

Exhibit D

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

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

v.

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

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

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

MDL No. 3047

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

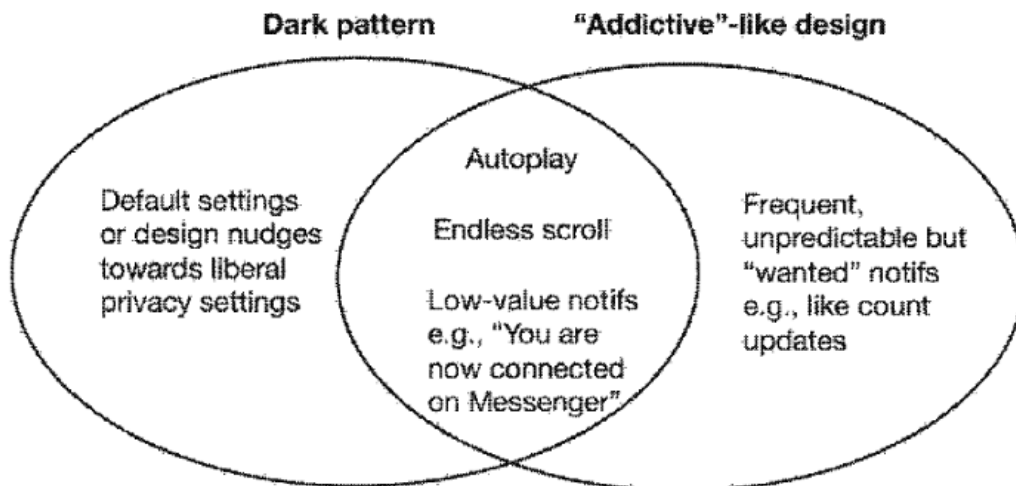
Judge: Hon. Yvonne Gonzalez Rogers

Magistrate Judge: Hon. Peter H. Kang

TRIAL REPORT OF COLIN GRAY
May 16, 2025

Expert Report of Colin M. Gray, PhD

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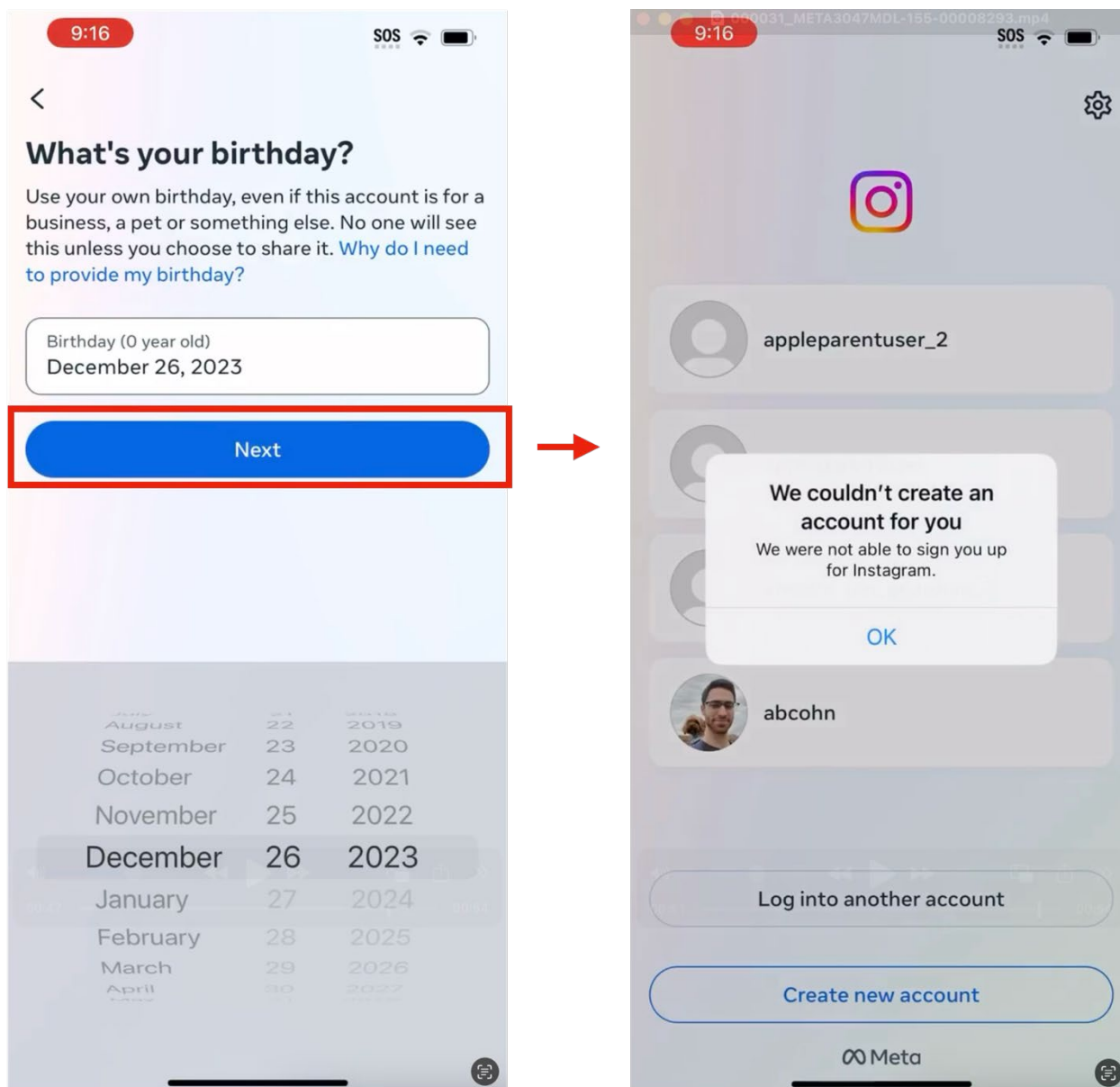
a. **Dark Patterns Across Numerous Instagram Platform Features Contributed to Harms**

