DIGITAL ENVIRONMENTS AND YOUTH MENTAL HEALTH

A GLOBAL RESEARCH AGENDA

oxygen

Authors

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Acknowledgements

We acknowledge the traditional custodians of lands throughout Australia and we pay our respects to the Elders past and present, for they hold the memories, culture and dreams of the Aboriginal and Torres Strait Islander people. We recognize and respect their cultural heritage, beliefs and continual relationship with the land.

CONTENTS

A NOTE FROM OUR YOUTH ADVISORS

“As a young person navigating multiple cultural influences, digital environments were shaping me long before I could name their influence. Online, I found empowerment and solidarity, but also moments of hostility and unrealistic expectations, quietly shaping how I saw myself. Looking back, the duality of those experiences isn’t random, but rather it reflects how these spaces were, and continue to be, built.

That’s why this project matters. Youth mental health can’t be separated from the digital ecosystems we grow up in. These platforms determine whose voices are amplified, what norms are reinforced, and whether young people feel seen or sidelined.

Young people are often thought of as passive users but we can also be the experts, especially when it comes to navigating digital life. Our insights should shape the global standards and policies that govern these environments. If this project leads to stronger safeguarding, more culturally responsive design, and meaningful youth partnership in research, then we can build digital worlds that protect and empower not just young people, but everyone.”

Adriel, 19

“For too long, youth have been held hostage in hope that change is coming, and mental health concerns are being actioned rather than just discussed. This report is the first step to actioning that change, and I am proud to have had a hand in the process.

Digital media has formed the bedrock of societal socialization, playing a critical role in shaping youth identities and fostering safe spaces. Nevertheless, the speed at which information and media is forced upon young viewers is deeply troubling, placing undue mental stress as distressing content is often shown without warning.

The internet is not the space it was five years ago. Its rapid evolution and the infiltration of artificial intelligence have given rise to a new era of mental health concerns for youth. It’s time policy gets ahead of problems, not the other way around.”

Rumaysa, 18

“Digital environments have become woven into our daily routines so seamlessly that engaging with them feels as habitual as brushing our teeth. Whether we actively choose to or not, we are constantly exposed to online spaces that shape how we connect, learn, and understand ourselves and our surroundings. For me, these environments have been powerful places of cultural and identity discovery, but they have also been sites of comparison, pressure, and identity-based questioning.

Digital ecosystems influence youth mental health in ways that are complex, intersectional, and still poorly understood. Few global initiatives have attempted to explore this landscape meaningfully, and even fewer have centred young peoples lived realities while doing so.

My hope is that this work will contribute to better understanding the opportunities digital spaces offer and the vulnerabilities they can create. By integrating youth perspectives, I envision that future research, interventions, and protections are grounded in the realities of the digital generation.”

Neerja, 19

“I just wanted to reiterate how grateful I am for the opportunity to contribute to such a fascinating topic. When I was previously on the [name redacted] Youth Advisory Group for mental health, [digital environments and their impact on youth mental health] was essentially all that was discussed (being pre-social media ban). Also, in my political science minor at university it's been a huge focus of my attention as well. I feel very fortunate to be able to use this experience, as well as my broader experience as a young man who grew up online, to help guide discussions.

It has often frustrated me that policy and research efforts seem to miss just how nuanced, complex, and fast moving (not to mention incomprehensible to many!) the experience of being a young person on the internet is, so it's excellent that this project exists to better capture that. I feel confident that the Delphi results are a clear step in the right direction.”

Saul, 19

EXECUTIVE SUMMARY

THE CHALLENGE

- **Digital environments are pervasive,** shaping how young people connect, learn, and develop.

- **Youth mental health is worsening globally,** representing a major public health concern.

- Evidence on the impact of digital environments is **mixed, complex, and bidirectional,** showing both risks and benefits.

- **Key gaps in research persist,** including limitations in methods, a lack of causal evidence, and insufficient attention to diverse populations.

- The evidence base lacks **global representation,** with most research conducted in high-income settings.

- Policymakers must **act urgently,** often in the context of **scientific uncertainty.**

As such, there is an urgent need for coordinated, consensus-driven research priorities to guide meaningful, age- and context-appropriate research.

PROJECT AIM

This project aimed to rapidly develop research priorities related to digital environments and youth mental health.

These were obtained via **a global real-time Delphi study** with:

24
professionals
(subject-matter experts)

22
young people
(experts by experience, aged 16-20)

Experts from around the world **identified and prioritized the most important research areas,** leading to validated, consensus-driven research priorities to guide a future global research agenda.

