criticize Mojtabai's Bradford Hill analysis because it relies on self-reported symptoms, rather than on diagnosed psychiatric disorders. However, Defendants have failed to show that healthcare professionals and academics do not rely on self-reported symptoms when diagnosing patients or carrying out studies. Defendants have not shown that the inclusion self-reported symptoms data in the Bradford Hill analysis renders the analysis scientifically unreliable.

Defendants argue that Mojtabai's "lay opinions about company documents are improper." In the Mojtabai Motion, this argument is not well-developed, and it is difficult to assess why Defendants believe Mojtabai should be prevented from relying on Defendants' internal documents, which appear to be directly relevant to the functioning of the social media platform design features. Defendants present no basis for the conclusion that a general causation expert assessing the harms arising from a defendant's product is unable to rely on the defendant's documents discussing that product and its functioning. Defendants, in essence, argue that an expert must not be able to review the evidence that is directly relevant to the case. That is not the law. Mojtabai "may testify about his review of [Defendants'] corporate documents ... for the purpose of explaining the basis for his opinions, assuming those opinions are otherwise admissible." (*Zetz*, *supra*, 644 F.Supp.3d at p. 703.) Defendants have not shown that any of Mojtabai's opinions are otherwise inadmissible.

Defendants argue that Mojtabai's conclusions as to YouTube should be excluded because "he has no basis to give any causation opinions as to YouTube." (Defs' Mojtabai Mot., at p. 19.) This argument is best presented at trial during cross-examination. Mojtabai has relied on studies assessing YouTube. For example, Mojtabai has relied on a study that found "that YouTube use had both a positive and negative impact on loneliness and mental health in a diverse range of users," and that "[f]rom a public health perspective, YouTube represents a good example of the social and clinical consequences of social media use." (Vaughn Decl., Ex. 3, at pp. 15-16.) Plaintiffs have also pointed to other sources for Mojtabai's opinions as to YouTube. (See, e.g., May Mojtabai Rept., Defs' Ex. B, at p. 62 [citing internal Instagram research showing that 10% of surveyed adolescents reported negative social comparisons on YouTube]; at p. 74 [characterizing

Pew Research Center study as showing that large share of teenagers use YouTube almost constantly].) Defendants have not demonstrated that Mojtabai is unfamiliar with the features of YouTube.

Finally, Defendants argue that Mojtabai's conclusions about social media addiction and problematic social media use are not generally accepted or reliable. Specifically, Defendants argue that the court "should exclude Dr. Mojtabai's opinion that problematic social media use and social media addiction are substantial contributing causes of adverse mental health outcomes ... because neither condition has achieved general acceptance in the scientific community." (Defs' Mojtabai Mot. at p. 20, internal citations, quotation marks, brackets, and ellipses omitted.) Defendants base this argument on the fact that "social media addiction" and "problematic social media use" are not *diagnosed* psychiatric conditions. Defendants note that these harms are not listed in the "DSM-5-TR." As stated above, the fact that the DSM-5 does not include the term "social media addiction" does not, without more, justify excluding the opinion of an expert testimony that such a condition exists; Defendants cite no authority requiring a contrary conclusion. If Mojtabai's opinions differ from those offered by a respected codification manual, then Defendants can use that fact in cross-examination. What is important here is whether Mojtabai can reliably reach his opinion that social media use causes mental health harms, not whether "social media addiction" has been listed in the DSM-5. Notably, Mojtabai has testified that problematic social media use has been "a contributing factor to [some his patients'] mental health problems." (Mojtabai Dep., Defs' Ex. C, at 60:19-25.)

Defendants' Motion to Exclude the Expert Testimony of Lotte Rubaek

Court's Ruling: The Rubaek Motion is granted. Rubaek may not testify at trial as a general causation expert witness.

In their letter disclosing Rubaek as an "unretained" or "nonretained" expert on May 16, 2025, Plaintiffs described Rubaek as follows:

> Ms. Rubaek is a Licensed Clinical Psychologist and Psychotherapy Specialist and is the current overall leader of the Clinical Academic Group for self-harm at Capital Region Psychiatry (Region Hovedstadens Psykiatri) in the Capital Region of Denmark. Ms. Rubaek has over eighteen years of clinical and research experience in the field of mental health,

> with at least sixteen of those years focusing on children and adolescent mental health. Ms. Rubaek has seven years of postgraduate education specializing in cognitive therapy and psychotherapy. She has been a licensed psychologist since 2009 and received an advanced specialist degree in psychotherapy in 2016. Ms. Rubaek has experience in the clinical treatment of children and adolescents suffering from mental health disorders. She has studied and treated patients who engage in and suffer from self-harm, suicidality and suicidal ideations, and eating disorders. She further has expert knowledge of research in the same areas of self-harm, suicide, eating disorders and related mental health co-morbidities. She has been active in both treatment and research during her career as a practicing clinical psychologist, researcher and leader. She leads a specialized clinical team focused on treatment for non-suicidal self-injury in children and adolescents and is the overall leader of the Clinical Academic Group in the Capital Region of Denmark, overseeing self-injury treatment, research, and staff competence development.

(Kouba Decl., Ex. C, at pp. 7-8.) "A 'nonretained expert' is an occupational expert, such as a treating physician, police officer, or others who might testify as an expert but whose opinions are formed as part of normal occupational duties." (*Belfiore-Braman v. Rotenberg* (2018) 25 Cal.App.5th 234, 237.) Plaintiffs agree that Rubaek fits this definition. (See Pls' Opp. Rubaek Mot., at p. 9.)

