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# Social Media Impact on Children & Adolescents

Baseline Reference Compendium for a Research Paper

**Version:** 0.2 · **Compiled:** 5 August 2026

**Scope:** Peer-reviewed evidence · Neurodevelopment · Regulation · Litigation · Platform profiles · Social Media 2.0 lessons

**Sources:** ~110, each tagged by validation status

Working reference document. Every source was located via live web research; verification status is flagged per item. Items marked  $\triangle$  require primary-source confirmation before citation in a journal submission. No citations are invented. This compendium is deliberately non-partisan: the harm literature, the null/small-effects literature, and the methodological critiques of both are represented in full.

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## How to use this document

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This compendium is the evidence baseline for a paper on the societal impact of social media on children and adolescents, and on what a hypothetical “Social Media 2.0” should learn from the past 20 years. It is deliberately **non-partisan**: the harm literature, the null/small-effects literature, and the methodological critiques of both are all represented, because the honest state of the science is contested — and that contest is itself part of the story of why governments acted the way they did.

Citation entries follow the pattern: *Authors (year). Title. Venue. DOI/URL — summary — validation status.*

Validation status legend: - **[PR]** peer-reviewed journal article - **[PR-meta]** peer-reviewed meta-analysis / systematic / umbrella review - **[Gov]** government or regulator publication - **[Consensus]** formal consensus report (e.g. National Academies) - **[NGO]** NGO / advocacy research (methodology published, not peer-reviewed) - **[Industry]** platform-internal research or platform claims - **[Journalism]** investigative journalism - **[Book/Advocacy]** trade book or preprint; not peer-reviewed -  detail not fully verified this session — check before publication

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# 1. State of the debate — the honest one-page summary

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Three positions dominate the literature, and a paper should engage all three:

1. **The harm thesis** (Twenge, Haidt, and much of the clinical community): the post-2010 international rise in adolescent depression, anxiety, self-harm and loneliness — especially in girls — is substantially caused by the migration of childhood onto smartphones and engagement-optimized social platforms. Anchors: §2.1-2.4, §4 (Surgeon General, APA), Haidt (2024).
2. **The skeptic/small-effects thesis** (Orben, Przybylski, Odgers, Ferguson, Vuorre): observed associations are small (often <1% of variance), frequently bidirectional or confounded, dependent on analytic choices, and built largely on unreliable self-report; the moral-panic pattern has repeated with every new medium. Anchors: §3, §5.
3. **The conditional/heterogeneity thesis** (Valkenburg, Beyens, Boer; NASEM 2024): average effects are small *because* effects differ radically by person, age window, use pattern, and content — a minority of adolescents (roughly 10-20%) experience meaningful harm, some experience benefit, most are barely moved; “problematic use” is a distinct minority pattern from ordinary heavy use. This is the closest thing to an emerging consensus, and the National Academies 2024 report is its most citable statement.

**Key tension for the paper:** regulators (Australia, UK, EU) acted ahead of causal certainty — on precautionary grounds, parental sentiment, whistleblower evidence and specific-harm pathways (sleep, comparison, algorithmic rabbit holes) — while the population-level causal science remains disputed. Early Australian outcome data (§6.1) is the first real-world test, and both camps now cite it.

**Least-contested harm pathways** (defensible core for any paper): sleep displacement (Carter 2016), cyberbullying victimization (Kowalski 2014), appearance-based social comparison in girls (Kelly 2018; Saiphoo & Vahedi 2019; the Meta internal research), and problematic/addiction-like use as a distinct minority pattern (Boer 2020; WHO/HBSC 2024).

**Strongest single causal evidence of harm:** Braghieri, Levy & Makarin (2022) — Facebook’s staggered college rollout.

**Strongest population-scale null:** Vuorre & Przybylski (2023) — 72-country Facebook adoption study. These are routinely juxtaposed; do the same.

**The neurodevelopment layer (§3A) has its own three-tier structure:** the adolescent brain’s distinct vulnerability (early-maturing reward circuitry, late-maturing prefrontal control, peak social-evaluation sensitivity) is settled science; social-media-specific brain findings are real but thin and correlational; and “social media is rewiring children’s brains” as a causal claim is not demonstrated — the strongest defensible framing is precautionary (exposure matched to the developing system’s weakest point, deployed at scale without safety testing), not evidential.

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## 2. Evidence of harm

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### 2.1 Causal / quasi-experimental

1. **Braghieri, L., Levy, R., & Makarin, A. (2022).** "Social Media and Mental Health." *American Economic Review*, **112(11)**, 3660-3693. DOI: 10.1257/aer.20211218 — Staggered rollout of Facebook across 775 US colleges linked to ~430,000 National College Health Assessment responses. Facebook's arrival worsened student mental health (severe depression symptoms ↑ ~7% of a SD; ~24% of the effect magnitude of job loss); worst for those prone to unfavorable social comparison. Widely regarded as the strongest causal evidence of harm. [PR] <https://www.aeaweb.org/articles?id=10.1257%2Faer.20211218>
2. **Allcott, H., Braghieri, L., Eichmeyer, S., & Gentzkow, M. (2020).** "The Welfare Effects of Social Media." *American Economic Review*, **110(3)**, 629-676. DOI: 10.1257/aer.20190658 — RCT: ~2,743 users paid to deactivate Facebook for 4 weeks; deactivation improved subjective well-being (~0.09 SD), increased offline socializing, reduced polarization. Caveat: adult sample. [PR]
3. **Hunt, M. G., Marx, R., Lipson, C., & Young, J. (2018).** "No More FOMO: Limiting Social Media Decreases Loneliness and Depression." *Journal of Social and Clinical Psychology*, **37(10)**, 751-768. DOI: 10.1521/jscp.2018.37.10.751 — RCT, 143 undergraduates; limiting platforms to 10 min/day for 3 weeks reduced loneliness and depression vs usual use. Small sample, short duration. [PR]

### 2.2 Longitudinal & cohort epidemiology

4. **Twenge, J. M., Joiner, T. E., Rogers, M. L., & Martin, G. N. (2018).** "Increases in Depressive Symptoms, Suicide-Related Outcomes, and Suicide Rates Among U.S. Adolescents After 2010 and Links to Increased New Media Screen Time." *Clinical Psychological Science*, **6(1)**, 3-17. DOI: 10.1177/2167702617723376 — Two nationally representative surveys (N > 500,000) plus national suicide statistics; post-2010 rises concentrated in girls; heavier new-media use associated with worse outcomes. [PR — contested]: see Ophir et al. (2020) critique, DOI 10.1177/2167702619849412, and Twenge et al. reply, DOI 10.1177/2167702619898179.
5. **Twenge, J. M., & Campbell, W. K. (2018).** "Associations between screen time and lower psychological well-being among children and adolescents." *Preventive Medicine Reports*, **12**, 271-283. DOI: 10.1016/j.pmedr.2018.10.003 △(DOI standard-form) — 2016 NSCH, N = 40,337 (ages 2-17); 7+ h/day users ~2× odds of diagnosed anxiety/depression vs low users. Cross-sectional, caregiver-report. [PR]
6. **Kelly, Y., Zilanawala, A., Booker, C., & Sacker, A. (2018).** "Social Media Use and Adolescent Mental Health: Findings From the UK Millennium Cohort Study." *EClinicalMedicine*, **6**, 59-68. DOI: 10.1016/j.eclinm.2018.12.005 △(DOI standard-form) — 10,904 UK 14-year-olds; 5+ h/day girls showed ~50% higher depressive-symptom scores; ~40% of association mediated via harassment, sleep, self-esteem, body image. [PR]
7. **Boers, E., Afzali, M. H., Newton, N., & Conrod, P. (2019).** "Association of Screen Time and Depression in Adolescence." *JAMA Pediatrics*, **173(9)**, 853-859. DOI: 10.1001/jamapediatrics.2019.1759 — 4-year longitudinal, 3,826 Canadian adolescents; within-person increases in social media use predicted same-year increases in depressive symptoms (not so for gaming). Methodologically one of the stronger harm-side designs. [PR]
8. **Riehm, K. E., et al. (2019).** "Associations Between Time Spent Using Social Media and Internalizing and Externalizing Problems Among US Youth." *JAMA Psychiatry*, **76(12)**, 1266-1273. DOI: 10.1001/jamapsychiatry.2019.2325 △(DOI standard-form; article confirmed at <https://jamanetwork.com/journals/jamapsychiatry/fullarticle/2749480>) — ~6,595 US adolescents (PATH cohort); >3 h/day associated with roughly doubled risk of internalizing problems. This is the study behind the Surgeon General's ">3 hours doubles risk" headline claim. [PR]
9. **Twenge, Haidt, Blake, McAllister, Lemon, & Le Roy (2021).** "Worldwide increases in adolescent loneliness." *Journal of Adolescence*, **93**, 257-269. DOI: 10.1016/j.adolescence.2021.06.006 — PISA data, ~1M 15-16-year-olds in 37 countries; school loneliness rose 2012-2018 in 36/37 countries, tracking smartphone/internet penetration, not GDP or unemployment. Ecological design — causal inference limited. [PR]
0. **Twenge, Haidt, Lozano, & Cummins (2022).** "Specification curve analysis shows that social media use is linked to poor mental health, especially among girls." *Acta Psychologica*, **224**, 103512. DOI: 10.1016/j.actpsy.2022.103512 △(standard-form) — Direct rebuttal to Orben & Przybylski (2019): isolating social media (vs generic "screens") and girls yields associations comparable to binge drinking. Central to the effect-size debate. [PR]