WHAT WE FOUND

There was strong consensus that future research should prioritize:

1. Impacts across development

- Including positive and negative impacts of digital environments
- A focus on children and developmental differences

2. Content exposure

- Suicide and self-harm
- Disordered eating
- Harmful or age-inappropriate content

3. Risk experiences and safety

- Cyberbullying, grooming, non-consensual image sharing
- Broader risk and safety outcomes

4. Social functioning

- Effects on relationships, connection, and interpersonal dynamics

5. Underlying mechanisms

- Including the role of algorithms, platform features, and AI systems

6. Governance and policy

- Research must be independent from industry influence
- Evidence should directly inform policy, standards, and regulatory frameworks

HOW TO ADVANCE THE FIELD

- **Strengthen methodological rigour** (causal, longitudinal, and nuanced measurement)
- **Focus on specific features and experiences** – not just overall use
- **Embed youth participation** in all stages of research
- **Ensure global representation and equity**
- **Strengthen pathways from research to policy and practice**

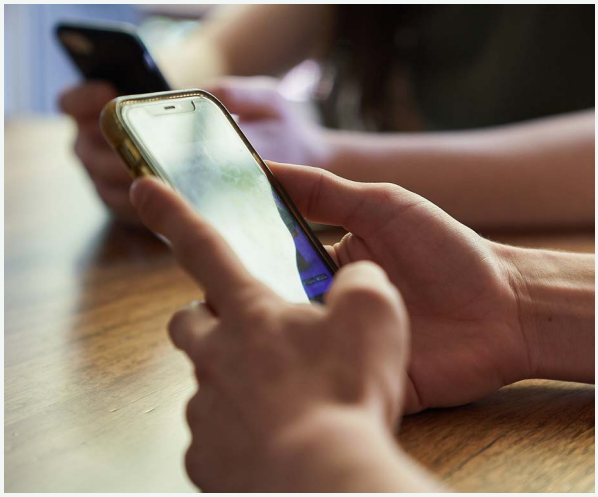
The challenge is no longer identifying what to study. It is ensuring that research is coordinated, rigorous, globally-relevant, and translated into action.

BACKGROUND

Across the world, children and young people are growing up in digital environments that shape their social lives, education, identity development, and access to information.

Digital environments, including social media, online communities, gaming platforms, and emerging generative artificial intelligence (AI) technologies, offer important opportunities for connection, learning, creativity, and help-seeking. At the same time, there are growing concerns about their potential to negatively impact youth mental health and wellbeing. This comes at a time when rates of **psychological distress and mental ill-health among young people are continuing to rise globally**, described as a public health crisis (Kieling et al., 2024; McGorry et al., 2024; McGorry et al., 2025; UNICEF, 2025; WHO, 2025).

Despite the scale and urgency of these concerns, **current evidence does not point to a simple or uniform relationship between digital environments and youth mental health**. While young people represent the highest users of digital environments (Statista, 2023), global evidence highlights a heterogeneous pattern of findings about their impact on mental health (Agyapong-Opuku et al., 2025; Ferguson, 2026; Maheux et al., 2024; Przybylski et al., 2020; Teague et al., 2026; Valkenburg et al., 2022; WHO, 2025). Academic literature consistently characterizes the relationship between digital environments and youth mental health as highly variable, rather than uniformly helpful or harmful. This indicates that **the influence of digital environments is more complex and bidirectional than public discourse often implies** (Przybylski & Weinstein, 2017). For instance, poor mental health may prompt increased use of digital technologies as a coping or distraction strategy, while heightened engagement may, in turn, intensify existing vulnerabilities (Odgers et al., 2020).



A note on artificial intelligence

Recent advances in digital environments have been marked by the rapid integration of generative AI and large language model chatbots into the everyday lives of young people. This shift has been accompanied by growing concern regarding the implications of these technologies for youth mental health (Mansfield et al., 2025), particularly as they are increasingly used for information-seeking, social interaction, emotional support, and access to mental health information (Cross et al., 2024). Unlike earlier digital mental health tools such as apps and virtual reality, which have struggled to sustain engagement, AI chatbots are already being used by millions – often without being designed, marketed, or trained to provide emotional support (Torous & Cipriani, 2025).

However, most generative AI currently sits within the consumer wellness space rather than the healthcare space. As these tools move closer to clinical use, the demands on evidence, regulation, and safety will intensify. Current evaluations remain limited: benchmarking standards are fragmented across jurisdictions, training data is often opaque, and early trials have relied on weak comparators such as waitlist controls, establishing feasibility but not efficacy. Concerning signals are also emerging, including reports of AI-associated psychotic symptoms, parasocial attachment to chatbots, and patterns of dependence. Research is needed not only on how AI tools help young people, but on how to detect harms, define adverse events, and ensure that human oversight remains part of any AI-mediated support.

Given the time required for research regarding young people's use of AI to be published and translated, few studies identified in our search focused specifically on AI. Despite this, generative AI is a rapidly growing and increasingly important digital environment to consider moving forward.

Furthermore, individual variability plays a critical role in shaping outcomes. Some individuals experience negative consequences, others derive social or emotional benefits, and many show no measurable impact. Other demographic and developmental characteristics such as age, gender, and sexuality also impact these associations (La Sala et al., 2025; Orben et al., 2024). Indeed, more recent advancements in digital environment design features (such as infinite scroll and personalized recommender systems) are also concerning given they promote addictive and repetitive patterns of use. This may be particularly harmful for younger populations who may struggle to regulate their usage and behaviour (Flayelle et al., 2023; Montag et al., 2024).