"Plaintiffs reserve their rights to elicit additional opinions from Ms. Rubaek, to rebut or respond to opinions of Defendants' witnesses that have not been disclosed as of today's date, or to address new or additional information." (Kouba Decl., Ex. C, at p. 8.) Plaintiffs also claim that Rubaek may offer testimony as to the following subject matters: "mental health; children and adolescents' mental health, in particular; cognitive and behavioral therapy; psychotherapy; self-harm; suicide; eating disorders; and related teen mental health comorbidities[;] ... [and] the connection between children's use of social media and the development of serious issues involving non suicidal and suicidal self-harm, suicidal ideations, and eating and related mental health disorders like depression or anxiety." (Kouba Decl., Ex. C, at p. 8.)

Plaintiffs identify three opinions Rubaek is expected to state in any testimony she provides: (1) "Social media use can predispose children to self-injury, eating disorders and suicide by contributing to the development

of or amplifying established risk factors for specific self-harm behaviors"; (2) "Social media can directly encourage a young person to self-harm or maintain and reinforce existing self-harm"; and (3) "The structure and design of social media and their business models can be a systemic and global cause of the increase in self-harm seen worldwide since the advent of social media in 2004." (Kouba Decl., Ex. C, at pp. 8-9.)

Rubaek has not carried out a systematic literature review in forming her opinions. Plaintiffs explain the basis for Rubaek's opinions as follows:

> Ms. Rubaek may base [her] opinions, in part, on her experiences in the clinical treatment of children and adolescents suffering from harm to their mental health and her education, training and experience in the field of research on these same topics. She will also offer testimony based on her experience as a Leading Expert member of Meta's Global Suicide and Self-Injury ('SSI') Expert Advisory Board, the documents and information used as exhibits in Ms. Rubaek's deposition on April 1, 2025, and her review of studies related to self-harm.

(Kouba Decl., Ex. C, at p. 10.)

Defendants raise three main reasons why they believe Rubaek's general causation testimony should be excluded. *First*, Defendants argue that Rubaek's opinions impermissibly rely on content and publishing activity. *Second*, Defendants argue that Rubaek is not qualified to opine on how Defendants' features cause self-harm. *Third*, Defendants argue that Rubaek's conclusions that social media use causes mental health harms are based on unreliable methodology.

Putting Defendants' first argument to one side, considering Defendants' second and third arguments, Plaintiffs' task is to provide the court with evidence and argument showing that (1) Rubaek is qualified to provide testimony as to whether social media platforms' design features cause self-harm, eating disorders, and suicide, and (2) Rubaek employed reliable methodologies for reaching those opinions. The absence of an expert report means that the parties here must point to Rubaek's testimony in order to support their respective positions.

Rubaek mentions design features, but she does not conclude that these features cause self-harm, eating disorders, or suicide. For example, when pushed by Defense counsel as to whether any harm arose from content, Rubaek stated:

> The features of the platform are designed to affect the content on the social media platform. For example, the metrics, likes and comments and the amount of followers, those are designed to make a teenager post more on the specific media to get more social rewards through these posts and to make them stay for a little longer on the platform.

(Rubaek JCCP Dep., Defs' Ex. B, at 167:11-16.) But Plaintiffs do not point to any testimony showing a methodology for how this observation led Rubaek to conclude that such design features led to self-harm, eating disorders, or suicide.

In their Opposition, Plaintiffs claim that Rubaek offers relevant opinions regarding the following design features: (1) beauty filter; (2) retention mechanisms (i.e., infinite scroll, notifications, ephemeral content, streaks); (3) age verification; and (4) interplay in algorithm design and quantification metrics. (See Pls' Opp. Rubaek Mot., at pp. 6-8.) The problem is that Plaintiffs have failed to provide any basis for a conclusion that Rubaek, who treats minors engaged in self-harm, has any expertise or has developed any reliable scientific methodology for concluding that these design features *cause* self-harm, eating disorders, or suicide. Instead, Plaintiffs merely state:

> Ms. Rubaek has become an expert in this field over her time spent diagnosing and treating children with mental health issues, delving into the causes of those mental health disorders, and through her role as leader of the clinical academic group on self-harm. Defendants' assertion that Ms. Rubaek "has no understanding of how the features on Defendants' platforms work" (Mot. at 12) is belied by both her credentials and professional experience—which Defendants dismissively refer to as "secondhand knowledge" from her patients. (*Id.*) Ms. Rubaek's deposition testimony further contradicts the assertion that she "has little experience with or knowledge of how social media use contributes to self-harm." (Mot. at 11.) She not only named and explained specific features and platforms, she also explained the effect those specific features can have on a child.

(Pls' Opp. Rubaek Mot., at p. 6.) Plaintiffs cite no evidentiary support for the claim that Rubaek's deposition testimony demonstrates that Rubaek has

expertise (or even sufficient knowledge) of how social media use contributes to self-harm, eating disorders, and/or suicide. Instead, putting the cart before the horse, Plaintiffs appear to suggest that, because Rubaek opined on social media design features, she must both (1) be qualified to do so, and (2) have employed a scientifically reliable methodology in order to do so. Especially in light of the lack of comprehensive review of the scientific literature, it is unclear how Rubaek's practice treating self-harm among minors in Denmark would give her the expertise or provide Rubaek with a reliable scientific methodology to opine on a matter of general causation such as the causal effect of notifications on self-harm, eating disorders, and/or suicide. The opinion she seeks to provide here goes beyond the expertise required to diagnose an individual patient and to opine about the factors contributing to that patient's injury.