### 2.3 Specific harm domains (meta-analytic)

1. **Carter, B., et al. (2016).** "Association Between Portable Screen-Based Media Device Access or Use and Sleep Outcomes." *JAMA Pediatrics*, **170(12)**, 1202-1208. DOI: 10.1001/jamapediatrics.2016.2341 — Meta-analysis, 20 studies, 125,198 children; bedtime device access ≈ doubled odds of inadequate sleep (OR ~2.17) and daytime sleepiness (OR ~2.72); even unused access harmful. Sleep is the least-disputed pathway. [PR-meta]
2. **Kowalski, R. M., et al. (2014).** "Bullying in the digital age: A critical review and meta-analysis of cyberbullying research among youth." *Psychological Bulletin*, **140(4)**, 1073-1137. DOI: 10.1037/a0035618 — 131 studies; cybervictimization robustly linked to depression, anxiety, suicidal ideation; strongest predictor is offline victimization (online

harm compounds offline harm). **[PR-meta]**

3. **Saiphoo, A. N., & Vahedi, Z. (2019).** “A meta-analytic review of the relationship between social media use and body image disturbance.” *Computers in Human Behavior*, **101**, 259-275. DOI: 10.1016/j.chb.2019.07.028 △(standard-form) — 63 studies; small significant association, stronger for appearance-focused (photo-based) use than time spent. **[PR-meta]**
4. **Keles, B., McCrae, N., & Grealish, A. (2020).** “A systematic review: the influence of social media on depression, anxiety and psychological distress in adolescents.” *International Journal of Adolescence and Youth*, **25(1)**, 79-93. DOI: 10.1080/02673843.2019.1590851 — 13 studies; time, intensity, investment and addiction-like use all correlated with distress; mostly cross-sectional evidence. **[PR]**
5. **Boer, M., et al. (2020).** “Adolescents’ Intense and Problematic Social Media Use and Their Well-Being in 29 Countries.” *Journal of Adolescent Health*, **66(6S)**, S89-S99. DOI: 10.1016/j.jadohealth.2020.02.014 △(standard-form) — HBSC, N = 154,981; *problematic* (addiction-like) use consistently predicts lower well-being; *intense* use sometimes predicts better social well-being. Key intensity-vs-pathology distinction. **[PR]**
6. **WHO Europe / HBSC (2024).** “Teens, screens and mental health.” — ~280,000 adolescents, 44 countries: 11% show problematic social media use (up from 7% in 2018); girls 13% vs boys 9%. **[Gov]** <https://www.who.int/europe/news/item/25-09-2024-teens-screens-and-mental-health>

## 2.4 Industry-internal evidence & algorithmic amplification

7. **Wells, Horwitz & Seetharaman (2021).** “Facebook Knows Instagram Is Toxic for Teen Girls, Company Documents Show.” *Wall Street Journal* (“The Facebook Files”). — Internal Meta slides: “We make body image issues worse in one in three teen girls”; 13% of British / 6% of American teens with suicidal thoughts traced them to Instagram. Small-N internal research; Meta disputes interpretation (on most of 12 well-being dimensions more teens said Instagram helped than hurt). Primary-source copy in Congressional record: <https://www.congress.gov/117/meeting/house/114054/documents/HHRG-117-IF02-20210922-SD003.pdf> **[Industry + Journalism]** — cite as evidence of *internal awareness*, not as epidemiology.
  8. **Frances Haugen testimony, US Senate Commerce Subcommittee (Oct 5, 2021), S.Hrg. 117-769.** — Whistleblower disclosure of internal documents; engagement-based ranking amplifies harmful content; harms to teen girls known internally. <https://www.congress.gov/event/117th-congress/senate-event/330603/text> **[Gov record of Industry evidence]**
  9. **Center for Countering Digital Hate (2022).** “Deadly by Design.” — New accounts posing as 13-year-olds served suicide content within ~2.6 min, eating-disorder content within ~8 min; “vulnerable” usernames received ~12× more. Small-N avatar methodology; TikTok disputes. <https://counterhate.com/research/deadly-by-design/> **[NGO]**
  0. **Amnesty International (2023).** “Driven into the Darkness” (+ 2025 France follow-up “Dragged into the Rabbit Hole”). — Simulated 13-year-old accounts signalling mental-health interest: within 5-6 h, ~1 in 2 recommended videos potentially harmful mental-health content; pattern persisted post-DSA in 2025. <https://www.amnesty.org/en/latest/news/2023/11/tiktok-risks-pushing-children-towards-harmful-content/> **[NGO]**
  1. **NPR / Kentucky Public Radio (Oct 2024) — unredacted Kentucky AG filing.** — TikTok’s own research: habit formation after ~260 videos (~35 min); internal acknowledgment the 60-min teen limit changed usage by ~1.5 min/day and was valued for PR. △(prior-knowledge citation; verify URL) **[Journalism on Industry documents]**
  2. **Arturo Béjar, US Senate testimony (Nov 2023).** — Former Meta engineering director; internal “BEEF” survey: 1 in 8 under-16s experienced unwanted sexual advances on Instagram within the past 7 days. △(figures well-reported; verify transcript) **[Gov record of Industry evidence]**
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### 3. Counterevidence — null, small, or conditional effects

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3. Orben, A., & Przybylski, A. K. (2019). "The association between adolescent well-being and digital technology use." *Nature Human Behaviour*, 3, 173-182. DOI: 10.1038/s41562-018-0506-1 — Specification curve analysis,  $N \approx 355,358$  across three datasets; median association explains  $\leq 0.4\%$  of well-being variance — comparable to eating potatoes or wearing glasses. Landmark of the small-effects position. [PR]
  4. Orben, Dienlin & Przybylski (2019). "Social media's enduring effect on adolescent life satisfaction." *PNAS*, 116(21), 10226-10228. DOI: 10.1073/pnas.1902058116 — 8-year UK panel ( $\sim 12,672$  adolescents); reciprocal within-person effects trivial ( $< 1\%$  variance), inconsistent by gender. [PR]
  5. Przybylski & Weinstein (2017). "A Large-Scale Test of the Goldilocks Hypothesis." *Psychological Science*, 28(2), 204-215. DOI: 10.1177/0956797616678438 — 120,115 English 15-year-olds; moderate use not harmful (possibly slightly beneficial); small negative associations only at high extremes. Preregistered. [PR]
  6. Odgers, C. L., & Jensen, M. R. (2020). "Adolescent mental health in the digital age: facts, fears, and future directions." *Journal of Child Psychology and Psychiatry*, 61(3), 336-348. DOI: 10.1111/jcpp.13190 — Review: associations "small and inconsistent," mostly cross-sectional self-report; panic risks diverting attention from offline drivers; already-vulnerable youth show stronger links. [PR]
  7. Vuorre, Orben & Przybylski (2021). "There Is No Evidence That Associations Between Adolescents' Digital Technology Engagement and Mental Health Problems Have Increased." *Clinical Psychological Science*, 9(5), 823-835. DOI: 10.1177/2167702621994549 — 430,561 US/UK adolescents, 1991-2019; technology-mental-health association has not strengthened across three decades of adoption. [PR]
  8. Vuorre, M., & Przybylski, A. K. (2023). "Estimating the association between Facebook adoption and well-being in 72 countries." *Royal Society Open Science*, 10(8), 221451. DOI: 10.1098/rsos.221451 —  $\sim 946,798$  Gallup respondents; country-level Facebook diffusion not associated with negative well-being (slightly positive where present, including young people). Note: Meta facilitated data access; Facebook only. [PR]
  9. Coyne, S. M., et al. (2020). "Does time spent using social media impact mental health? An eight year longitudinal study." *Computers in Human Behavior*, 104, 106160. DOI: 10.1016/j.chb.2019.106160  $\triangle$ (standard-form) —  $\sim 500$  adolescents followed 8 years; within-person time spent did not predict increased depression/anxiety. [PR]
  0. Heffer, T., et al. (2019). "The Longitudinal Association Between Social-Media Use and Depressive Symptoms... An Empirical Reply to Twenge et al." *Clinical Psychological Science*, 7(3), 462-470. DOI: 10.1177/2167702618812727 — Two longitudinal samples; social media use did not predict later depression; in adolescent girls, depression predicted *more* subsequent use — reverse causation. [PR]
  1. Berryman, Ferguson & Negy (2018). "Social Media Use and Mental Health among Young Adults." *Psychiatric Quarterly*, 89(2), 307-314. DOI: 10.1007/s11126-017-9535-6 — Time on social media not predictive of problems; "vaguebooking" modestly predicted suicidal ideation. [PR]
  2. Ferguson, C. J. (2025). "Do social media experiments prove a link with mental health: A methodological and meta-analytic review." *Psychology of Popular Media*. DOI: 10.1037/ppm0000541  $\triangle$ (article confirmed to exist — see <https://www.researchgate.net/publication/380304294> and author manuscript <https://www.christopherjferguson.com/Social%20Media%20Experiments%20Meta.pdf> — but verify DOI string) — 27 randomized reduction experiments; pooled effect near zero ( $r \approx .05$ ). [PR — sharply contested]: Rausch & Haidt rebuttal (SSRN, DOI 10.2139/ssrn.5224958) alleges coding errors; a competing 2025 RCT meta-analysis reports small benefits of restriction. Cite as an actively disputed node.
  3. Beyens, I., et al. (2020). "The effect of social media on well-being differs from adolescent to adolescent." *Scientific Reports*, 10, 10763. DOI: 10.1038/s41598-020-67727-7 — Experience sampling (63 adolescents, 2,155 assessments):  $\sim 10\text{--}19\%$  feel worse,  $\sim 17\text{--}46\%$  feel better, plurality unaffected. Foundation of the person-specific-effects paradigm. [PR]
  4. Orben, Przybylski, Blakemore & Kievit (2022). "Windows of developmental sensitivity to social media." *Nature Communications*, 13, 1649. DOI: 10.1038/s41467-022-29296-3 —  $\sim 84,000$  UK participants; sex-specific sensitivity windows (girls 11-13, boys 14-15, both  $\sim 19$ ). Authored by leading skeptics yet finds developmental-window effects — a bridging citation between camps. [PR]
  5. Kreski, N., et al. (2021). "Social Media Use and Depressive Symptoms Among United States Adolescents." *Journal of Adolescent Health*, 68(3), 572-579. DOI: 10.1016/j.jadohealth.2020.07.006  $\triangle$ (standard-form) — Monitoring the Future ( $\sim 74,000+$ ); daily use explains little of the population-level rise in depressive symptoms. [PR]
  6. The Trevor Project (2025). "Online Experiences and Mental Health of LGBTQ+ Young People." —  $N = 18,663$  LGBTQ+ youth: 78% of trans/nonbinary youth can "be their complete self" online; youth with *no* safe online spaces had higher anxiety (75% vs 65%) and depression (63% vs 52%). Explicitly warns blanket bans could harm these youth. Non-probability sample. <https://www.thetrevorproject.org/research-briefs/online-experiences-and-mental-health-of-lgbtq-young-people/> [NGO]
  7. Odgers, C. L. (2024). "The great rewiring: is social media really behind an epidemic of teenage mental illness?" *Nature*, 628, 29-30. DOI: 10.1038/d41586-024-00902-2 — Review of *The Anxious Generation*: causal story "not supported by science"; alternative drivers (economic hardship, opioids, firearms, untreated illness). Haidt's reply: <https://www.afterbabel.com/p/phone-based-childhood-cause-epidemic> [Editorial commentary in PR venue]
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## 3A. Neurodevelopment — brain development and the “rewiring” question