Despite these issues being pervasive in public and academic debates for some time, the recurrence of inconsistent and mixed findings underscores the need for more rigorous research to understand both the risks and benefits of digital environments for young people globally. Indeed, as governments around the world look to regulate how young people access and experience digital environments, policy decisions are being made prior to the establishment of strong scientific evidence. For example, Australia has recently introduced a minimum age requirement that restricts those aged under 16 from accessing certain social media platforms (Online Safety Amendment [Social Media Minimum Age] Bill 2024, Aus). While this seeks to mitigate potential harms and may temporarily minimize exposure to harmful content for some, it also risks removing an avenue of support for isolated young people (Robinson et al., 2025). This approach is also under scrutiny for disproportionately impacting young people, without enforcing design changes by technology companies and social media platforms. Results from a longitudinal evaluation (Stevic et al., 2026) will provide critical evidence on the impact of the legislation as other countries explore adopting the same approach.

Despite rapid growth in research over the past two decades, understanding in this field remains limited. Much of the literature continues to rely on cross-sectional designs, which do little to advance understanding of causality, mechanisms, or change over time. As a result, **longstanding questions persist about the potential risks and benefits of digital environments** such as which contexts may be unsafe, for whom, and at what developmental periods. In a recent consensus statement from 120 international experts, priorities identified for the field included standardizing research constructs/measurements, investigating risk and protective factors, expanding beyond correlative associations, and conducting research outside high-income countries (Capraro et al., 2025). Continued calls for the same methodological advances in future research point to the **need for a more coordinated and global effort to meaningfully progress the field.**

Addressing these gaps requires input from diverse global stakeholders, including both professionals and young people, whose lived experiences and expertise reflect the varied contexts in which digital environments are used.

This challenge is worsened by gaps in global representation. Most of the research in this field is conducted across high-income countries, with regions in the Global North such as Europe and North America, as well as Oceanic countries such as Australia and New Zealand, reflected in 83% of studies in this field, and only 17% of studies from the Global South (Fassi et al., 2024). This **geographic concentration limits the generalizability of findings to diverse cultural, economic, and social contexts worldwide** and fails to reflect the online experiences of young people in different parts of the world. Indeed, associations between social media use and mental health outcomes have differed across countries. For instance, the Health Behaviour in School-aged Children Survey reported differing associations between experiences of cyberbullying victimization, perpetration, and sleep-onset difficulties as they relate to social media use in only some of the 42 countries included (Craig et al., 2020). A review of research in the Global South highlights the need to consider how differences in digital access as well as societal inequalities within regions may exacerbate harms or benefits of social media use (Ghai et al., 2022). Further, cultural factors also appear to influence vulnerability to the effects of social media use, with individualistic societies self-reporting stronger associations between depression and social media use compared to collectivistic societies (Tiezzi & Tiezzi, 2025). Such variation may also reflect broader differences in digital and mental health literacy, including the extent to which parents and carers feel equipped to support young people's online engagement (La Sala et al., 2024).

Responding to these issues, recent World Health Organization (WHO) guidance on the digital determinants of youth mental health highlighted an urgent need for coordinated, cross-sector research that can inform effective policy and practice at a global scale (WHO, 2025). Policymakers are increasingly required to make decisions in the context of scientific uncertainty and rapidly evolving technologies. At the same time, the pace of technological change continues to outstrip the development of a stable evidence base. **Together, these factors create an imperative for a structured, consensus-driven research prioritization exercise to identify the most pressing and actionable areas to address in future research.**

Young people are not only the primary users of digital environments but also important people to consider when understanding their impact, yet their perspectives are often underrepresented in research agenda setting.

> *"Because in my Muslim community, my Indian community, it's not something that they talk about. We've had a recent mental health epidemic regarding social media. Students came forward and said they feel so depressed."*
>
> *Youth advisor*

> *"Young people have said that they're scared for the future. Not just geopolitically, but because they compare themselves to idealized influencers and feel they won't measure up."*
>
> *Youth advisor*

Digital environments

Digital environments have been defined as technology-mediated spaces where people interact, access information, communicate, or carry out activities through digital platforms, tools, or systems. This broadly includes social media and AI platforms, as well as gaming, virtual reality, or other digital contexts that facilitate one-to-one or one-to-many interaction or communication. For this project, digital environments include only those that are freely accessible and available to global users (i.e., you do not have to pay or be a participant in a study to gain access). Digital health and therapeutic interventions have been excluded.

PURPOSE OF THE PROJECT

The purpose of this project was to develop a consensus-based global research agenda on digital environments and the mental health of children and young people. This objective was based on a request from WHO for a rapid, structured research prioritization exercise that could engage interdisciplinary experts and young people across diverse world regions.

This project aimed to:

1. **Develop a consensus on priority research areas, informed by experts and young people.**
   Given mixed findings and divergent academic views on the benefits and risks of digital environments, the project aimed to identify areas of agreement about critical knowledge gaps that must be filled to guide future research, policy, and practice.

2. **Ensure that global and diverse perspectives shape future research priorities**.
   Young people are both the primary users of digital environments and those most likely to be affected by related mental health impacts, yet their views are rarely incorporated into research that impacts them. This project convened two groups of participants (youth and professionals) to ensure that both perspectives directly informed the development of research priorities.

3. **Generate policy-relevant, actionable, and timely research priorities to inform decision-making.**
   This project aimed to identify high-priority, feasible research areas aligned with the information needs of policymakers, practitioners and other decision-makers seeking to protect and promote the mental health of children and young people in digital environments.

