Department for
Science, Innovation
& Technology

Research and analysis

Understanding the impact of smartphones and social media on children and young people: executive summary

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Executive summary

There is growing concern about the risks digital technologies, particularly social media, smartphones and Artificial Intelligence (AI), may pose to individual children and adolescents, including severe outcomes such as sexual exploitation, bullying-related distress and premature death. These individual-level harms require urgent attention from research, industry and policy.

Beyond these individual-level impacts, it is also important to understand the average impact of such technologies across the entire population of children and young people, in order to help inform policy choices that will impact them collectively. While

our public and policy discourse often conflates individual- and population-level impacts, it is important to treat them as distinct when evaluating current research. Department for Science, Innovation and Technology (DSIT) therefore commissioned this report to specifically explore how research of the causal relationship between digital technology use and population-level child and adolescent developmental outcomes can be improved.

This report is the product of a Scientific Consortium comprising 14 leading UK scholars, who collaborated to synthesise existing evidence on population-level impacts of social media, smartphones and AI, review current research funding in this area, and recommend strategic research projects for strengthening the causal evidence base over the next 2 to 3 years. Strategic investment in research has the potential to help position the UK as a global leader in online safety. This research must target the most urgent and policy-relevant questions, codeveloped by policymakers, researchers and affected communities. If causal evidence of technologies' population-level impacts is a priority to be created in the next 2 to 3 years, supporting experimental research and natural experiment evaluations should be prioritised.

Further, investments in improving measures of digital technology use in large-scale UK cohort and household panel assets would generate world-class data assets that could support longer-term research provision.

Evidence review: A systematic and pre-specified synthesis of existing systematic reviews found that adolescents who spent more time on social media reported poorer mental health. This small but consistent correlation located in cross-sectional research could be due to social media negatively influencing mental health, mental health issues influencing social media use, or other factors - such as socioeconomic circumstance, parenting or genetic factors - that impact both social media use and mental health. Longitudinal data also revealed some evidence of a positive association between increased time spent on social media and poorer adolescent mental health outcomes, with evidence suggesting that increased social media use may precede declines in mental health, though the strength and presence of this association varied across studies. However, while longitudinal studies can demonstrate the sequence of events, they cannot confirm causality without the use of more robust causal methods.

Only one review, out of seven, was found to be of high quality. Further, the quality of the majority of primary studies included in the reviews was also of low quality. This could, in part, explain why there was substantial variation in what primary studies found within each of the reviews. Further, our evidence synthesis did not find any reviews on the impact of time spent using AI chat applications or smartphones on

adolescents' mental health and wellbeing.

In our supplementary narrative review, we found no experimental studies on healthy adolescents that sought to reduce time spent on social media to see if it affected adolescent mental health or wellbeing. Due to this substantial gap, our ability to determine whether there is a causal impact of time spent on social media on population-level mental health and wellbeing remains poor. High quality experimental studies that test whether reducing adolescent social media use improves mental health would improve our understanding of whether there is a negative causal relationship.

Further, it is widely recognised by academics that research on time spent using social media routinely fails to investigate how its impact on individuals - both positive or negative - might be determined not by time spent engaging with platforms, but by the specific activities engaged in, types of content consumed, context of use, or what other activities are being displaced. In our narrative review, we therefore also examine the impact of content exposure, finding evidence that its effects can be either positive or negative depending on the type of content engaged with.

This narrative review additionally examined evidence regarding the effectiveness of school level smartphone restrictions to improve children and young people's mental health and wellbeing. Evidence was more consistent for restrictive school phone policies positively influencing in-school behaviours (e.g. reducing screen time in school and bullying, or increasing physical activity), yet it was less robust and more context-dependent for mental health and wellbeing outcomes that are likely determined by both in- and out-of-school factors.

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Funding landscape review: Our review of past, current and planned research activities investigating child and adolescent developmental outcomes and social media, smartphone and AI chat application use in the UK and other countries, found that despite the need for more experimental or quasi-experimental studies to improve the ability to make causal claims at population-level, funding remains concentrated on other methods.

More funding currently supports research on adolescents rather than children. Similarly, more funding supports research on wellbeing and non-clinical mental health outcomes rather than other developmental outcomes, such as physical health (including exercise and sleep), behaviours and academic performance. While this might align with current policy and societal priorities, it is a funding gap.

The UK is furthermore not yet supporting extensive research on how AI impacts children and adolescents. It also lacks large-scale and strategic research investments present in other countries, such as research centres, that would allow for a more proactive and effective research approach.

Recommendations for potential research investments

1. Any DSIT-funded research must target the most urgent and policy-relevant questions. Prioritisation is best co-developed by policymakers, researchers and affected communities and consideration should be given to whether generating high-quality causal evidence of population-level impacts is a priority.
2. If generating causal evidence is confirmed as a research aim, the most effective approaches will be natural experiment evaluations (e.g. of policy changes or real world events) and Randomised Controlled Trials (RCTs). These methods offer rigorous insight, and RCTs can scale to small or large interventions — even though larger efforts might be difficult to deliver in time. Given that technology companies already conduct frequent experimental evaluations of their products, it would be worth exploring regulatory mechanisms for mandating collecting and sharing of societally relevant aggregate outcome data during such tests (e.g. mood or wellbeing), particularly concerning children and adolescents.
3. Beyond the short-term 2 to 3 year time scale for producing research outputs, investment should prioritise enhancing existing large-scale UK cohort and household panel study investments with improved measures of digital technology use. This would generate world-class data assets and support long-term research. A national research strategy on online harms could further coordinate long-term investment and ensure alignment across government, funders and research communities.
4. If research moves beyond strict causal research questions, diverse disciplines and methods will also be essential to capture the complexity and dynamism of digital experiences and impacts, including ensuring young people's online wellbeing and safety through improved social media platform design. For example, developing and testing interventions that help individuals, families, schools and communities navigate a rapidly evolving digital environment should also be seen as a priority. This includes promoting strategies that mitigate harm and build digital resilience. Investments in a) allowing children and adolescents, as well as other affected communities, to be engaged in research as co-creators, and b) research collaborations to create better theory, should be seen as foundational investments that would also increase research quality across the landscape.

Strategic, sustained investment in research and infrastructure has the potential to position the UK as a global leader in online safety, allowing good quality scientific evidence to drive - not delay - effective responses to the many growing challenges children and adolescents face in a digital world.

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