Although Rubaek has clinical experience in analyzing the mental health injuries of her patients and their causes, she has not done research as to the overall effect of social media functionality on childhood or adolescent mental health. Moreover, she has not thoroughly studied the literature in the area of the effects of social media design features on minors. There is no reliable methodological support for her opinions on the subject of general causation.

The fact Meta named Rubaek to its expert panel on suicide and self-injury does not qualify her to give the testimony proposed by Plaintiffs. Rubaek's expertise in pediatric mental health could have been of benefit to Meta in responding to questions about the circumstances and influences that tend to lead to harmful behaviors in minors, but that does not mean that her limited experience with Meta qualifies her to opine on how the features of Defendants' social media platforms affect minors' mental health.

Defendants' Motion to Exclude the Expert Testimony of Dr. Eva Telzer

Court's Ruling: The court denies the Telzer Motion.

Telzer is "a Professor of Psychology and Neuroscience at the University of North Carolina Chapel Hill (UNC), the Program Director for the developmental psychology graduate program, and the co-Director of the Winston National Center for Technology Use, Brain, and Psychological Development at UNC. [She] also hold[s] a faculty appointment in the

Biomedical Research Imaging Center in the School of Medicine at UNC." (Telzer Rept., Defs' Ex. A, at p. 7.)

"As a developmental cognitive neuroscientist with expertise in adolescence, [Telzer has] implemented multiple longitudinal studies examining the neurodevelopment of the adolescent brain. [She has] expertise in complex methodological and analytical tools in developmental cognitive neuroscience including the use of laboratory-based computer tasks, ecological momentary assessment (EMA), functional magnetic resonance imaging (fMRI) in developmental populations, and longitudinal techniques for analyzing neuroimaging data." (Telzer Rept., Defs' Ex. A, at p. 8.)

Telzer's academic work includes studying how social media use affects the mental health of adolescents. Telzer explains:

> I have published over 200 peer reviewed research articles, reviews, and commentaries. Many of these publications address the links between social media and tech use and adolescents' health and well-being, with a particular focus on brain development. I have used rigorous longitudinal methods and brain imaging to show that adolescents' social media behaviors are related to depressive symptoms, daily social connection, body image, sleep, and changes in the brain's functional development.
>
> In 2023, I published a groundbreaking study in JAMA Pediatrics examining how habitual checking behaviors on social media relates to longitudinal functional brain development. This is the first study to show that social media use early in adolescence is related to functional changes in the developing brain (Maza et al., 2023).
>
> In 2024, I published a study in Social Cognitive Affective Neuroscience showing early neural vulnerabilities in adolescents that predict addiction-like social media behaviors and depressive symptoms over a 5-year period (Flannery et al., 2024).
>
> I have published 12 book chapters in edited volumes. One of these book chapters, published in 2024 in The Handbook of Media Psychology, provides a comprehensive review on how social media shapes the developing brain of adolescents (Rich et al., 2024). In 2022, I edited a handbook on Adolescent Digital Media Use and Mental Health. This handbook gathered writing from experts around the world to discuss the role of social media on adolescents'

body image, disordered eating, sleep, depression and anxiety, brain development, health risk behaviors, addiction, and suicide and self-injury (Nesi et al., 2022). Notably, The Handbook of Digital Media and Adolescent Mental Health was used by relevant legislative and federal agency staffs to develop bills and reports (e.g., Kids Online Safety Act).

My papers have been cited over 15,000 times. I have an h-index of 67 and an i10-index of 169. These statistics place me in the 99th percentile of the most highly cited Professors in Psychology (Ruscio & Prajapati, 2013). The U.S. Surgeon General cited my research in the "Social Media and Youth Mental Health Advisory" in 2023 (Office of the Surgeon General, 2023).

(Telzer Rept., Defs' Ex. A, at pp. 8-9.)

Telzer offers the following opinions:

- Adolescent brains are undergoing rapid development. This period of development makes it particularly vulnerable to the negative impacts of social media.
- Social media is characterized by a set of features designed to promote endless engagement. These features – which include social comparison, positive feedback, metrics, targeted algorithms, and intermittent variable rewards – can cause problematic usage in children and teenagers.
- A review of Defendants' documents provides further evidence that social media platforms are designed to promote engagement, and that use is associated with negative mental health outcomes.
- In addition to these clinical effects, heavy social media use changes the development of the adolescent brain, altering it from what would have been considered typical prior to the advent of social media. Longitudinal studies prove that heavy social media use results in functional and structural changes to areas of the teenage brain that are typically associated with addiction, executive control, and social belonging.
- Based on my education and experience, these changes in the brain lead me to believe that teenagers are particularly vulnerable to developing problematic social media use or outright addiction.