4. **Provide a rigorous, transparent, and efficient methodology within a rapid timeline.**
   By conducting a real-time Delphi (RTD) study using 4CF Halnyx (The Future Literacy Company, n.d.) as the RTD platform, we were able to achieve continuous feedback, rapid consensus formation, and international participation despite time zone and scheduling constraints. This methodology is well suited to a limited timeline and the need for rapid, credible outputs.

5. **Support WHO and the wider research community in understanding key research priorities in the rapidly evolving field of digital environments and youth mental health.**
   The findings from this project can support efforts to ensure digital environments protect and promote youth mental health and reduce harm and can contribute to streamlining future research initiatives that will better inform policy decisions.


REVOLUTION IN MIND

METHODS

OVERVIEW OF APPROACH

This project combined a rapid review of recent evidence with an international consensus process.

First, a targeted review of recent literature was conducted to identify key gaps and emerging areas of research relating to digital environments and the mental health of children and young people. These findings were used to develop an initial set of research topics.

Second, a real-time Delphi (RTD) study was conducted with two international panels consisting of young people and professionals/subject-matter experts. Participants rated the importance of a broad range of research areas, with opportunities to review group responses and refine their ratings over time. This iterative process enabled areas of agreement to emerge across diverse global perspectives within a relatively short timeframe.

CONSENSUS PROCESS

Both young people and professionals rated each research area on its level of priority for future research (from "Not a priority" to "Very high priority"). Responses were analyzed to identify areas of high importance and strong agreement within and across panels. Research topics that met predefined thresholds for both importance and consensus were considered priority areas for inclusion in the final narrative synthesis of results.

This approach ensured that the resultant priorities were grounded in both the current evidence base and the perspectives of young people and international experts, reflecting a balanced and globally-relevant set of research directions.

For a detailed overview of the Methods, please see Supplementary File 1.

INVOLVEMENT OF YOUNG PEOPLE

Youth involvement was embedded throughout each stage of this project.

Young people as advisors

Four youth advisors were involved in this project. They were supported and supervised by the Orygen project team. They contributed to shaping the research questions and scope, reviewing language used within the RTD survey, and ensuring cultural and developmental appropriateness. They were actively involved in the interpretation of project findings and development of this report.

Young people as consultants

A youth consultation was held to supplement initial item generation. The purpose of this consultation was to discuss young people's experiences and perspectives relating to digital environments. Young people were asked about their views on the harms and benefits of digital environments, what they think researchers should focus on, and what sort of study designs they think best answer those questions. Given the lack of published academic literature pertaining to newer forms of digital environments (e.g., generative AI tools, AI companions, etc.), their perspectives on these environments were then incorporated into the RTD item bank.

Young people as experts by experience

Youth panel members in the RTD survey were young people aged 16–20 who were involved in formal youth advisory groups, advocacy work, or leadership roles relating to youth wellbeing or mental health, human rights, online safety, or digital policy. Youth networks and groups were approached with invitations for young people to participate. Invitations to young people spanned all WHO regions to ensure global representation.

INVOLVEMENT OF PROFESSIONAL ADVISORS AND STAKEHOLDERS

To support the scientific rigour, relevance, and global applicability of this work, professional and expert advisors were involved throughout the project's design, implementation, interpretation, and dissemination.

The following **subject-matter expert advisors** provided input into every stage of the research and contributed to its development and reporting:

- **Professor John Torous** MD, MBI - Director of Digital Psychiatry, Department of Psychiatry, Beth Israel Deaconess Medical Center (BIDMC), Harvard.
- **The International Association for Child and Adolescent Psychiatry and Allied Professions (IACAPAP)** – IACAPAP is registered as a not-for-profit association and a non-state actor in official relations with WHO.

Professional panel members were academic experts who were first and last authors of the publications included in the rapid review, as well as additional identified experts with extensive research experience and publication history in the field of youth mental health and digital environments.

> *"Everyone has such a strong opinion on the topic. It's quite exciting to be able to reflect on our own experiences and think about how we can improve the experiences of others. It's been very empowering."*
>
> *Youth advisor*

FINDINGS

PARTICIPANTS

PROFESSIONALS

Of the 134 professionals invited to participate, 31 consented and 22 completed the RTD survey.

Professionals were largely based in high-income countries (95.5%; predominantly Europe: 63.6%) and most identified as female (63.6%). Many worked as researchers or academics (81.8%), and they spanned a range of career stages. Professionals reported frequent engagement with digital environments, and most expressed a mixed but cautious view of the impact of digital environments on youth mental health. Demographic and professional characteristics of the sample are detailed in Appendix A (Table 1).

YOUTH

The youth sample comprised young people aged 16–20. Most identified as female (65.4%) and were living in high-income countries (85%). Most were students (57.7% tertiary; 26.9% secondary) or engaged in part-time work (34.6%). Young people reported high levels of digital engagement (76.9% "Very high"), with most spending more than 6–8 hours online per day. Social media, messaging apps, and generative AI tools were their most-used platforms. The majority reported lived or living experience of mental health challenges (84.6%); among those with lived experience, about half disclosed both personal experience and supporting someone else. Similar to the professionals, young people held mixed views about the impact of digital environments on youth mental health. Demographic and digital characteristics of the sample are detailed in Appendix A (Table 2).

