

Written evidence submitted by Equalise: ESRC Centre for Lifecourse Health Equity (NDC0020)

Science, Innovation and Technology Committee Inquiry: Neuroscience and digital childhoods

Equalise: ESRC Centre for Lifecourse Health Equity is a £9 million ESRC-funded research centre based in UCL's Department of Epidemiology and Public Health, with academic partners at City St George's University London, University of Essex, University of Glasgow, University of Strathclyde and Universite Toulouse III. Led by Professors Yvonne Kelly and Anne McMunn, in partnership with experts in policy and the third sector, **Equalise** tackles health inequalities across four themes: Learning, Care, Work and Place. The **Learning** theme focuses on early years and socioeconomic gaps in child development.

Executive Summary

- Digital device use has both benefits (e.g. learning, social connection, support for marginalised groups) and harms (e.g. anxiety, depression, poor sleep, bullying).
- Priorities for future research are threefold: teasing out causal impacts from correlational patterns; improving understanding of the underlying reasons for impacts; and identifying those most at risk.
- No single study design is sufficient; multi-method approaches that triangulate evidence across observational, experimental, and qualitative research are needed.
- Well-designed longitudinal observational studies can contribute meaningfully to causal inference through temporal ordering, replication, breadth of data and natural experiments.

In this evidence submission, we address question 4 in the Terms of Reference which asks, *Is there adequate evidence around the impact of digital devices on the development of children and adolescents?* This note summarises what is known, where the research gaps are, and the research approach necessary to address these gaps.

Overview of What is Known

Benefits of digital device use amongst children and adolescents include knowledge acquisition and social support/connection, especially for marginalised groups, e.g. sexual/gender minorities, those with disabilities/neurodivergences.

Harms include impacts on mental ill health including increased risk of anxiety, depression, self-harm, suicidal ideation, poor body image, low self-esteem, disrupted

sleep, substance (mis)use, and bullying (Bohnert et al., 2026¹; Ng Fat et al., 2021²; Booker et al., 2018³; Kelly et al., 2019⁴).

Priorities for Future Research

There are gaps in our understanding of the impacts of digital device use on child and adolescent development due to limitations of the evidence base. These limitations can be addressed through three key approaches:

- 1. Teasing out causal impacts:** Establishing directionality is essential for identifying causal relationships beyond simple correlations (e.g. young people with pre-existing mental health vulnerabilities may selectively engage with certain online content). Disentangling correlation from causation requires longitudinal population surveys, where individuals report on social media use and mental health at multiple time points.
- 2. Understanding underlying mechanisms:** Identifying the mechanisms linking social media use and mental health is crucial to explain *why* impacts on wellbeing occur. This understanding is necessary to better target and improve support and interventions.
- 3. Identifying those most at risk:** Greater attention is needed to identify at-risk groups by moving beyond average population estimates, which can obscure important subgroup differences. Some groups may be more vulnerable to harm, while others may benefit. Research should also span all developmental stages, including infancy, childhood, and adolescence, since findings from adult studies cannot be assumed to apply to younger populations.

Research Approaches

All study designs have limitations, underscoring the need for multi-method approaches to establish causal relationships, understand underlying mechanisms, and identify those most at risk. This requires triangulating evidence across observational, experimental, computational, and qualitative designs when investigating the impact of digital technologies on young people's wellbeing.

Longitudinal observational studies are widely recognised as complements or alternatives to experimental designs such as randomised controlled trials (RCTs). A key advantage is that they do not require intervention in people's lives. While RCTs are often regarded as the "gold standard" for causal inference, this assumption is problematic in the context of social media use among young people, for two main reasons:

- Ethical and practical constraints:** It is often unethical, and typically impossible to blind participants, to randomise exposure to harmful social experiences, such as cyberbullying or exposure to violent or sexual content.

¹ Bohnert, M., Gracia, P., & Kelly, Y. (2026). Digital Use, Adolescent Mental Health, and Gender: Associations and Pathways Between Digital Engagement and Youth Depressive Symptoms. *YOUTH & SOCIETY*. doi:[10.1177/0044118X261429123](https://doi.org/10.1177/0044118X261429123)

² Ng Fat, L., Cable, N., & Kelly, Y. (2021). Associations between social media usage and alcohol use among youths and young adults; findings from Understanding Society. *Addiction*. doi:[10.1111/ADD.15482](https://doi.org/10.1111/ADD.15482)

³ Booker, C., Sacker, A., Kelly, Y. (2018). Gender differences in the associations between age trends of social media interaction and well-being among 10-15 year olds in the UK. *BMC Public Health*. doi:[10.1186/s12889-018-5220-4](https://doi.org/10.1186/s12889-018-5220-4)

⁴ Kelly, Y., Zilanawala, A., Booker, C., & Sacker, A. (2019). Social Media Use and Adolescent Mental Health: Findings From the UK Millennium Cohort Study. *EClinicalMedicine*. doi:[10.1016/j.eclinm.2018.12.005](https://doi.org/10.1016/j.eclinm.2018.12.005)

Experimental interventions that target overall screen or social media time lack specificity and do not capture exposure to specific types of harmful content.

- **Limited generalisability:** RCTs typically rely on highly selected, often convenience-based samples that are not representative of the wider population. As a result, findings may not generalise beyond narrow groups and require replication across diverse settings.

In light of these limitations, well-designed longitudinal observational studies can contribute meaningfully to causal inference through:

1. **Temporal ordering:** Repeated observations within individuals enable clearer assessment of directionality, helping to address a key limitation of cross-sectional (“snapshot”) studies.
2. **Replication:** Consistent findings across multiple studies, populations, and countries strengthen confidence that observed effects are robust.
3. **Breadth of data:** Longitudinal population surveys collect rich, multi-domain information, allowing researchers to account for a wide range of confounding factors and develop more nuanced explanations of observed relationships.
4. **Natural experiments:** These studies can exploit policy changes, such as regulatory shifts, age restrictions, or school bans, to examine before-and-after effects in real-world settings.

Strengthening the evidence base therefore requires a multi-method approach. Integrating findings across observational, experimental, and qualitative studies provides deeper insights and supports more effective, evidence-informed policy. The UK is a global leader in longitudinal population research, with a strong tradition of birth cohort and household panel studies. Their breadth, representativeness, and rich data make them uniquely well suited to investigating the mechanisms underlying both benefits and harms of digital technologies, and to identifying groups at greatest risk.

Acknowledgments

This response has been prepared by the **Equalise** Learning theme with contributions from:

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