- Both problematic social media use and addiction can cause or contribute to loss of sleep, anxiety, depression, low self-esteem, negative social comparison, other mental health problems, and conflicts with parents.
- There is strong evidence that neurobiologically vulnerable youth are at heightened risk for developing problematic social media use, and especially for girls, this leads to higher rates of depression.
- These findings provide strong evidence that social media causes depressed mood in teenagers.
- Some adolescents that use social media can exhibit impulsivity and difficulties in self-regulation, which are core features of ADHD.
- Similarly, the ability to sustain attention on a task despite distractions can be disrupted by frequent phone checking, as notification or urge to scroll social media fragments attention and reduces the capacity for deep, sustained thinking. These changes will negatively affect the students' ability to learn in the classroom.
- Social media use has altered the school environment. In addition to the cognitive changes that affect the ability to learn, studies shows that students are spending a large portion of the school day on social media.
- As discussed below, students are picking up their phone over 100 times a school day and spending greater than 1/3 of each school hour on social media.
- Parenting has changed with the advent of social media. Many parents fail to understand the full extent of harms that can be caused by social media use. Nor is it reasonable for a parent to monitor their child 24/7. It is critical that tech companies fully inform parents and children of the true risks of their platform so that informed decisions can be made as a family.

(Telzer Rept., Defs' Ex. A, at pp. 5-7.)

Defendants raise multiple arguments in seeking to exclude Telzer's testimony. *First*, Defendants argue that Telzer's opinions impermissibly rely on content and publishing activity. Again, this argument is based on a misreading of Section 230, as well as an inaccurate portrayal of Telzer's opinions. Plaintiffs need only show that they were harmed by the design features of Defendants' platforms—they do not need to show that they were *not* harmed by third-party content as well. And as this court has noted, Defendants cannot be allowed to apply an improper but-for test that

excludes liability under section 230 if the harm would not have occurred *but for* the third-party content. (*Internet Brands*, *supra*, 824 F.3d at p. 853.)

Moreover, to the extent that Defendants believe Telzer concedes that content on social media platforms *also* causes harms does not undermine her testimony, but rather demonstrates that she has considered other potential causes of harm. The fact Telzer has referred to the word "content" in her testimony (See Motion at pp. 9-10) or that she has *considered* literature that primarily analyzes the effect of content does not mean she cannot provide an opinion regarding how design features themselves lead to harm *regardless of* content. Telzer testifies that her opinions and the research upon which she has relied are "content agnostic": i.e., they do not take into account the *type* or *nature* of content when measuring the mental health harms caused by social media use. (See Defs' Ex. B, at 252:1—253:2.) In her Report, Telzer explained:

> Addiction-like social media use is also not tied to the specific type of content on the platform but rather to the features that facilitate compulsive use. Features like infinite scrolling, autoplay, and algorithmic recommendations create a continuous loop of engagement. Unlike other addictions, which are often tied to specific substances or behaviors, *social media addiction is content agnostic, meaning that users can develop addictive behaviors regardless of what they are consuming*. A user may become deeply engaged with certain types of content because the social media platform continuously amplifies more of that content, even though it may not hold intrinsic addictive qualities. This process can lead to users becoming engrossed in content that they might otherwise have little interest in, had it not been for the platform's personalized amplification. The key factor is not the subject matter but rather the way the platform detects, amplifies, and delivers personalized content to sustain engagement. *Unlike substance use disorders, where addiction is primarily driven by the dose of the substance consumed, problematic social media use is driven by behavioral reinforcement mechanisms embedded within the platform's architecture. These features encourage compulsive engagement regardless of the quantity or type of content being consumed.*

(Telzer Rept., Defs' Ex. A, at p. 174, emphasis added.) Ultimately, whether a particular Plaintiff in this litigation was harmed by design features or

instead *solely* by third-party content is ultimately a question for the jury to decide.

Defendants contend that studies relied upon by Telzer are not content neutral. For example, Defendants appear to suggest that the Maza study (Simonsen Decl., Ex. M) is not content neutral because, in the study design, the participants received positive, negative, or neutral feedback. However, the point of the study was to consider the effect of social reaction feedback as such, regardless of content. "We hypothesized that checking social media habitually would make adolescents increasingly hypersensitive to social feedback anticipation and thus would be associated with longitudinal increases in neural activation ... ." (Simonsen Decl., Ex. M, at p. 161.)

Defendants next raise multiple arguments in an attempt to show that Telzer's causation opinions are based on unreliable methodology. First, Defendants claim that Telzer's opinions in this litigation are contradicted by her own academic work and by certain statements she has made in the past regarding social media use. Defendants cite statements made by Telzer in an academic paper that discusses the limitations *of that study*. (See Defs' Telzer Mot., at p. 11.) But such a statement does not necessarily contradict an opinion based on numerous studies when viewed together. Defendants note that, in 2023, Telzer made a contradictory statement during an interview. However, Telzer has explained that there is more data now than in 2023:

> The literature has accumulated exponentially. I can't necessarily speculate on 2023 or recall specifically. But since then, we can make -- based on the totality of all of the research and all of the emerging studies that have come out, including several this week that are coming out with using these more rigorous methods -- longitudinal designs, within-person designs, experimental designs -- all of those together can really confidently now tell us that there are causal links between social media use and depression.

(Telzer Dep., Defs' Ex. B, at 178:16—179:2.) To the extent Defendants believe Telzer has contradicted her current opinions in work outside of this litigation, then they can raise those contradictions at trial during cross-examination. Ultimately, those alleged contradictions do not undermine the methodology of her work leading to the opinions she expresses for purposes of this litigation.

Defendants point to a statement by Telzer in a New York Times article in which Telzer, when discussing the Maza study, purportedly stated that

"We can't make causal claims that social media is changing the brain." (Simonsen Decl., Ex. D, at p. 2.) The statement is found in a news article interview, not a peer-reviewed article. Moreover, it appears that the statements made by Telzer are limited to the Maza article itself: i.e., Telzer does not attempt to provide a causation analysis based on a literature review of many articles and based on a totality of the evidence. The fact that Telzer believed that the Maza study, viewed alone, does not show causation does not prevent Telzer from reaching causation opinions here. It is also worth pointing out that Telzer stated during the interview that "teens who are habitually checking their social media are showing these pretty dramatic changes in the way their brains are responding." (Simonsen Decl., Ex. D, at p. 2.)