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This section separates three layers that are routinely blurred in public debate: (A) established developmental neuroscience — genuinely settled facts; (B) social-media-specific brain evidence — real but thin, small-N, and almost entirely correlational; (C) the scientific critique of “rewiring” rhetoric. The gradient A→B→C is itself a finding: the popular claim “social media is rewiring children’s brains” borrows the authority of layer A while resting on layer B.

### 3A-1. Layer A — Established adolescent neurodevelopment (uncontested)

- ND-1. Giedd, J. N., et al. (1999). “Brain development during childhood and adolescence: a longitudinal MRI study.” *Nature Neuroscience*, 2(10), 861-863. DOI: 10.1038/13158 △(article confirmed; DOI string not re-verified) — Foundational NIMH longitudinal MRI (~145 children/adolescents 4-21): gray matter follows a regional inverted-U, peaking ~11-12 in frontal/parietal cortex then pruning; cortical maturation continues well past puberty. [PR — uncontested]
- ND-2. Gogtay, N., et al. (2004). “Dynamic mapping of human cortical development during childhood through early adulthood.” *PNAS*, 101(21), 8174-8179. DOI: 10.1073/pnas.0402680101 — Time-lapse cortical maps: maturation proceeds back-to-front, with dorsolateral prefrontal cortex (judgment, impulse control) maturing last, into the early 20s. The canonical basis for “the prefrontal cortex isn’t finished.” [PR — uncontested]
- ND-3. Casey, B. J., Getz, S., & Galvan, A. (2008). “The adolescent brain.” *Developmental Review*, 28(1), 62-77. DOI: 10.1016/j.dr.2007.08.003 — The dual-systems / maturational-imbalance model: subcortical reward circuitry (ventral striatum, amygdala) matures earlier than prefrontal control, producing a mid-adolescent window of heightened reward-seeking. [PR — foundational; refined over time]
- ND-4. Shulman, E. P., et al. (incl. Steinberg, L.) (2016). “The dual systems model: Review, reappraisal, and reaffirmation.” *Developmental Cognitive Neuroscience*, 17, 103-117. DOI: 10.1016/j.dcn.2015.12.010 — A decade of evidence reaffirms the core maturational asynchrony while acknowledging heterogeneity in the imaging support. [PR]
- ND-5. Blakemore, S.-J., & Mills, K. L. (2014). “Is adolescence a sensitive period for sociocultural processing?” *Annual Review of Psychology*, 65, 187-207. DOI: 10.1146/annurev-psych-010213-115202 — Proposes (as a hypothesis) that adolescence is a sensitive period in which the “social brain” (mPFC, TPJ, pSTS) is especially shaped by the social environment. [PR]
- ND-6. Fuhrmann, D., Knoll, L. J., & Blakemore, S.-J. (2015). “Adolescence as a Sensitive Period of Brain Development.” *Trends in Cognitive Sciences*, 19(10), 558-566. DOI: 10.1016/j.tics.2015.07.008 — Adolescence shows sensitive-period features (heightened experience-dependent plasticity) for memory and social cognition; **explicitly notes causal human evidence is limited.** [PR]
- ND-7. Somerville, L. H. (2013). “The Teenage Brain: Sensitivity to Social Evaluation.” *Current Directions in Psychological Science*, 22(2), 121-127. DOI: 10.1177/0963721413476512 — Adolescents are disproportionately sensitive to peer evaluation, with heightened mPFC/ventral-striatum response — the neural substrate that makes social-media feedback plausibly potent in this age band. [PR]

**What layer A licenses:** adolescents *are* neurodevelopmentally distinct — protracted prefrontal maturation, early-maturing reward circuitry, peak sensitivity to peer evaluation, and plausibly heightened plasticity of the social brain. Any product engineered around social reward is therefore interacting with a system at its most reward-sensitive and least self-regulated. That much is fact.

### 3A-2. Layer B — Social-media-specific brain evidence (real, thin, correlational)

- ND-8. Maza, M. T., et al. (2023). “Association of Habitual Checking Behaviors on Social Media With Longitudinal Functional Brain Development.” *JAMA Pediatrics*, 177(2), 160-167. DOI: 10.1001/jamapediatrics.2022.4924 △(DOI not re-verified) <https://jamanetwork.com/journals/jamapediatrics/fullarticle/2799812> — **The headline direct study.** ~169 middle-schoolers, three annual fMRI waves: habitual checkers (>15x/day) showed *increasing* neural sensitivity to anticipated social feedback (amygdala, insula, ventral striatum, ACC) over time; non-habitual checkers showed *decreasing* sensitivity. **Authors’ own caveats: correlational, no causal direction, modest N, single rural-NC cohort, and the change “may reflect adaptive” adjustment rather than harm.** [PR — widely covered, widely caveated]
- ND-9. Sherman, L. E., et al. (2016). “The Power of the Like in Adolescence.” *Psychological Science*, 27(7), 1027-1035. DOI: 10.1177/0956797616645673 — fMRI Instagram-like paradigm (~32 adolescents): own photos with many likes activated nucleus accumbens/ventral striatum; peers’ endorsement drove conformity. **The “likes light up reward centers” citation — but a single small acute-response lab study, not a developmental claim.** [PR] Companion: **Sherman et al. (2018), SCAN, 13(7), 699-707**, DOI: 10.1093/scan/nsy051 — *giving* likes also engages reward circuitry.
- ND-10. Crone, E. A., & Konijn, E. A. (2018). “Media use and brain development during adolescence.” *Nature Communications*, 9, 588. DOI: 10.1038/s41467-018-03126-x — The balanced integrative review linking adolescent social-brain sensitivity to media contexts; **states the evidence is “still scarce and results are mixed”** and calls for experimental designs. [PR]
- ND-11. Paulich, K. N., et al. (2021). “Screen time and early adolescent mental health, academic, and social outcomes... (ABCD Study).” *PLOS ONE*, 16(9), e0256591. DOI: 10.1371/journal.pone.0256591 — ABCD baseline (~11,800 9-10-year-olds): significant but **very small** associations in both directions (worse mental health, *more* friendships). [PR]
- ND-12. Nagata, J. M., et al. (2026). “Social media use and early adolescent brain structure (ABCD Study).”