REAL-TIME DELPHI

The RTD survey consisted of 123 individual statements (derived from the rapid review and youth consultations) that were rated independently by both panels. As shown in Appendix B, 52 (42.3%) items were rated as high priority by the professional panel, and 91 (74.0%) items were rated as high priority by the youth panel. Forty-six (37.4%) items were considered high priority by both panels. The overlap between panels reveals a core set of shared priorities, while differences point to areas where perspectives diverge.

HIGH PRIORITY RESEARCH AREAS

For the purposes of this report, items that were endorsed by both panels have been considered high priority research areas. A full list of items that were rated by the panels and their ratings are displayed in Appendix B. The top 10 highest-priority research areas (reflecting very high importance ratings and very strong consensus) are summarized in Figure 1.

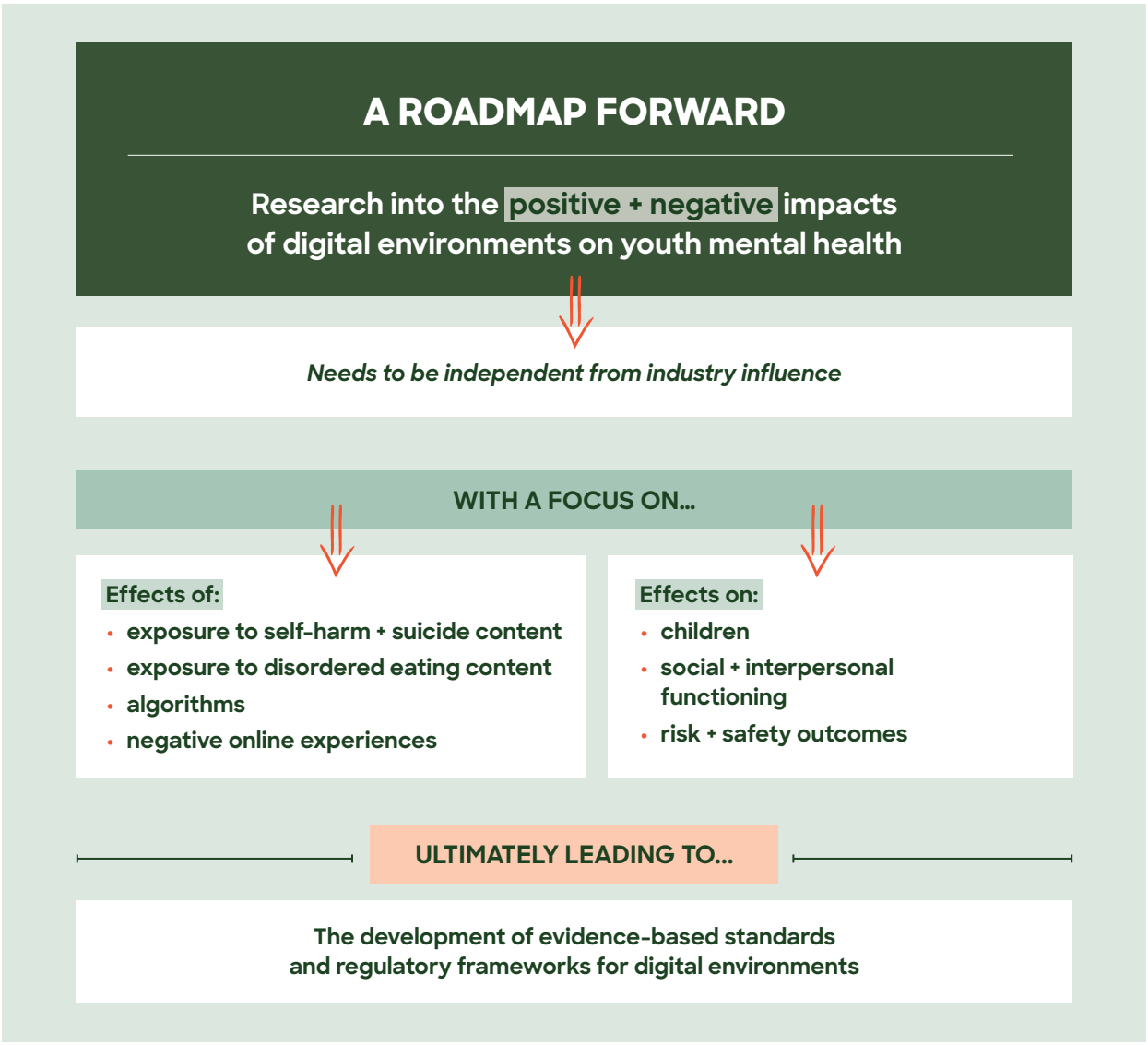


FIGURE 1. A roadmap forward based on the top 10 highest-priority research areas

To support interpretation, items that reached consensus across both panels have been synthesized using a structured thematic approach. Specifically, individual items were grouped into conceptually related domains and then organized according to two phases of the research process: (1) conceptualization (what to research), and (2) methodological priorities (conduct and design). This approach allows for a clearer understanding of how individual priorities relate to broader areas of research need.

CONCEPTUALIZATION OF RESEARCH (WHAT TO RESEARCH)

There was strong consensus that several areas require urgent research attention. Professionals and young people (hereafter collectively referred to as experts) strongly agreed that research should focus on **both the positive and negative impacts** of digital environments, should aim to understand the **specific mechanisms** underpinning the relationship between digital environments and mental health outcomes, and should examine **individual differences** in this relationship.