83. Like all digital platforms, Instagram has changed its functionality and user interface over time. The flows I captured are from Spring 2025 unless indicated otherwise, but based on my review of documents, past versions of the platform were even less protective of underage users—in particular due to lack of durable parental controls. As much to the point, the sections below are illustrative of the dark patterns I have seen; it is not represented as an exhaustive list.

ii. **Settings Made It Easy for Underage Users to Sign Up**

84. Meta's account registration flow lacks meaningful friction when verifying a prospective user's age. The flow on Instagram begins with the user selecting the "Create New Account" button, followed by sequential prompts to input a mobile number or email address, verify that input via a confirmation code, add a name, create a username, and finally enter a date

of birth.³³ (META3047MDL-155-00008293 (iOS); META3047MDL-155-00008312 (Android); META3047MDL-155-00008302 (web browser)).



META3047MDL-155-00008293 (iOS).

³³ “Prior to December 2019, Meta did not require that individuals registering for an account on Instagram provide their date of birth as part of the registration process.” (Meta Second Supplemental Response to Interrogatory No. 19 at 2; see also Meta Second Amended Response to Request for Admission No. 2 at 7 (admitting that Meta also did not “require prior to December 2019 that individuals provide a specific numeric age”)).

85. While the system does implement a nominal constraint by terminating the process if the provided birthdate indicates the user is under 13, this modal dialog is not difficult to circumvent. (See, e.g., META3047MDL-003-00181914 at -81922 showing a 1.16 million underage enforcement backlog.) Upon entering an age under the threshold, the interface responds with a generic error message: “We couldn’t create your account // We were not able to sign you up for Instagram,” accompanied by a single “OK” button. But after clicking the OK button, the user can change the birthdate entry and try again to sign up. (META3047MDL-155-00008293 (iOS); META3047MDL-155-00008302 (web browser)). Within this signup flow, there is no mechanism to cross-validate age using alternative data sources (e.g., parental or ID verification, facial estimation, inferences based on IP address or device). Thus, users under 13 can access the platform merely by guessing a more “acceptable” birthdate.