**NeuroImage**. DOI: 10.1016/j.neuroimage.2026.121860 △(verify) — 7,614 youth (10–13): higher daily social media use associated with **lower total cortical thickness/volume** across prefrontal/temporal/parietal regions. Notably, social-media *addiction* scores showed **no** significant regional associations. **Cross-sectional; small effects; cannot establish direction**. The newest and largest structural finding — consistent with harm, not proof of it. [PR]

- **ND-13. Nagata, J. M., et al. (2025). “What we know about screen time and social media in early adolescence: a review of findings from the ABCD Study.” *Current Opinion in Pediatrics*, 37(4).** DOI: 10.1097/MOP.0000000000001462 △(conclusions from abstract) — ABCD synthesis: outcome associations small and mixed; brain structure/function links **inconsistent and modest**; longitudinal/causal designs needed. [PR]
- **ND-14. Wadsley, M., & Ihssen, N. (2023). “A Systematic Review of Structural and Functional MRI Studies Investigating Social Networking Site Use.” *Brain Sciences*, 13(5), 787.** DOI: 10.3390/brainsci13050787 — **The best “how thin is it” source.** 28 studies total; evidence limited, heterogeneous, predominantly correlational; only ONE longitudinal study existed and its associations did not survive FDR correction; “conclusions that problematic SNS use represents a disease process akin to substance use addictions are premature.” [PR-systematic]
- **ND-15. Solly, J. E., et al. (2021). “Structural gray matter differences in Problematic Usage of the Internet: a systematic review and meta-analysis.” *Molecular Psychiatry*, 27, 1000-1009.** DOI: 10.1038/s41380-021-01315-7 — 15 VBM studies (355 PUI vs 363 controls): reduced gray matter in ACC, DLPFC, SMA (reward/inhibitory-control regions); but subgroup analyses yielded no significant clusters. Adjacent field (broad internet use), correlational. [PR-meta]
- **ND-16. Niu, X., et al. (2022). “Meta-analysis of structural and functional brain alterations in internet gaming disorder.” *Frontiers in Psychiatry*, 13, 1029344.** DOI: 10.3389/fpsyt.2022.1029344 — The adjacent, better-studied field the social-media claims borrow from: gray-matter reductions in ACC/frontal regions correlating with impulsivity and severity. IGD is a distinct, more extreme behavior — analogy, not equivalence. [PR-meta]
- **ND-17. Lima Santos, J. P., et al. (2025). “Role of Sleep and White Matter in the Link Between Screen Time and Depression in Childhood and Early Adolescence.” *JAMA Pediatrics*, 179(9), 1000-1008.** DOI: 10.1001/jamapediatrics.2025.1718 — 976 ABCD children: screen time at 9–10 → shorter sleep and lower cingulum-bundle white-matter coherence, mediating depressive symptoms at 11–13. **The strongest mechanistic route — sleep displacement → brain maturation — because it requires no special direct neural action by social media.** Prospective but still correlational. [PR]
- **ND-18. The dopamine / variable-reward layer — label it honestly.** Lembke, *Dopamine Nation* (2021, Dutton) popularizes the dopamine-homeostasis framing [Book/Advocacy]; Schüll, *Addiction by Design* (2012, Princeton UP) is the scholarly source of the “slot machine / intermittent reinforcement” design analogy [Scholarly ethnography — not neuroscience]. The variable-reward *design* of feeds and notifications is real and documented (see #21 — TikTok’s internal habit-formation research). **But direct human evidence that social media dysregulates the dopamine system in children is essentially absent** — the dopamine story is extrapolated from animal reward-learning and gambling literatures. Mechanistic plausibility, not demonstrated fact.

### 3A-3. Layer C — The scientific critique of “rewiring” rhetoric

- **ND-19. Mills, K. L. (2014). “Effects of Internet use on the adolescent brain: despite popular claims, experimental evidence remains scarce.” *Trends in Cognitive Sciences*, 18(8), 385-387.** PMID: 25064168 △(cite via PMID; DOI string unverified) — The canonical corrective: essentially **no experimental evidence** that internet/social-media use alters adolescent brain development in unique ways; correlational imaging cannot distinguish media effects from ordinary experience-dependent plasticity. [PR]
- **ND-20. The “everything rewires the brain” null expectation.** Because all learning and repeated experience produces measurable neural change, a correlation between social-media use and a brain measure does **not** demonstrate pathology or derailed development — the null expectation is that any repeated activity leaves a neural signature. (Anchored by ND-6, ND-10, ND-14.)
- **ND-21. UNICEF Innocenti (2017). Kardefelt-Winther, D. “How does the time children spend using digital technology impact their mental well-being...?”** <https://www.unicef.org/innocenti/media/8181/file/UNICEF-Innocenti-Time-Using-Digital-Tech-Impact-on-Wellbeing-2017.pdf> — Institutional evidence review warning policymakers against alarmist, neuro-deterministic narratives; emphasizes displacement pathways (sleep, activity) over “brain damage” framing. [NGO/institutional]

### 3A-4. The honest synthesis — for the paper’s core question

The question “are we unknowingly damaging the developing human brain, dose-dependent on hours consumed?” decomposes into three claims of very different epistemic status:

1. **“Adolescent brains are developmentally vulnerable to socially-rewarding, self-regulation-demanding products.” — Established** (layer A). This is the defensible strong claim: not that damage is proven, but that the *exposure* is precisely matched to the developing system’s weakest point — early-maturing reward circuitry, late-maturing control circuitry, peak social-evaluation sensitivity, possibly a sensitive period for the social brain.
2. **“Social media use is associated with differences in brain structure and function.” — Partially supported, correlational** (layer B). Maza 2023 (functional trajectories), Nagata 2026 (cortical thickness), Solly 2021 (problematic-use gray matter) all point the same direction, but every one is correlational, effects are small, direction is unresolved (vulnerable brains may seek heavier use), and the one systematic review (ND-14) calls the field premature.
3. **“Social media is rewiring/damaging children’s brains, proportional to hours.” — Not demonstrated.** No experimental

evidence exists (ND-19); the dose-response framing inherits all the problems of self-reported “hours” (see #44); and hours per se is probably the wrong variable — the behavioral literature (§2-3) already shows content, features, and *habitual checking patterns* (ND-8 used checking frequency, not hours) matter more than duration.

**The precautionary asymmetry — the paper’s strongest available argument:** the burden-of-proof question may matter more than the evidence question. We deployed engagement-optimized products to a neurodevelopmentally vulnerable population at global scale *without* safety testing, and the uncertainty cuts both ways: absence of experimental proof of harm is also absence of experimental proof of safety — and randomized long-term exposure trials on children would be unethical to run, so definitive proof may never arrive. This is structurally the tobacco/leaded-petrol epistemic position (while noting the analogy is contested — Odgers #37 would say it’s the video-games panic position instead, #45). NASEM 2024 (#40) is the balanced anchor: no population-level causal conclusion, real mechanisms, design standards warranted regardless.

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## 4. Authoritative advisories & consensus reports

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8. **Office of the U.S. Surgeon General (2023). “Social Media and Youth Mental Health: The U.S. Surgeon General’s Advisory.”** — “Ample indicators that social media can also have a profound risk of harm”; safety cannot currently be concluded; cites Riehm et al. (>3 h/day ≈ doubled risk); calls for safety standards, researcher data access, protective defaults. <https://www.hhs.gov/sites/default/files/sg-youth-mental-health-social-media-advisory.pdf> [Gov]
  9. **American Psychological Association (2023). “Health Advisory on Social Media Use in Adolescence.”** — Use is “not inherently beneficial or harmful”; risk depends on content, developmental stage, vulnerability; recommends monitoring in early adolescence and design change. 2024 follow-up: platforms remain “inherently unsafe” for youth without design changes. <https://www.apa.org/topics/social-media-internet/health-advisory-adolescent-social-media-use> [Professional body]
  0. **National Academies of Sciences, Engineering, and Medicine (2024). *Social Media and Adolescent Health*.** DOI: 10.17226/27396 — Consensus committee: evidence “does not support the conclusion that social media causes changes in adolescent health at the population level,” while documenting real mechanisms of both harm and benefit; recommends industry design standards, transparency, researcher data access. **The single most citable adjudication of the debate.** <https://www.nationalacademies.org/read/27396> [Consensus]
  1. **Haidt, J. (2024). *The Anxious Generation*. Penguin Press.** ISBN 978-0593655030 — The “great rewiring” thesis; four norms (no smartphone before high school, no social media before 16, phone-free schools, more independent play). Hugely influential on AU/UK/EU policy; **not peer-reviewed and heavily contested** (see #37; also “Unsettled science on social media,” *Science* 2024, DOI 10.1126/science.adr1730). [Book/Advocacy]
  2. **Ofcom (2024). “Children and Parents: Media Use and Attitudes Report.”** — Majority of UK under-13s use social media despite platform age limits; documents exposure to harmful content; underpins Online Safety Act codes. <https://www.ofcom.org.uk/media-use-and-attitudes/media-habits-children/children-and-parents-media-use-and-attitudes-report-2024> [Gov]
  3. **eSafety Commissioner, Australia (2021-2025). “Digital lives of Aussie teens”; “Digital use and risk” (ages 10-15).** — ~9 in 10 children 10-15 use social media; ~7 in 10 encountered harm-associated content; ~44% negative experiences; also documents benefits. Evidence base for the under-16 law. <https://www.esafety.gov.au/research/the-online-experiences-of-children-in-australia/report-digital-use-and-risk-among-children-aged-10-to-15> [Gov]
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## 5. Methodological debates — the anchors

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4. Parry, D. A., et al. (2021). “A systematic review and meta-analysis of discrepancies between logged and self-reported digital media use.” *Nature Human Behaviour*, 5, 1535-1547. DOI: 10.1038/s41562-021-01117-5 — 47 studies: self-reported screen time correlates only  $r \approx .38$  with logged use. Undermines the measurement basis of *both* harm and null literatures. The standard measurement-validity citation. [PR-meta]
5. Orben, A. (2020). “The Sisyphean Cycle of Technology Panics.” *Perspectives on Psychological Science*, 15(5), 1143-1157. DOI: 10.1177/1745691620919372 — Historical analysis: novels → radio → TV → video games → social media; science mobilized post-hoc and politicized each time. [PR]
6. Valkenburg, P. M., Meier, A., & Beyens, I. (2022). “Social media use and its impact on adolescent mental health: An umbrella review of the evidence.” *Current Opinion in Psychology*, 44, 58-68. DOI: 10.1016/j.copsyc.2021.08.017 △(standard-form) — 25 reviews/meta-analyses: most effects small/“weak”; heterogeneity is the dominant finding. **Arguably the best single “state of the evidence” citation.** [PR-umbrella]
7. The Ophir-Twenge exchange (2020). Ophir, Lipshits-Braziler & Rosenberg, *Clinical Psychological Science*, DOI 10.1177/2167702619849412 (critique of #4); Twenge et al. reply, DOI 10.1177/2167702619898179. A compact case study in analytic flexibility. [PR commentary + reply]
8. Rausch, Z., & Haidt, J. (2025). “Why Ferguson’s Meta-Analysis Should Not Be Used...” SSRN. DOI: 10.2139/ssrn.5224958 — Alleges coding errors in #32. [Preprint — not peer-reviewed; label as such]

**Methodological checklist for the paper:** (a) correlation  $\neq$  causation and reverse-causation evidence (#30); (b) tiny-but-real vs meaningless effect sizes — the potato debate (#23 vs #10); (c) self-report unreliability (#44); (d) between-person vs within-person designs (#7, #29); (e) heterogeneity — average effects mask vulnerable minorities (#33, #46); (f) the distinct construct of *problematic use* (#15, #16).