High priority was placed on examining specific exposures and experiences within digital environments. The experts agreed that research should examine the impact of **exposure to content related to violence, pornography, suicide or self-harm**, and **disordered eating** on mental health. They also agreed that research should examine the concept of **"digital stress"** (e.g., stress arising from managing online communication, self-presentation, and social expectations in digital environments) and how it relates to youth mental health, and should **develop tools and resources to address this.**

1. Priority digital environments and platform features

In addition to these core research topics, experts identified specific digital environments and platform features as priority areas for investigation. **Multimedia messaging apps** (such as Snapchat and WhatsApp) and **short-form content platforms** (such as TikTok) were rated as the most important digital environments for investigation. Additionally, examination of **algorithms**, **recommender systems** (e.g., TikTok's "For You" page), **image filters**, **AI-generated content**, **reward systems**, and **links to age-inappropriate content** were considered highest priority.

The experts were presented with a series of items specifically related to social media, AI, and online gaming. They agreed that research into **social media** should examine its impact on **social and interpersonal functioning**, **risk and safety outcomes**, and **physical health**. They agreed this research should also specifically examine the impact of **social connections and interactions** (e.g., following/unfollowing, friending/unfriending, tagging/untagging) and **negative experiences** (e.g., cyberbullying, being stalked or groomed, having images shared without consent).

Regarding AI, the experts believed that research should examine the impact of **publicly available generative AI** on **emotional and psychological health**, and should specifically examine the impact of the following features:

- **Human-likeness and relational roles** (e.g., empathic/supportive language, social presence, friendship-like or companion roles)
- **Therapeutic or support-like functions** (e.g., providing psychological advice, structured interventions, or acting as a primary support tool)
- **Romantic or sexualised interactions** (e.g., AI being perceived as a romantic partner or sexual entity)

The experts also agreed that research should lead to the development of tools or resources to **improve social media and AI literacy**.

Regarding online gaming, impacts on **social and interpersonal functioning** were rated as top priorities for research.

2. Cross-cutting priorities

More broadly, the experts agreed that research should **meaningfully engage young people with lived experience**, and that **research and public health agendas should be independent from industry influence**. The experts agreed that research should **develop standards or frameworks for regulation** of digital environments (i.e., that research should inform policy decisions) and should **develop tools and resources for policymakers to support young people** within digital environments. They agreed that research should **understand the impact of regulatory changes** influencing digital environments.

> *"These algorithms deliberately shift you towards content that gets reactions. It's like a lot of things from the fringes end up coming into mainstream... It gets reactions because it's controversial."*
>
> *Youth advisor*

> *"[For some] young people who spend hours on gaming... [they feel], I guess, connected in that sense, rather than [with] offline connections."*
>
> *Youth advisor*

METHODOLOGICAL PRIORITIES (CONDUCT AND DESIGN)

1. Measurement

Experts emphasized that research should **move beyond simple metrics such as time spent online** and should **explicitly disentangle the type and quality of use** (e.g., specific exposures, interaction qualities, and emotional responses to content). They also agreed that research should **use, or develop where necessary, validated measures** to assess these specific features to enable robust comparisons across studies.

2. Causality and longitudinal research

The experts agreed that research should establish whether there is a **causal relationship** between digital environments and youth mental health, including the **strength and direction** of the relationship, and should examine the **long-term effects** of digital environments on youth mental health.

3. Platform diversity

Experts agreed that research examining social media should **focus on a range of platforms**, rather than only one platform (e.g., Facebook) which may cause bias and limit the generalizability of findings.

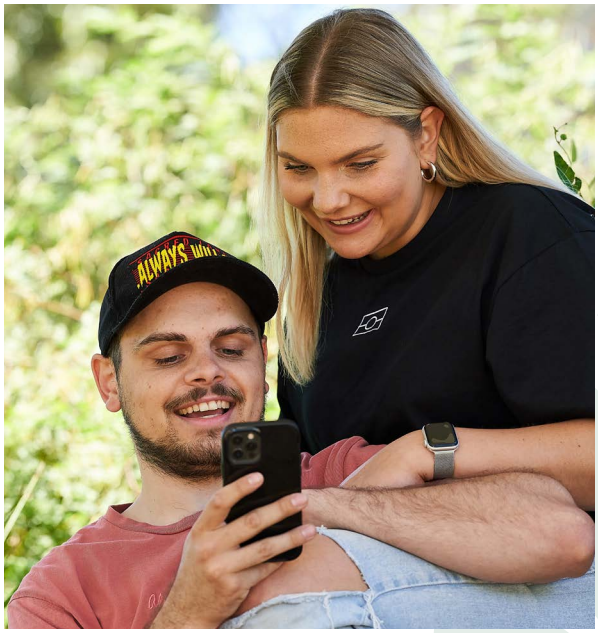
4. Population diversity

Regarding populations of interest, the experts agreed that research should examine **age differences** in both **motivations for engaging** with digital environments and in the **mental health outcomes** associated with digital environment engagement. They particularly urged research to focus on **younger young people** (i.e., children). They also agreed that research should examine the impacts of digital environments on young people with **different mental health conditions**.