In raising arguments about Telzer's past statements, Defendants claim that Telzer stated in a YouTube video that " 'prior literature . . . ha[s] not yet established some of the causal claims.' " (Defs' Telzer Mot., at p. 11, citing Defs' Ex. C [i.e., the YouTube video], brackets and ellipses in original.) Plaintiffs have demonstrated—and Defendants do not dispute—that the quoted phrase does not appear in the YouTube video. Defendants quoted Telzer as saying something in an interview that she did not say; Defendants explanation that the phrase is included in Telzer's deposition does not change that fact. Again, the court points out that such mischaracterizations of the record do not inspire confidence in Defendants' credibility on these questions.

Defendants also cite a study Telzer co-authored in 2025: Burnell et al. (2025). (See Simonsen Decl., Ex. I.) There, the authors concluded that "[a]ssociations between adolescent social media use and well-being are inconclusive, and studies using rigorous methodologies and objective measures are needed." (Simonsen Decl., Ex. I, at p. 194.) The statement is found in an article authored by five academics and thus may not completely and accurately state the overall causation opinions of Telzer. Moreover, Defendants have not shown that the authors of Burnell et al. (2025) reviewed the exact same data or literature that was reviewed by Telzer here for the purposes of forming her expert opinions. Defendants will be free to cite to Burnell et al. (2025) at trial to cross-examine Telzer. But the required scrutiny under *Sargon* goes to whether the expert's methodology underlying her current opinions is reliable. As discussed below, Defendants have not shown this unreliability.

Defendants fault Telzer for relying on correlational evidence that, according to Defendants, can never support a conclusion as to causation. What Defendants do not claim is that Telzer relies *solely* on correlational evidence. "All studies have limitations and flaws, and it is entirely valid to

interpret each study's results by taking into account these limitations and flaws. However, it is essential that the results of other studies conducted by other scientists on the same subject, that aim to correct for the limitations and flaws in prior studies, be taken into account, and the body of studies be considered as a whole." (*Cooper*, *supra*, 239 Cal.App.4th at p. 589.) Defendants have failed to show that, when Telzer reviewed a wide range of sources as part of her scientific literature review, it was scientifically unreliable for her to include correlational evidence as a basis for her causation opinions.

Defendants claim that Telzer has "cherry-picked" literature that is favorable to her opinions so that she need not address "contrary literature." Defendants do not critique the *way* in which Telzer completed her review of the literature. Instead, Defendants merely claim—without citing the studies—that "the prevailing scientific literature does not support a causal link between social media use and adolescent mental health outcomes." (Defs' Telzer Mot., at p. 14.) Defendants do not identify the studies that Telzer is purportedly ignoring. In reality, Defendants take issue with Telzer's *conclusions*. Defendants can address these issues during cross-examination.

As they do with other Plaintiffs' Experts, Defendants fault Telzer for reaching a conclusion that differs from the DSM-5. The fact that the DSM-5 does not include the term "social media addiction" does not, without more, justify excluding the opinion of an expert that such a condition exists; Defendants cite no authority requiring a contrary conclusion.

Defendants take the position that Telzer, who has studied the effects of social media on mental health, should be prevented from relying upon social media companies' internal documents when forming her opinions because academics typically do not have access to such documents. Defendants present no basis for the conclusion that a general causation expert assessing the harms arising from a defendant's product is unable to rely on the defendant's documents discussing that product and its functioning. Defendants, in essence, argue that an expert must not be able to review the evidence that is directly relevant to the case. That is not the law. Telzer "may testify about [her] review of [Defendants'] corporate documents ... for the purpose of explaining the basis for [her] opinions, assuming those opinions are otherwise admissible." (*Zetz*, *supra*, 644 F.Supp.3d at p. 703.)

Defendants claim that Telzer's opinions are improper because Telzer is unable to define "heavy social media use." This argument is not sufficiently developed by Defendants in their Motion. A reading of Defendants' Reply suggests that Defendants believe that Telzer should be required to assign a

certain amount of time to use in order for it to qualify as "heavy social media use." Defendants do not provide any support for this position. And Telzer has explained that "heavy social media use" is not defined solely in terms of amount of time, but rather defined based on the ways in which social media is used in problematic ways:

> I'm not specifically tying that to any amount of time per se. I'm mostly referring to the use of habitually checking and engaging in more problematic social media behaviors that's interfering with their daily lives.

(Telzer Dep., Defs' Ex. B, at 243:19-23.)

Defendants argue that Telzer has failed to offer reliable opinions specific to any single platform. As Plaintiffs point out, this is a critique of the *conclusions* that are offered by Telzer, not the *methodology* employed. The fact that Defendants might argue that Telzer's testimony, without more, fails to show that any particular social media platform caused a particular type of harm suffered by a certain Plaintiff is not a proper basis for excluding the testimony of a general causation expert under *Sargon*. It is no coincidence that the cases cited by Defendants on this point involve substantive rulings by a court as to the sufficiency of allegations or evidence, not the admissibility of an expert's opinion. (See Defs' Telzer Mot., at p. 19, citing *Bockrath*, *supra*, 21 Cal.4th 71 [allegations of causation in the complaint were insufficient], and *Sanderson*, *supra*, 950 F.Supp. at p. 985 [summary judgment was granted because the plaintiff's evidence was insufficient to create a triable issue of material fact as to causation].)