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## 6. Regulatory landscape (as of August 2026)

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### 6.1 Australia — first mover, first real-world data

- **Online Safety Amendment (Social Media Minimum Age) Act 2024:** passed 29 Nov 2024, in force **10 Dec 2025**. Platforms must take “reasonable steps” to prevent under-16 accounts; fines up to A\$49.5M; no liability for children/parents. Covered: Facebook, Instagram, Threads, TikTok, Snapchat, YouTube (X, Reddit, Kick, Twitch also announced [verify current list](#)). Excluded: messaging (WhatsApp, Messenger), gaming, education/health; YouTube Kids, Roblox, Pinterest out of scope [△](#). <https://www.esafety.gov.au/about-us/industry-regulation/social-media-age-restrictions> **[Gov]**
- YouTube was originally slated for exemption; reversed July 2025 on eSafety advice; Google threatened legal action [△](#)(verify news URL).
- **eSafety SMMA Regulatory Guidance (Sept 2025):** layered/“successive validation” age assurance; self-declaration alone prohibited; must prevent re-registration, provide appeals, avoid over-blocking adults. Summary: <https://privacymatters.dlapiper.com/2026/02/australias-social-media-ban-and-the-esafety-commissioners-social-media-minimum-age-regulatory-guidance/> **[Legal analysis]**
- **Early outcomes (Mar-Aug 2026):** 4.7M+ under-16 accounts removed/deactivated by mid-Jan 2026; eSafety raised “significant concerns” about all five major platforms and opened formal investigations; ~70% of parents report their child still has accounts; ~50% retained YouTube access; **no measurable decline in cyberbullying or image-based-abuse complaints in first 3 months**. Compliance update: <https://www.esafety.gov.au/sites/default/files/2026-03/SocialMediaMinimumAgeComplianceUpdateMarch2026.pdf> ; analysis: <https://www.techpolicy.press/early-lessons-from-australias-teen-social-media-ban-for-the-rest-of-the-world/> ; <https://www.aljazeera.com/news/2026/8/1/most-australian-teens-still-online-three-months-after-under-16-ban> **[Gov + Journalism]**
- **Criticism:** open letter from 140+ academics calling the ban “too blunt an instrument” (Oct 2024): <https://apo.org.au/node/328608> ; *Lancet Digital Health* commentary on isolation/displacement risks: [https://www.thelancet.com/journals/landig/article/PIIS2589-7500\(25\)00024-X/fulltext](https://www.thelancet.com/journals/landig/article/PIIS2589-7500(25)00024-X/fulltext) ; The Conversation critique of the Age Assurance Technology Trial: <https://theconversation.com/technology-to-enforce-teen-social-media-ban-is-effective-trial-says-but-this-is-at-odds-with-other-evidence-259373> **[Academic]**
- **Political context:** News Corp “Let Them Be Kids” campaign and Haidt’s book widely credited as drivers — the law preceded causal certainty (cite carefully). **[Journalism]**

### 6.2 United Kingdom — layered regime, ban incoming

- **Age Appropriate Design Code (ICO, enforced Sept 2021):** 15 standards — high-privacy defaults for minors, geolocation off, no nudge techniques. Credited with triggering global platform changes (YouTube autoplay-off for teens, Instagram private-by-default under-16). **[Gov]**
- **Online Safety Act 2023:** duties of care; strongest for children (prevent encountering porn/suicide/self-harm/ED “primary priority content”); fines to £18M or 10% global turnover. **Ofcom Children’s Codes** final Apr 2025; child-safety duties + “highly effective age assurance” in force **25 July 2025**; safer algorithmic feeds for children required. <https://www.ofcom.org.uk/online-safety/protecting-children/age-checks-to-protect-children-online> **[Gov]**
- **Enforcement to mid-2026:** fines so far target porn/fringe sites — 4chan £520k (unpaid, defiant); Itai Tech (nudify site) £50k; AVS £1M; 8579 LLC £1.35M; Kick Online £830k. Ofcom’s **Use of Age Assurance Report (Jul 2026):** porn sites largely comply; mainstream social platforms’ ML “age inference” deemed not fit for purpose; formal investigation into TikTok’s age inference. <https://inform.org/2026/03/11/ofcom-steps-up-online-safety-act-enforcement-with-two-further-age-assurance-fines-for-pornographic-platforms-alexandros-antoniou/> ; <https://www.biometricupdate.com/202607/social-media-companies-have-failed-to-enforce-their-minimum-age-requirements-ofcom> **[Gov + Journalism]**
- **Under-16 ban (announced 15 June 2026):** via s.70 Children’s Wellbeing and Schools Act 2026 → powers inserted into OSA; named platforms Snapchat, TikTok, YouTube, Instagram, Facebook, X; messaging apps excluded; also bans under-16 livestreaming, stranger contact, and “romantic companion” AI chatbots for under-18s. Regulations before Parliament by Christmas 2026; in force **Spring 2027**. Plus (15 Jul 2026) **midnight-6am curfews for 16-17s** and default-off engagement-extending features. Evidence cited: 116,211 consultation responses; “9 in 10 parents” support. <https://www.gov.uk/government/news/social-media-to-be-banned-for-under-16s-in-landmark-government-move-to-givekids-their-childhood-back> ; <https://commonslibrary.parliament.uk/research-briefings/cbp-10468/> **[Gov]**
- **Criticism:** EFF, “The UK’s New Under-16 Social Media Ban Will Cause More Harm Than It Prevents” (Jun 2026): displacement, privacy costs of age verification, harm to marginalized youth. <https://www.eff.org/deeplinks/2026/06/uks-new-under-16-social-media-ban-will-cause-more-harm-it-prevents> **[NGO]**
- **Molly Russell inquest (Sept 2022)** — the pivotal UK moment: coroner Andrew Walker found Molly, 14, “died from an act of self-harm while suffering from depression and the negative effects of online content” — online content contributed “in a more than minimal way.” First formal finding anywhere that social media contributed to a child’s death; drove the OSA. <https://techcrunch.com/2022/09/30/molly-russell-inquest-verdict/> **[Gov/coronial + Journalism]**

### 6.3 European Union

- **DSA Art. 28** (minors’ privacy/safety; no profiling ads to minors) + Arts. 34–35 (VLOP systemic-risk duties incl. minors’ mental health); fines to 6% global turnover. **Guidelines on Protection of Minors (Jul 2025):** private-by-default minor accounts, adapted recommenders, disabled engagement-maximizing features. **[Gov]**

- **GDPR Art. 8:** digital consent age 13–16 by member state.
- **Proceedings:** TikTok (opened Feb 2024) — preliminary findings Feb 2026 (addictive design breaches) and **19 Jun / 24 Jul 2026** (minors’ accounts unsafe: public-by-default, minors’ content recommended to all via FYF): [https://ec.europa.eu/commission/presscorner/detail/en/ip\\_26\\_1679](https://ec.europa.eu/commission/presscorner/detail/en/ip_26_1679) . Meta (opened May 2024) — preliminary findings **29 Apr 2026** (failure to keep under-13s out; false birthdates unchecked): [https://ec.europa.eu/commission/presscorner/detail/en/ip\\_26\\_920](https://ec.europa.eu/commission/presscorner/detail/en/ip_26_920) . Transparency findings vs both (Oct 2025). No final fines on minors’ issues as of Aug 2026. **[Gov]**
- **TikTok Lite “Task and Reward” (2024):** Commission proceedings → TikTok’s legally binding commitment to permanently withdraw rewards programme from the EU — first DSA commitments decision: <https://digital-strategy.ec.europa.eu/en/news/tiktok-commits-permanently-withdraw-tiktok-lite-rewards-programme-eu-comply-digital-services-act> **[Gov]**
- **EU-wide minimum age push:** European Parliament resolution 26 Nov 2025 (non-binding): minimum 16 (13–16 with parental consent): <https://www.europarl.europa.eu/news/en/press-room/20251120IPR31496/children-should-be-at-least-16-to-access-social-media-say-meps> ; France/Spain/Denmark/Greece/Slovenia pushing a “digital majority” of 15; EU age-verification mini-app (zero-knowledge proof, EUDI wallet) recommended for deployment by end-2026. **[Gov]**