The experts thought that research should be conducted in **geographically diverse populations** (i.e., non-Western countries, low- and middle-income countries) and should analyze digital environment use from a **range of countries and cultures where the availability of technology may differ.**

5. Reporting standards

Experts agreed that research should **clearly report the specific digital environment/s under investigation**, rather than using generic terms (e.g., "social media"), and should report adequate information about the **racial and ethnic distribution of the sample**.



> *"[AI] is easy, anonymous, [and] I guess, for people who might already be in a stage of unsureness or vulnerability, it seems like the safest or easiest option [to seek help]."*
>
> *Youth advisor*

> *"I feel like in a time of such distrust with organizations and distrust with government and policy and things like that, I don't think [partnerships with tech] would be very widely, like, well received."*
>
> *Youth advisor*

> *"More young people [should be] included in platform design … and policy changes as well."*
>
> *Youth advisor*

CONCLUSION

This project set out to develop a consensus-based global research agenda on digital environments and the mental health of children and young people. Through a real-time Delphi process engaging both international professionals and young people, the findings identify a clear and urgent set of priorities for advancing the field.

The results highlight both the complexity of the relationship between digital environments and youth mental health, and the limitations of the current evidence base. Despite rapid growth in research, fundamental questions remain unresolved. This is not due to a lack of interest or effort but rather reflects persistent challenges in how research in this field has been conducted.

Importantly, many of the priorities identified in this project are not new and it is important to note that the findings here reflect perspectives of experts from predominantly high-income countries. Previous reviews and expert statements have consistently highlighted similar challenges, including the need for improved measurement, longitudinal designs, and greater global representation (Agyapong-Opoku et al., 2025; Caparo et al., 2025; Ghai et al., 2022; Maheux et al., 2024; Orben et al., 2024). Rather than introducing an entirely novel set of recommendations, this project brings together these existing insights and, through a structured global consensus process, identifies those that should be prioritized for coordinated action moving forward.

Across panels, there was strong agreement that research must move beyond fragmented, cross-sectional approaches and instead focus on causal mechanisms, longitudinal outcomes, and the specific features and experiences within digital environments that shape mental health and may differ across developmental periods. At the same time, the findings point to systemic issues that have constrained progress to date, including inconsistent measurement, limited global representation, insufficient involvement of young people, and a tendency to repeatedly address similar questions without cumulative advancement.

Key priorities for advancing the field

Based on the consensus generated through this project, five priorities emerge for strengthening research over the next three years:

1. Strengthen methodological rigour and consistency

There is a need for shared standards in measurement and study design. This includes moving beyond static and self-reported indicators of use (e.g., time spent online) towards more nuanced assessments of exposures, experiences, and interactions, as well as prioritizing longitudinal and causal research designs that reflect real-world use among children and young people.

2. Focus on specific mechanisms, features, and experiences

Future research should prioritize understanding how particular aspects of digital environments (e.g., algorithms, platform features, exposure to specific types of content) shape mental health outcomes, rather than treating digital environments as a uniform construct.

3. Embed youth participation and lived experience as a core component of research

Young people must be meaningfully involved in the design, conduct, and interpretation of research. Their lived experience is critical for ensuring that research questions, measures, and outcomes reflect real-world use and impact, and is particularly important in a field that is evolving so quickly. They can guide the development and implementation of digital environments that are co-designed with young people and those with lived experience, ensuring they are safe, relevant, and responsive to their needs.

4. Ensure global relevance and involvement of diverse groups

Research must extend beyond high-income settings to include diverse cultural, geographic, and socioeconomic contexts. This is essential for developing an evidence base that is globally applicable and responsive to different patterns of digital engagement.

5. Strengthen pathways from research to policy and practice

There is a clear need for research to more directly inform policy, including the development of standards and regulatory frameworks for digital environments. At the same time, maintaining independence from industry influence remains critical. Achieving this balance will require transparent, structured models of collaboration that allow research to inform decision-making without compromising integrity.

Findings from this report echo previous work and provide a clear direction for how researchers and policymakers worldwide can collaborate to develop research on the impact of digital environments on youth mental health. The challenge now is not identifying what to study, but working collectively to ensure that the right research is conducted in the right way and translated into meaningful action that supports young people and their mental health.

A note on human support in technology-enabled care:

As generative AI and other digital tools are increasingly used by young people for emotional support and help-seeking, attention must also be paid to the human roles that surround these technologies. A growing body of evidence describes "digital navigators", defined as trained individuals who help patients and clinicians select, use, and interpret digital health tools, and who support digital literacy among those most at risk of exclusion (Shin et al., 2026). While outside the scope of this Delphi, this emerging, equity-oriented role illustrates a broader principle relevant to the research agenda: technology-enabled support for young people is most effective and safest when accompanied by human guidance. Future research and policy on digital environments should consider not only the platforms themselves, but also the workforce and support structures needed to help young people navigate them safely.

> *"One of my hopes is that governments and decision-makers understand the situation of social media better than they do now."*
>
> *Youth advisor*

> *"I really love that you're driving towards practical change. I'm kind of sick of seeing the same thing again and again, where you have these conversations and nothing comes of it. So thank you."*
>
> *Youth advisor*

PROJECT TEAM

Dr Louise La Sala
(Lead, Senior Research Fellow)

Dr La Sala is a Senior Research Fellow in the Suicide Prevention Research Unit at Orygen, the Centre for Youth Mental Health at the University of Melbourne, Australia, where she leads the Digital Harms and Online Safety work program. She has over 15 years of experience conducting research on social media use in young people. She is a lead researcher on the #chatsafe project which is a broad program of work dedicated to supporting online safety when communicating online about self-harm and suicide.