Finally, Defendants argue that Telzer's testimony should be excluded because she failed to disclose the data upon which she relied. Importantly, Defendants do not cite any authority suggesting that a failure by Telzer to provide certain underlying data from her peer-reviewed work would justify an order excluding Telzer's testimony under *Sargon*. In their Opposition, Plaintiffs suggest that Telzer has not directly relied on any of the data that was not produced, but instead only relied on the published results of studies. In their Reply, Defendants do not respond to this point. In any event, Telzer cannot provide any testimony at trial directly based on unpublished work if she has not produced in discovery the data underlying that work and those opinions (to the extent, of course, that the data was requested in discovery).

Defendants' Motion to Exclude the Expert Testimony of Dr. Jean Twenge

Court's Ruling: The Twenge Motion is denied.

Twenge describes her professional background as follows:

> 8. I am a Professor of Psychology at San Diego State University. I have authored or coauthored 148 peer-reviewed scientific journal articles and 44 scholarly book chapters, including works on generational trends in adolescent mental health, social media use and mental health, screen time and behavioral issues among children, generational differences in teen independence, causal effects of social rejection, screen media and sleep issues, and generational trends in happiness and life satisfaction. In 2021, 2022, 2023, and 2024, Clarivate Analytics included me on its list of the top 0.1% of highly cited scientists, indicating significant and broad influence in research.
>
> 9. I have also authored or co-authored 17 books. These include *iGen* (2017), one of the first works to document the scope of the adolescent mental health crisis and to hypothesize it was linked to social media and smartphone use, and *Generations* (2023, paperback 2025), which details the impact of technological change on all six living American generations. I am also the co-author of two undergraduate textbooks (*Personality Psychology* and *Social Psychology*) that are revised every few years, requiring me to keep up with the emerging research in both fields. I regularly teach a course in personality psychology and have previously taught courses in research methods (including at the graduate level), social psychology, cultural psychology, introductory psychology, and the history of psychology.
>
> ...
>
> I work with large, nationally representative datasets that survey adolescents every year or every other year. These datasets have two distinct advantages: their large sample size makes analyses more reliable and less prone to random variation, and their representative sampling makes them more generalizable to adolescents as a whole. The Monitoring the Future dataset, for example, has surveyed U.S. 12th graders every year since 1976 and 8th and 10th

graders every year since 1991. In the early 2010s sudden increases appeared in loneliness and depressive symptoms, prompting me to explore why they occurred. My research has led me to conclude that there is a causal relationship between the increasing popularity of social media use, particularly on smartphones, and adolescent depression. I have published these findings in over 30 peer-reviewed papers, which are listed on my curriculum vitae attached as Exhibit A. In collaboration with researchers Jonathan Haidt and Zach Rausch, since 2019 I have also maintained open-source literature reviews on trends in adolescent mental health and associations between social media use and adolescent mental health. Other researchers have contributed to these literature reviews, and Meta researchers, for example, have also analyzed the resource. (META3047MDL-019-00034776)

(Twenge Rept., Defs' Ex. A, at pp. 1-2.)

Twenge offers the following opinions:

2. Time series studies on trends in adolescent mental health strongly support social media as a key contributor to increases in adolescent depression, unhappiness, loneliness, self-harm, and suicide.

3. None of the potential alternative causes of these increases fit the time series data nearly as well as social media.

4. Correlational studies show that the more hours a day an adolescent uses social media, the more likely they are to be depressed or unhappy. These links are larger among girls.

5. Longitudinal studies show that adolescents' social media use at an initial time (i.e., Time 1) leads to depression at a later time (i.e., Time 2).

6. Experimental studies show that people who are randomly assigned to eliminate or reduce social media for two weeks or more are less lonely and less depressed, demonstrating a causal path from social media use to lower psychological well-being.

7. The totality of the evidence demonstrates a clear causal path from social media use to low psychological well-being in adolescents, as all the Bradford Hill criteria for establishing causality are met.

(Twenge Rept., Defs' Ex. A, at p. 1.)

Twenge summarizes the general nature of her methodology for forming these opinions as follows:

> 13. In forming the opinions for this report, I relied on my prior research and research from others, including studies referenced in the attached materials considered list, Exhibit D, as well as those cited in the above mentioned open-source literature reviews on trends in adolescent mental health and social media use.
>
> 14. In this report, I review four types of research studies investigating the association and potential causal relationship between social media and mental health among adolescents: (1) time series studies, (2) correlational studies, (3) longitudinal studies, and (4) experimental studies.

(Twenge Rept., Defs' Ex. A, at p. 3.) Twenge also bases her conclusions on a Bradford Hill analysis.

Defendants raise four main arguments for why Twenge's testimony should be excluded. *First,* Defendants argue that Twenge's opinions are impermissibly based on Defendants' publication of third-party content. *Second*, Defendants take issue with Twenge's Bradford Hill analysis. *Third,* Defendants claim that Twenge failed to analyze the specific exposures and the specific outcomes at issue in this litigation. *Fourth*, Defendants claim that Twenge "leaps to conclusions" that are unsupported by the scientific evidence.