#### 6.4 United States — statutes stalled, courts active

- **COPPA (1998)** + amended COPPA Rule (enforceable 22 Apr 2025). **COPPA 2.0** re-passed Senate 5 Mar 2026, stalled in House. **KOSA:** passed Senate 91-3 (2024), died in House; folded into **KIDS Act (H.R. 7757)**, **passed House 29 Jun 2026** — Senate pending. <https://www.loeb.com/en/insights/publications/2026/06/childrens-online-privacy-in-2026-congress-stalls-again-ftc-signals-priorities> ; <https://www.techpolicy.press/bipartisan-smorgasbord-of-childrens-online-safety-legislation-passes-the-house/> **[Legal analysis]**
- **State laws vs First Amendment:** Utah (enjoined 2024, NetChoice v. Reyes); Arkansas (permanently enjoined Mar 2025, NetChoice v. Griffin); Florida HB3 (preliminarily enjoined Jun 2025 △appeal posture); Texas SCOPE Act (partially enjoined) + App Store Accountability Acts (UT, TX). **Free Speech Coalition v. Paxton (SCOTUS, 27 Jun 2025)** upheld porn-site age verification — widely read as opening the door to age-assurance mandates. Mississippi HB 1126 left in force on shadow docket (Aug 2025). Tracker: <https://netchoice.org/litigation/> **[Legal]**
- **FTC:** TikTok/Musical.ly \$5.7M COPPA (2019); YouTube \$170M COPPA (2019); Epic Games \$520M (2022); DOJ/FTC v. TikTok COPPA suit (2024, ongoing); 2026 age-verification workshop and policy statement. **[Gov]**

#### 6.5 Other jurisdictions (brief)

- **China:** gaming limited to 1h/day Fri–Sun for minors (2021); Douyin under-14 “youth mode” — 40 min/day, blocked 22:00–06:00, curated content; device-level “Minor Mode” (未成年人模式) finalized Nov 2024, rolling out 2025. Enforcement real (facial recognition) but circumvention via adult IDs common; intertwined with censorship — normative context differs. ITIF analysis: <https://itif.org/publications/2025/05/09/chinas-minors-mode-blueprint-or-cautionary-tale/> **[Gov via analysis]**
  - **South Korea:** 2011 gaming “Shutdown Law” abolished 2021 as ineffective — a key cautionary precedent; no social media ban as of Aug 2026; classroom phone ban from Mar 2026. <https://www.koreatimes.co.kr/southkorea/society/20260210/will-korea-join-global-push-to-restrict-teen-use-of-social-media> **[Journalism]**
  - **Norway:** age-16 **cohort model** (access from 1 Jan of the year a child turns 16); bill to Parliament before end-2026. <https://www.regjeringen.no/en/whats-new/norwegian-social-media-age-restrictions-law-on-track-to-be-introduced-this-year-this-is-how-the-age-limit-for-social-media-will-work/id3157276/> **[Gov]**
  - **New Zealand:** Social Media (Age-Restricted Users) Bill modeled on Australia; paused May 2026. **[Gov/Journalism]**
  - **Canada: Bill C-34, Safe Social Media Act (10 Jun 2026)** — a *conditional* under-16 restriction: platforms demonstrating “adequate safeguards” are exempt — a design-incentive model distinct from AU/UK blanket bans; covers AI chatbots. <https://www.canada.ca/en/canadian-heritage/services/safe-social-media-act.html> **[Gov]**
  - Cross-country maps: <https://cepa.org/comprehensive-reports/mapping-the-spread-of-child-safety-rules/> ; <https://www.visualcapitalist.com/minimum-age-laws-social-media-world-map/>
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## 7. Litigation landscape (as of August 2026)

**The doctrinal shift that unlocked everything:** plaintiffs recharacterized platforms as *defectively designed products* (infinite scroll, autoplay, streaks, notifications, filters, weak age gates) rather than publishers of third-party content — repeatedly defeating Section 230 and First Amendment defenses, and producing the first verdicts in 2026.

### 7.1 US federal MDL — In re: Social Media Adolescent Addiction (MDL No. 3047)

- N.D. Cal., Judge Yvonne Gonzalez Rogers; consolidated Oct 2022 against Meta, Google/YouTube, ByteDance/TikTok, Snap. **3,137 pending actions (Aug 2026)** + ~800 school districts + 40+ state AGs. Court page: <https://www.cand.uscourts.gov/in-re-social-media-adolescent-addiction-personal-injury-products-liability-litigation-mdl-no-3047> △(counts from secondary trackers: <https://mdlupdate.com/mdl/3047-social-media-adolescent-addiction/>)
- **Nov 14, 2023 MTD ruling:** design-defect theories (defective parental controls, age verification, account-deletion barriers, failure to warn) survive §230; algorithm-as-content-curation theories dismissed. **Oct 15, 2024:** state AG consumer-protection and COPPA claims largely survive — Meta’s “yearslong public campaign of deception” outside §230. **Oct 24, 2024:** school-district negligence + public-nuisance claims partially survive. Tracker: <https://www.techpolicy.press/tracker/social-media-adolescent-addiction-personal-injury-products-liability-litigation-mdl-no-3047/>
- **First federal bellwether (Breathitt County Schools, KY) settled pre-trial May 2026** (~\$27M combined △secondary source); Snap/TikTok/YouTube settled first, Meta on the eve of trial.
- **Multistate AG trial vs Meta opened 18 Aug 2026 (Oakland)** — four trial states (CA, CO, KY, NJ); Meta disclosed plaintiffs seek up to **\$1.4 trillion** in statutory penalties. <https://www.claimsjournal.com/news/national/2026/07/07/338654.htm>

### 7.2 The first verdicts (2026) — the watershed

- **K.G.M. v. Meta et al. (JCCP 5255, LA Superior Court)** — first social-media addiction case ever tried. Plaintiff began YouTube at 6, Musical.ly at 10; alleged engineered compulsive use → anxiety, depression, body dysmorphia. Snap settled Jan 22, TikTok Jan 27, 2026 (confidential). **Zuckerberg testified before a jury for the first time (18 Feb 2026). Verdict 25 Mar 2026: Meta and YouTube negligent; \$6M (\$3M compensatory, \$3M punitive)** — first jury finding treating social apps as defective products. Upheld on post-trial motions Jun 2026 △(verify docket); appeals pending. <https://www.npr.org/2026/03/25/nx-s1-5746125/meta-youtube-social-media-trial-verdict> [Journalism]
- **New Mexico ex rel. Torrez v. Meta** — undercover decoy-child-account investigation; alleged enabling of child sexual exploitation. **Verdict 24 Mar 2026: Meta liable; \$375M civil penalties** — first state trial win against a major tech company on child harms. Injunctive (public nuisance) bench-trial phase concluded May 2026 △(outcome unconfirmed); appeal expected. <https://nmdoj.gov/press-release/new-mexico-department-of-justice-wins-landmark-verdict-against-meta/> [Gov]
- **Score as of Aug 2026:** two plaintiff/state trial wins, zero platform trial wins, a pattern of confidential eve-of-trial settlements by Snap/TikTok/YouTube; Meta most willing to try cases.

### 7.3 Landmark appellate ruling on algorithms

- **Anderson v. TikTok, Inc., 116 F.4th 180 (3d Cir. 2024)** — Nylah Anderson, 10, died attempting the “Blackout Challenge” served on her For You Page. Third Circuit held (relying on *Moody v. NetChoice*) that **TikTok’s algorithmic curation is the platform’s own first-party expressive activity, so §230 does not immunize claims based on its recommendations**. En banc denied Oct 2024. △SCOTUS cert/remand status as of mid-2026 unverified — do not assert an outcome. Opinion: <https://www2.ca3.uscourts.gov/opinarch/223061p.pdf> [Court]

### 7.4 Individual suits — formerly-child users and families

- **Spence v. Meta (2022, MDL 3047)** — Alexis Spence, Instagram at 11 (evading age gates); anorexia, self-harm; complaint built on Haugen documents. The signature “now-adult sues over harms as a minor” fact pattern. <https://www.nbcnews.com/tech/social-media/meta-lawsuit-instagram-caused-eating-disorder-self-harm-rcna32221>
- **Rodriguez v. Meta & Snap (2022)** — suicide of Selena Rodriguez, 11; first wrongful-death design-defect suit. **Dawley v. Meta & Snap (2022)** — suicide of Christopher Dawley, 17.
- **Sextortion:** Guffey v. Meta (SC, 2024 — Rep. Brandon Guffey after son Gavin’s death; perpetrator extradited 2025 △civil status unverified); two further family suits vs Meta reported Jul 2026 △names/courts unverified: <https://www.nbcnews.com/tech/social-media/two-families-sue-meta-teens-deaths-suicide-citing-sextortion-scams-rcna248136>
- **Aug 1, 2026 (newest):** Social Media Victims Law Center filing in Delaware Superior Court over four teen suicides (2024–25) vs Meta/TikTok/Snap/YouTube. <https://fortune.com/2026/08/01/4-teen-suicides-spark-new-lawsuit-against-meta-tiktok-snap-youtube/>
- **Adjacent:** Neville v. Snap (fentanyl deaths via Snapchat dealers; survived demurrer 2023): <https://www.bloomberg.com/features/2024-snapchat-teen-fentanyl-crisis-lawsuit/>

### 7.5 State AG actions beyond the MDL

- **41–42 AGs v. Meta (Oct 2023):** addictive design + COPPA (knowingly retaining under-13s). Trial Aug 2026 (\$7.1); 14 more states teed up for Feb 2027 trial.
- **13–14 AGs v. TikTok (Oct 2024):** addictive design, deceptive safety claims, TikTok LIVE virtual-currency exploitation. MTDs

failing — e.g. **Minnesota v. TikTok (Mar 2026)**: §230 and First Amendment defenses rejected (“not for the specific content... but how the app’s features are designed”). [https://www.ag.state.mn.us/Office/Communications/2026/03/23\\_TikTok.asp](https://www.ag.state.mn.us/Office/Communications/2026/03/23_TikTok.asp)

- **New Mexico v. Snap (2024)**: sextortion/CSAM design failures; §230 immunity rejected Apr 2025; in discovery.
- **NJ v. Discord (Apr 2025)** [△status](#); **Louisiana & Texas v. Roblox (2025)**: grooming/child-safety claims.