86. This lack of friction allows a child or teen to easily circumvent the age gate and access the platform—either representing themselves as a teen user (for users that are under 13) or as an adult user (for any user of any actual age under 18). By offering no additional verification steps, Instagram’s interface design implicitly assumes the accuracy of self-reported age even though Meta’s documents indicate self-reported age is inaccurate (META3047MDL-003-00029531 at -29534). The interface does nothing to disincentivize falsification. This lack of friction reflects a design decision that privileges rapid onboarding over meaningful and durable age-gating protections.³⁴

87. Even after Instagram adopted some parental controls in 2022 for the first time,³⁵ Meta still did not employ other age verification tools to prevent users under the age of 13 from creating accounts. (META3047MDL-019-00056764 at -56766).

88. The use of the scrolling date picker without contextual warnings or validations also reflects **interface interference**, a high-level dark pattern strategy in which interface

³⁴ See Strahm et al., 2018 (for more on onboarding goals and UI techniques).

³⁵ “Meta admits that parental controls, including tools developed for parental supervision of Teens, were first made available to users on Instagram in 2022.” Meta’s First Amended Response to Request for Admission No. 3 at 6.

elements are used to shape or limit discoverability and understanding. Because this flow also includes relatively little friction in comparison to the extensive deletion flow (see below), the sign-up process also represents the beginning of the meso-level pattern described in the literature as an attentional “roach motel,” where it is easy to create an account but difficult to delete it. This is in opposition to common UX design principles, which focus on ease of use and the ability of a user to quickly and efficiently accomplish their goals (Norman, 2013).

89. Not only does Instagram make it easy for underage users to create accounts, the platform’s underage reporting form³⁶ uses **obstruction**, **interface interference**, and **forced action** to discourage reporting these users. For instance, the form requests the username, full name, *and* birthdate of the individual being reported—items unlikely to be known by someone submitting the form. Crucially, the form also does not indicate which fields are required, giving the impression that some of these fields might be optional. In practice, however, the form cannot be submitted without including a full date of birth for the underage user and, if a user attempts to submit the form more than twice without the required information, Instagram introduces an additional form of **obstruction**: an error message stating that “you’re going too fast” and that “restrictions might be made on your account” if they continue using the feature. This message appears to be a generalized rate-limiting response, but in this context, it functions as a deterrent to form submission, implicitly punishing users for repeated attempts to report an underage account. The result of this form design is a potential chilling effect on community reporting. Functionally, the design does not support enabling users to help maintain a safe environment for children.

90. Deposition testimony provided to me indicates that, historically, Instagram’s reporting feature for underage users has involved even more friction. Vaishnavi Jayakumar, the former Head of Youth Policy at Meta, explained that, at least prior to March 23, 2021, “if you

³⁶ Report an Underage User on Instagram. Instagram. <https://help.instagram.com/contact/723586364339719> (last accessed May 15, 2025).

wanted to report a user for being under 13, you had to go to a web form. And so, you know, go out of the app essentially, go to a form and then report that account for being under 13.”³⁷ Once at this form, it took “over 7 screens for users to report U-13 users on IG.”³⁸ Ms. Jayakumar acknowledged—and Meta employees discussed at the time—how an “in-app” reporting feature would be “a much faster, much more seamless way to report users.”³⁹ However, Meta employees discussed how making this change would be a “significant lift from the legal and privacy perspective,” because growing the volume of reports would add to an already-existing “backlog of 2.5 million cases age-related reports to review.”⁴⁰

iii. Cancellation of an Account Is Cumbersome

91. Meta’s account deletion flow—particularly as experienced by teen users—was designed in such a way that successful and permanent account deletion was actively discouraged through a series of obstructive design choices. These choices cumulatively served to disincentivize users from completing account deletion and instead pushed them toward temporary deactivation or full reengagement. These interface decisions exemplify both **obstruction** and **forced action** high-level dark patterns, each of which impedes users from exercising autonomy over their data and presence on the platform, and Meta employees acknowledged as much. (See, e.g., META304-7MDL-096-00000086 at -00087.) Additionally, the platform delivery strategy makes it very easy to sign up and almost impossible to leave, constituting an example of the attentional “roach motel” attention capture pattern.

³⁷ Jayakumar Dep. 91:24-92:3.

³⁸ Jayakumar Dep. Ex. 9.

³⁹ Jayakumar Dep. 92:13-14.

⁴⁰ Jayakumar Dep. Ex. 9; Jayakumar Dep. 93:1-25.