Defendants' first argument, as discussed above, is based on a misreading of Section 230. Plaintiffs need only show that they were harmed by the design features of Defendants' platforms—they do not need to show that they were *not* harmed by third-party content as well. And as this court has noted, Defendants cannot be allowed to apply an improper but-for test that excludes liability if the harm would not have occurred *but for* the third-party content. (*Internet Brands*, *supra*, 824 F.3d at p. 853.) Moreover, to the extent that Defendants believe Twenge concedes that content on social media platforms *also* causes harms does not undermine her testimony, but rather demonstrates that she has considered other potential causes of harm. And Twenge provides her opinions regarding how social media use leads to harm *regardless of* content. Twenge's analysis focuses on the time spent on social media, regardless of the content viewed, and concludes that social

media use in general causes mental health harm: "Experimental studies show that reducing social media and screen use improves well-being. The evidence as a whole thus demonstrates a causal path from social media use to depression and low well-being, and fulfills all of the Bradford-Hill criteria for establishing causation." (See Twenge Rept., Defs' Ex. A, at p. 38.)

Defendants' critique of Twenge's Bradford Hill analysis consists of two arguments. First, Defendants claim that the Bradford Hill analysis is not Twenge's "own rigorous work." According to Defendants, Twenge's Bradford Hill analysis is "a copy and paste of [Lembke's] cursory blog post as opposed to an independent assessment of serious, scientific issues." (Defs' Twenge Mot., at p. 11.) Defendants' argument is based on: (1) the fact that Twenge had not performed a Bradford Hill analysis prior to being retained for this litigation; and (2) Twenge first learned about Bradford Hill analyses "by reading a Substack post" by Lembke, another of Plaintiffs' Experts. (Twenge Dep., Defs' Ex. B, at 319:20—320:15.)

The fact that Twenge has not performed prior Bradford Hill analysis as part of her academic work does not make the Bradford Hill analysis inadmissible at trial. Defendants provide no support for the suggestion that an expert in her field cannot provide a Bradford Hill analysis in her field of expertise unless she is an expert in carrying out Bradford Hill analyses. Because Twenge is qualified to study the effects of social media use on mental health, she is qualified to engage in a Bradford Hill analysis on that topic. (See, e.g., *In re Roundup Products Liability Litigation* (N.D. Cal. 2018) 390 F.Supp.3d 1102, 1131.) Moreover, the fact that there might be similarities between the work of two different experts studying the effects of social media use on mental health (or that they would rely on similar studies) is hardly surprising. Without more, these similarities do not demonstrate that Twenge's Bradford Hill analysis is scientifically unreliable.

Defendants' second critique of the Bradford Hill analysis is that it disregards "foundational requirements" of the Bradford Hill methodology. Defendants claim that Twenge "never explains the weight that she attaches to any of the Bradford Hill criteria or the relationship of the criteria to her analysis." Defendants claim that Twenge failed to explain which factors drive her general causation opinion. In so arguing, Defendants cite *Onglyza*, *supra*, 90 Cal.App.5th at p. 787, where the trial court, in excluding an expert's testimony, "explained that its decision was based on various methodological defects it found in [the expert's] application of six of the nine Bradford Hill factors, and that because [the expert] failed to weigh them together, it could not identify any predicate opinion on a specific factor that was not essential to his ultimate opinion." In other words, a failure to specifically weigh factors is potentially a ground for exclusion of a Bradford

Hill analysis where the court concludes that the expert's conclusions as to some of the Bradford Hill factors are not supported by reliable methodology. Logically, an explicit weighing of the Bradford Hill factors would also be necessary where an expert included that some, but not all factors, supported her causation conclusions. Here, neither situation is present. For the reasons given here, Defendants fail to show that any methodologies employed by Twenge as to a single factor are unreliable; and Twenge has found that each factor supports her causation opinion. (See Twenge Rept., Defs' Ex. A, at pp. 35-37.) Moreover, Twenge's opinions are not based solely on her Bradford Hill analysis.

Defendants' third main argument is that Twenge has failed to analyze the "specific exposures" and the "specific outcomes" at issue in this litigation. According to Defendants, in order to be admissible, Twenge's opinions must be based on analysis of (1) specific psychiatric disorders allegedly affecting individual Plaintiffs, and (2) how each individual social media platform caused such specific psychiatric disorders. Defendants thus appear to argue that it is scientifically unreliable for an academic to study whether social media use causes "low psychological well-being in adolescence."

Twenge has testified that she has assessed the following mental health outcomes: depression, self-harm, suicide, unhappiness, loneliness, life satisfaction, and happiness. (Twenge Dep., Defs' Ex. B, at 120:11—121:2.) Twenge explained her opinion that mental health harms are "highly correlated with each other" and thus could be studied under the umbrella term "psychological well-being." (Twenge Dep., Defs' Ex. B, at 324:22—325:1.) Defendants have failed to present any evidence suggesting that it is scientifically unreliable to study *general* causation as to a set of similar psychiatric disorders. Defendants appear to conflate the role of a general causation expert (or an academic assessing potential causes of mental health harms) with a practicing psychiatrist who might diagnose *an individual patient* with a specific psychiatric disorder (or might diagnose an individual patient with a related set of similar psychiatric disorders).