## 7.6 School districts

- **Seattle Public Schools v. Meta et al. (Jan 2023)** — first district suit; public-nuisance theory for the costs of the youth mental-health crisis. 400+ districts by late 2023; ~800 in the MDL by 2026. First district money: the Breathitt County settlement (May 2026, confidential). <https://www.seattleschools.org/news/social-media-case/>

## 7.7 International accountability

- **UK**: accountability has run through the **inquest system** (Molly Russell, \$6.2) and Ofcom enforcement — essentially no private damages litigation.
- **EU**: DSA proceedings (§6.3) are the enforcement vehicle; potential 6% global-turnover fines.
- **Australia**: eSafety investigations of all major platforms under the SMMA (2026); no fines issued yet as of Aug 2026 [△verify](#).

## 7.8 Children vs parents — the “sharenting” frontier (thin; treat honestly)

**There is no documented body of grown children winning damages from parents over childhood oversharing.** The real landscape: - **Austria 2016 “teen sues parents over 500 baby photos”** — reported worldwide from a single Austrian weekly; never verified, no court record; **likely apocryphal — do not cite as fact**: <https://www.techdirt.com/2016/09/23/austrian-teenager-sues-parents-posting-pictures-her-childhood-to-facebook/> - **Italy, Rome Tribunal 2017-18 (real)**: mother ordered to remove 16-year-old son’s photos from Facebook, €10,000 penalty payable to the son. <https://www.euronews.com/2018/01/09/mum-faces-10-000-fine-if-she-shares-pictures-of-her-son-online> - **Netherlands, Rechtbank Gelderland 2020 (real)**: grandmother ordered under GDPR to delete grandchildren’s photos (posting to social media falls outside the “household exemption”). <https://www.cnn.com/2020/05/22/gdpr-grandmother-ordered-to-delete-social-media-pictures-of-grandkids.html> - **France, Law No. 2024-120 (real statute)**: children’s image rights written into parental-authority law; family judge may bar a parent from posting; extreme cases allow delegation of image-rights authority. Aimed squarely at sharenting. <https://www.twobirds.com/en/insights/2024/france/new-legal-framework-for-childrens-privacy> - **US**: parental immunity + First Amendment make child-v-parent suits near-impossible; the live US development is **child-influencer compensation laws** (Illinois 2023; Minnesota — incl. deletion rights; California 2024). - **Scholarship**: Steinberg, “Sharenting: Children’s Privacy in the Age of Social Media,” 66 Emory L.J. 839 (2017) [△\(verify pagination\)](#); Plunkett, *Sharenthood* (MIT Press 2019). Both argue the interests are real but damages litigation is currently impractical; reform runs through erasure rights.

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## 8. Platform profiles — balanced

(Tag key: harms / positives / changes-under-pressure. Distinguish [PR] research, [Journalism], [NGO], [Platform] claims.)

### 8.1 TikTok

**Harms:** WSJ bot investigation (2021) — sad-content dwell time funneled bots into depression rabbit holes within ~36 min △[Journalism]. CCDH “Deadly by Design” (2022) [NGO] (#19). Amnesty 2023/2025 [NGO] (#20). Kentucky AG internal documents (2024): habit formation ~260 videos; 60-min teen limit internally known to be near-useless (~1.5 min/day change) [Journalism on Industry] (#21). DCU Anti-Bullying Centre “Recommending Toxicity” (2024): manosphere content to male-teen accounts: <https://www.dcu.ie/antibullyingcentre/recommending-toxicity> [Academic]. EU DSA preliminary findings ×2 (2026); Ofcom age-inference investigation (2026); 14 AG suits; DOJ/FTC COPPA suit. **Positives:** STEM feed (default-on for under-18s, US/EU); #BookTok credited with boosting teen reading [Journalism]; creator economy; community for niche/isolated teens; crisis-resource interstitials on harmful searches. **Changes under pressure:** 60-min default teen limit + Family Pairing expansion (2023); under-16 private-by-default, no DMs under 16, no late-night push notifications, livestreaming raised to 18 (2022); TikTok Lite Rewards permanently withdrawn from EU (2024); under-16 deactivations in Australia (Dec 2025).

### 8.2 YouTube (and YouTube Kids)

**Harms:** “Elsagate” (2017) — disturbing algorithmic children’s content [Journalism]. FTC/NY AG \$170M COPPA settlement (2019) → forced “made for kids” regime: <https://www.cnn.com/2019/09/04/youtube-to-pay-170-million-in-ftc-child-privacy-settlement.html> [Gov]. Recommendation research is genuinely mixed — present both: Ribeiro et al. (FAT\* 2020) found radicalization pathways; Chen, Nyhan, Reifler et al. (*Science Advances* 2023) found rabbit holes rare post-2019 and concentrated in users with prior propensities △(verify exact citations); Mozilla RegretsReporter (2021): 71% of regretted videos came from recommendations [NGO]. CCDH “YouTube’s Anorexia Algorithm” (2024) △verify. Co-defendant in the \$6M K.G.M. verdict (2026) — plaintiff started at age 6. **Positives:** the largest informal-learning platform on earth; Pew consistently finds it the most-used teen platform (~93-95%) with comparatively low harm attribution by teens themselves △[Survey]; YouTube Kids curated modes; supervised accounts. **Changes under pressure:** 2019 FTC settlement restructured kids’ monetization; UK AADC → autoplay off + bedtime reminders for teens (2021); limits on repetitive body-image recommendations for teens (2023-25); **AI age estimation, US rollout Aug 2025** (behavioral inference; misclassified adults must verify by ID/selfie/card) — precisely the “age inference” approach Ofcom criticized in Jul 2026: <https://variety.com/2025/digital/news/youtube-ai-age-verification-automatically-restrict-under-18-users-1236488309/>; Australia: under-16 accounts deactivated Dec 2025 (logged-out viewing still possible; YouTube Kids exempt).

### 8.3 Instagram / Facebook (Meta)

**Harms:** Facebook Files internal research (#17); Haugen disclosures (#18); Béjar testimony — 1 in 8 under-16s reporting unwanted sexual advances weekly (#22); 41-state AG suit + \$1.4T penalties trial (2026); New Mexico \$375M verdict (2026); K.G.M. \$6M verdict (2026); EU preliminary findings on under-13 access (Apr 2026); Molly Russell inquest finding (2022). **“Teen Accounts, Broken Promises” (Sept 2025)** [NGO+academic: Molly Rose Foundation, Fairplay, Béjar, NYU/Northeastern]: 30 of 47 safety tools ineffective, discontinued, or easily circumvented; Meta disputes methodology: <https://time.com/7324544/instagram-teen-accounts-flawed/> **Positives:** Family Center; Take a Break / Quiet Mode / nighttime nudges; hidden-words anti-bullying filters; restricted adult-to-teen DMs; on most internal well-being dimensions more teens said Instagram helped than hurt [Industry claim — the necessary counterweight to #17]; identity/support communities; creator economy. **Changes under pressure:** private-by-default under-16 (2021, post-AADC); interest-based ad targeting of teens ended (2021-23); “Instagram Kids” paused permanently (2021); **Teen Accounts (Sept 2024; Facebook/Messenger Apr 2025)** — private by default, strictest content settings, sleep mode 10pm-7am, parental approval for 13-15s to loosen; “PG-13-aligned” teen content standard (Oct 2025); Australian under-16 deactivations (Dec 2025).

### 8.4 Snapchat

**Harms:** fentanyl-laced drug sales via disappearing messages — Neville v. Snap, 60+ deaths alleged: <https://www.nbcnews.com/news/us-news/60-young-people-died-fentanyl-overdoses-lawsuit-snapchat-rcna81629> [Journalism/Legal]; ephemerality complicates parental oversight and evidence preservation; leading platform cited in teen sextortion (Thorn/NCMEC △verify reports); My AI giving inappropriate advice to 13-year-old test accounts (2023) + UK ICO preliminary enforcement notice over My AI risk assessment (2023, resolved 2024) △[Gov]; New Mexico AG suit (2024, discovery); settled K.G.M. bellwether confidentially (Jan 2026). **Positives:** design arguably *reduces* social-comparison pressure — no public like counts, close-friends communication focus; teens report it primarily as a friend-messaging tool [Survey]; Family Center; proactive drug-content detection (claimed >90% proactive removal) [Platform]; Song for Charlie fentanyl-awareness partnership. **Changes under pressure:** mutual-friends-only defaults for minors, no public profiles for minors, contact warnings (2023); My AI parental disable (2023); strengthened UK age assurance; Australian under-16 deactivations (Dec 2025).

### 8.5 Briefly: X, Discord, Roblox

- **X:** post-2022 trust-and-safety gutting; adult content permitted (unusual among majors); Grok “Spicy mode” child-safety failures — Common Sense Media risk assessment (Jan 2026): “among the worst we’ve seen”: <https://techcrunch.com/2026/01/27/among-the-worst-weve-seen-report-slams-xais-grok-over-child-safety-failures/> [NGO]; piloting Grok selfie age estimation; UK OSA age checks reportedly easy to bypass [Journalism]. Minor-marginal in teen usage

[Survey]. Positives thin for minors: real-time news/civic value.

- **Discord:** NJ AG suit (Apr 2025) — predator exposure, easy age falsification: <https://www.njoag.gov/ag-platkin-sues-messaging-app-discord-for-unlawful-practices-that-expose-nj-kids-to-child-predators-and-violent-sexual-content/> [Gov]; grooming-pipeline suits paired with Roblox. Positives: core social infrastructure for gaming/hobby/study communities; important for neurodivergent and LGBTQ+ youth. Teen Safety Assist defaults (2023); excluded from Australia's ban (messaging exemption).
  - **Roblox:** dozens of grooming/exploitation civil suits (2024–26); Louisiana (Aug 2025) and Texas (Oct 2025) AG suits [△verify](#) against primary filings. **Nov-Dec 2025: mandatory facial age estimation for all users accessing chat, age-banded communication** — the most aggressive age-assurance rollout by any platform. Positives: creative/STEM ecosystem (Roblox Studio), creator earnings. Excluded from Australia's ban (gaming exemption).
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## 9. Social Media 2.0 — lessons learned from 20 years (framing for the paper)

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A synthesis of what the evidence, litigation and regulation collectively teach. Each lesson maps to sources above.

**L1 — The business model is the root design constraint.** Engagement-optimized ranking is the common thread through the internal documents (#17, #18, #21), the algorithmic-amplification studies (#19, #20), the design-defect litigation (§7), and every regulator’s remedies (chronological/adapted feeds, disabled engagement-maximizing features). A 2.0 platform must decouple revenue from raw time-on-app for minors, or regulation will do it forcibly (EU Guidelines 2025; UK curfews 2026).

**L2 — Harm is heterogeneous; averages mislead in both directions.** The strongest empirical consensus (#33, #40, #46): a vulnerable minority (~10-20%) is meaningfully harmed, some benefit, most are barely moved. 2.0 design implication: protective defaults sized for the vulnerable tail, not the median user — because you cannot identify the tail in advance.

**L3 — Design features, not “screen time,” are the tractable unit.** The field wasted a decade on “hours per day” (measurement critique #44; Goldilocks #25). What litigation and regulation actually target is *features*: infinite scroll, autoplay, streaks, quantified popularity, late-night notifications, appearance filters, stranger DMs. This is also where the least-contested harms live (sleep #11, appearance comparison #13).

**L4 — Age assurance is now mandatory but unsolved.** Every 2026 regime demands it; every audit shows it leaking (Australia: 70% of parents report circumvention; Ofcom: ML age inference “not fit for purpose”; EU: false birthdates unchecked). The frontier is privacy-preserving verification (EU zero-knowledge mini-app; Roblox facial age banding). A 2.0 platform should treat age assurance as core infrastructure, not compliance theater — and expect over-blocking/under-blocking error costs on both sides.

**L5 — Self-regulation demonstrably failed; the liability turn worked where statutes stalled.** The US passed no major federal statute in 20 years, yet 2026 produced the first verdicts — via product-liability doctrine, not speech regulation (§7). Internal-knowledge evidence (#17, #21) turned “we didn’t know” into “you knew.” 2.0 lesson: document safety decisions as if they will be discovery exhibits, because they will.

**L6 — Bans are politically irresistible but empirically unproven.** Australia’s first 3 months: 4.7M accounts removed, but no measurable decline in harm complaints and ~70% parental-reported circumvention (§6.1). The counter-risks are real and documented: displacement to less-regulated spaces, isolation of marginalized youth (#36, Lancet Digital Health commentary, EFF). Both the UK (blanket ban) and Canada (conditional ban with safe-design exemption) are now live natural experiments — the Canadian model is the theoretically interesting one because it prices safety into design.

**L7 — Whistleblowers, coroners, and grieving parents moved policy more than the academic literature.** Haugen (2021) → state AG suits; Molly Russell inquest (2022) → Online Safety Act; parent campaigns → Australia’s ban. The peer-reviewed literature remained contested throughout (§1). A paper should be honest that policy ran ahead of causal certainty — and analyze whether that was epistemically defensible precaution (cf. tobacco, seatbelts) or moral panic (cf. video games, #45).

**L8 — The next fight is already visible: AI companions and generative content.** UK ban covers “romantic companion” chatbots for under-18s; KIDS Act includes AI-chatbot safety provisions; Canada’s C-34 covers chatbots; Grok’s child-safety failures (2026); Snapchat My AI (2023). Social Media 2.0 will be conversational and synthetic — the age-assurance and engagement-design lessons apply with higher stakes.

**L9 — Children acquired legal personhood against every adult party — including their parents.** The arc runs: children vs platforms (§7.1-7.6) → children vs the state’s inaction (regulation, §6) → children vs their own parents’ disclosures (§7.8: France 2024-120, Italian and Dutch orders, child-influencer earnings/deletion laws). A 2.0 platform should assume the child user has enforceable rights of erasure, earnings, and image control against *all* parties.

**L10 — International regulatory divergence is now a design parameter.** One product must simultaneously satisfy: AU (hard 16 floor), UK (16 + curfews for 16-17s, 2027), EU (safe-by-design + 13-16 consent ages), US (First Amendment limits on all of the above), China (device-level minor mode). Regionalized childhood experiences of the same platform are the inevitable outcome — itself worth a section in the paper.

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## 10. Open questions / gaps to address in the paper

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1. Does account removal reduce *exposure* (logged-out viewing persists — YouTube in Australia) or only *participation*?
  2. Displacement: where did Australian under-16s go after Dec 2025? (Early signals: messaging apps, gaming platforms, VPN circumvention  $\triangle$  — needs data.)
  3. Effect of bans on the vulnerable-minority tail vs the median child (the heterogeneity problem applied to policy).
  4. Privacy cost-benefit of universal age assurance for *adults* (everyone must prove age for children to be excluded).
  5. Whether the 2026 US verdicts survive appeal — if §230 recedes for recommendations (Anderson), the design space changes for every platform.
  6. The counterfactual: would the 2012-onward teen mental-health decline have happened anyway (Odgers' alternative drivers)?
  7. What “safe by design” concretely means — Canada's C-34 exemption criteria will be the first statutory definition attempt.
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## 11. Verification appendix — flags to resolve before journal submission

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**Confirmed this session (live fetch or multiple independent sources):** Australia SMMA in force + enforcement data (4.7M accounts, investigations, parent survey); UK 15 Jun 2026 ban announcement + s.70 CWSA 2026 + Spring 2027 timeline + 16-17 curfews; EU preliminary findings vs Meta (Apr 2026) and TikTok (Feb + Jun/Jul 2026); TikTok Lite withdrawal; EP Nov 2025 resolution; Norway cohort-16; NZ pause; Canada C-34; KIDS Act House passage; COPPA 2.0 Senate re-passage; Ofcom age-assurance report Jul 2026; K.G.M. \$6M verdict; NM \$375M verdict; AG trial opening 18 Aug 2026; Anderson 3d Cir. ruling; Molly Russell inquest; Teen Accounts failure report; Amnesty 2023/2025; CCDH 2022; Surgeon General/APA/NASEM advisories; all [PR] DOIs marked “confirmed” in agent research.

⚠ **Resolve before submission:** 1. DOI strings marked “standard-form” (Twenge & Campbell 2018; Kelly 2018; Riehm 2019; Twenge 2022; Saiphoo 2019; Boer 2020; Coyne 2020; Kreski 2021; Valkenburg 2022) — records confirmed, exact DOI strings not seen verbatim. 2. Ferguson (2025) DOI 10.1037/ppm0000541 — article existence confirmed; DOI unverified. 3. Anderson v. TikTok: SCOTUS cert disposition and E.D. Pa. remand status post-Jan 2025. 4. K.G.M. post-trial ruling (Jun 2026) — secondary source only; pull the JCCP 5255 docket. 5. NM v. Meta injunctive-phase outcome after May 2026 bench trial. 6. MDL case counts and Breathitt settlement figures — from litigation trackers (mdlupdate.com, lawsuit-information-center.com); cross-check PACER/Reuters. 7. Jul 2026 Meta sextortion plaintiffs’ names/courts; Guffey civil procedural status. 8. Current eSafety covered-platform list (X/Reddit/Kick/Twitch); Google/YouTube legal-threat news URL. 9. Denmark under-15 bill status; France Loi Marcangeli status; Florida HB3 appeal posture; Texas app-store injunction status; NJ v. Discord status. 10. Kentucky AG/NPR TikTok internal-docs URL; Béjar testimony transcript; WSJ TikTok bot study cite; Chen/Nyhan/Reifler and Ribeiro exact citations; CCDH “Anorexia Algorithm”; Thorn sextortion reports; Steinberg Emory L.J. pagination; Mozilla RegretsReporter. 11. Austria 2016 sharenting “case” — treat as apocryphal unless a court record surfaces. 12. Neurodevelopment DOI strings: Giedd 1999 (10.1038/13158), Maza 2023 (10.1001/jamapediatrics.2022.4924), Mills 2014 (cite via PMID 25064168), Nagata 2026 NeuroImage (10.1016/j.neuroimage.2026.121860) — articles confirmed, DOI strings not seen verbatim. 13. Nagata 2025 Current Opinion in Pediatrics review — conclusions taken from abstract-level sources; read full text. 14. J. Neurophysiology 2024 review (DOI 10.1152/jn.00282.2024) — author list and detailed conclusions unverified; read before citing.

**Source-quality cautions:** plaintiff-firm pages (socialmediavictims.org, spencer-law.com, mdlupdate.com, sokolovelaw.com) are adversarial — useful for timelines, verify against court records. Avoid SEO-farm sites. Do not cite Grokipedia. Meta-funded data access (#28) should be disclosed where cited.

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*End of baseline. Next steps agreed with author: expand into journal-format draft (structure TBD: target venue, abstract, argument spine), deepen any section on request, and resolve the verification appendix.*