Moreover, Twenge, as a general causation expert, is not required to specifically conclude that a particular platform caused a particular cause of harm. Defendants have failed to demonstrate that their social platforms are so different from each other that it would be scientifically unreliable to investigate their mental health effects as a group. Plaintiffs allege that the relevant design features are similar across different platforms and Defendants fail to adequately counter these allegations with evidence here. Twenge has similarly concluded that "there's a good amount of overlap between the platforms," such that it is appropriate to study social media use

more generally in drawing relevant conclusions as to all social media platforms. (Twenge Dep., Defs' Ex. A, at 119:12-24.) Moreover, the limitations of Twenge's analysis can be addressed at trial through the introduction of competing evidence and through cross-examination. If Defendants believe that Twenge's conclusions are insufficient evidence to demonstrate that a particular platform caused a particular type of harm, then they will be free to so demonstrate at trial. (See, e.g., *Stollings*, *supra*, 725 F.3d at p. 768.) And the fact Twenge's use of the term "social media" may differ from that used by other sources is an issue that can be raised during cross-examination; it does not justify exclusion of her testimony. If Defendants contend that one or more of their platforms do not meet Twenge's definition of "social media," they can offer evidence on the basis of which they can cross-examine Twenge's conclusions.

Defendants' fourth main argument (which includes multiple subparts) is that Twenge's opinions include "leaps of logic" not based on the actual underlying evidence. First, Defendants argue that Twenge has ignored the express limitations of the underlying studies she uses in support of her opinions. As they do in connection with other Plaintiffs' Experts, Defendants reach the unsupported conclusion that, if an individual study's authors state that that study, when viewed alone, cannot demonstrate a causal connection, then reliance on multiple, similar studies cannot support a causation opinion. Defendants provide no evidentiary support for this position. Nor do Defendants demonstrate that an expert must agree with the conclusions of the authors upon whose studies the expert relies. The Eighth Circuit has explained as follows:

> [W]e disagree that it is *per se* unreliable for an expert to draw an inference of causation from an epidemiological study that disclaimed proving causation. "Epidemiology cannot prove causation." *Reference Manual*, *supra*, at 598. Instead, epidemiology enables experts to find associations, which by themselves do not entail causation. *See id.* at 552-53, 598. But an observational study such as McGovern 2011 "can be brought to bear" on the question of causation, *id.* at 217, and "can be very useful" to answering that question, *id.* at 221. Ultimately "causation is a judgment for epidemiologists and others interpreting the epidemiologic data." *Id.* at 598; *see also id.* at 222 ("In the end, deciding whether associations are causal typically rests on scientific judgment."). Thus, it was not necessarily unreliable for the experts to rely on McGovern 2011 to draw an inference of causation just because the study itself recognized,

> consistent with these principles, that the association did not establish causation.

(*In re Bair Hugger Forced Air Warming Devices Products Liability Litigation* (8th Cir. 2021) 9 F.4th 768, 779, internal brackets and ellipses omitted.)

Defendants next accuse Twenge of having "cherry-picked" studies that support her conclusions. To argue that Twenge failed to include contrary studies in her analysis, Defendants oddly cite a contrary study that was analyzed by Twenge in her Report. (See Defs' Twenge Mot., at pp. 19-20, referring to Orben and Przybylski (2019).) Though they admit that Twenge addressed Orben and Przybylski (2019), Defendants claim that Twenge failed to adequately explain why that study did not affect her opinions. Defendants then mischaracterize Twenge's analysis by claiming that "Twenge criticizes Orben and Przybylski (2019) because it 'was primarily focused on overall screen time, not social media use specifically.' " (Defs' Twenge Mot., at p. 19.) In her Report, Twenge stated:

> In contrast to the research examined above, Orben and Przybylski (2019) is frequently cited as concluding that social media use is not linked to psychological well-being or worse mental health among adolescents. However, this paper was primarily focused on overall screen time, not social media use specifically; the paper included measures of TV watching, phone calls, and simply owning a computer. One of the paper's analyses (Table 2) did examine hours per day on social media and psychological well-being, finding a correlation of -.056. That means the more hours an adolescent spent on social media, the more likely it was they experienced low well-being, just as in many other studies. The authors argued that this effect was too small to matter.

(Twenge Rept., Defs' Ex. A, at p. 28.) Twenge's critique of Orben and Przybylski (2019) was not merely an observation that the study had just addressed "screen time," which often refers time spent on a smartphone. Instead, Twenge noted how Orben and Przybylski (2019) focused on things like "TV watching, phone calls, and simply owning a computer." Defendants' attempt to analogize Orben and Przybylski (2019) to studies relied upon by Twenge that measure time spent on a smartphone or online is thus misleading. Moreover, Twenge also noted that Orben and Przybylski (2019) found a correlation between social media and psychological well-being. If Defendants believe that a particular study reached a conclusion that differs from that reached by Twenge, Defendants can raise that fact during cross-examination.

Defendants argue that Twenge has ignored "critical scientific evidence" that does not support Twenge's opinions. According to Defendants, "Twenge's analysis also disregards relevant reviews of epidemiological studies conducted by medical and governmental associations, as well as other highly relevant studies that fail to support her opinions on causation." (Defs' Twenge Mot., at p. 20.) "There is not ... any requirement that an expert review every single study in the relevant body of literature." (*In re Johnson & Johnson Talcum Powder Products Marketing, Sales Practices and Products Litigation* (D.N.J. 2020) 509 F.Supp.3d 116, 194.) Moreover, Twenge repeatedly addressed contrary studies in her report and explained why they did not affect her conclusion. (Twenge Rept., Defs' Ex. A, at pp. 132, 28-29, 29-30.) Defendants will be able to challenge Twenge's conclusions before the jury based on studies she did not include in her literature review.

Date: 9/22/2025

Carolyn B Kuhl

The Honorable Carolyn Kuhl
Judge of the Superior Court