Dr La Sala has been recognized nationally and internationally for her work investigating the complex relationship between social media and youth mental health, and she has unique expertise in developing effective strategies to promote online safety and prevent self-harm and suicide among young people. Her work has informed online safety and suicide prevention policy at both a national and international level and she regularly advises technology companies, social media platforms, and government/online safety bodies on evidence-based ways to promote safe online environments for young people.

Dr Eleanor Bailey
(Clinician-Researcher, Research Fellow)

Dr Bailey is a Research Fellow in the Suicide Prevention Research Unit at Orygen, the Centre for Youth Mental Health at the University of Melbourne. Her work focuses on youth suicide prevention, digital technologies, and social media. She has established herself as a national leader in digital suicide prevention research, particularly in the development and evaluation of online and social-media-based interventions for young people experiencing suicide risk. Her work has contributed to several landmark initiatives, including the internationally recognised #chatsafe program, which has reached millions of young people worldwide and informed global policy and practice.

Dr Bailey is also a clinical psychologist who began her career working in a tertiary-level mental health service for young people experiencing severe and complex mood disorders, and more recently has established her own private practice.

Dr Nataya Branjerdporn
(Orygen Global, Global Partnerships)

Dr Branjerdporn is the manager of programs and partnerships at Orygen Global and has over eight years of experience in global youth mental health. She leads Orygen's work to elevate the importance of youth mental health practice and strengthen the implementation of promotion and prevention initiatives, such as the Being Initiative. Dr Branjerdporn is one of the two co-founders of Orygen's Youth Mental Health Fellowship program, an online education and mentoring program for youth advocates across the world.

Dr Branjerdporn represents Orygen on the World Health Organization Youth Council and was previously a co-chair of the Global Mental Health Action Network's Child and Youth Working Group. Her background is as an occupational therapist, and she completed her PhD on using a peer-based approach to support maternal-infant mental health in low-income community settings.

Professor Jo Robinson AM
(Unit Head, Suicide Prevention Research)

Professor Robinson AM established and leads the Suicide Prevention Research Unit at Orygen, The Centre for Youth Mental Health at the University of Melbourne. She is also Scientific Director of the Orygen Policy Centre. Her translational research across clinical, educational, community, and online settings have shaped suicide prevention policy and practice in Australia and internationally. Professor Robinson's work has a strong focus on evidence synthesis and expert consensus methodologies, with extensive experience in systematic reviews, structured research priority-setting exercises, the development of clinical and best practice guidelines, and developing and testing novel digital tools. She has a keen interest in policy and has led the development and evaluation of several suicide prevention strategies, the Federal Government's Anti-Bullying Rapid Review, a national digital mental health strategy, and an anti-stigma strategy.

Professor Robinson AM is the President of the International Association for Suicide Prevention and co-chair of their International Taskforce into Preventing Suicide in Women and Girls. She is also a member of multiple government advisory committees, including the Federal and Victorian Government's Advisory Groups on Suicide Prevention. She regularly provides advice to the Australian Government via policy briefs and in-person meetings as well as governments overseas (e.g., United Nations General Assembly, World Health Assembly, New Zealand Ministry of Health, Norwegian Mental Health Directorate).

PROJECT ADVISORS

John Torous, MD, MBI, is Director of the Digital Psychiatry Division in the Department of Psychiatry at Beth Israel Deaconess Medical Center (BIDMC), a Harvard Medical School–affiliated teaching hospital, where he serves as a staff psychiatrist and Associate Professor of Psychiatry at Harvard Medical School. Dual board-certified in psychiatry and clinical informatics, he earned his undergraduate degree in electrical engineering and computer sciences from UC Berkeley, his medical degree from UC San Diego, and completed his psychiatry residency, clinical informatics fellowship, and master's in biomedical informatics at Harvard. Dr. Torous has published more than 400 peer-reviewed articles—cited over 40,000 times—and five book chapters on digital mental health. His team supports minAapps.org, the world's largest database of mental health apps; mindApps.ai for benchmarking AI chatbots; the mindLAMP platform for digital phenotyping and interventions; and the Digital Navigator program advancing digital equity. He led the development of the American Psychiatric Association's widely adopted app evaluation framework, directs the Digital Psychiatry Clinic at BIDMC, serves as editor-in-chief of ***JMIR Mental Health*** and web editor for ***JAMA Psychiatry***, and recently testified before the U.S. Congress on AI and mental health. He is a senior member of IEEE and serves on multiple American Psychiatric Association committees.

The International Association for Child and Adolescent Psychiatry and Allied Professions (IACAPAP) is a WHO official non-state actor dedicated to promoting child and adolescent psychiatry and the mental health and development of children and adolescents through policy, practice, training, and research. The following researchers were appointed by the IACAPAP bureau to work as project advisors:

- **Professor Katajun Lindenberg** is a Professor of Clinical Child and Adolescent Psychology at Heidelberg University, Germany. She is the Director of the University Outpatient Clinic for Child and Adolescent Psychotherapy and Director of the Academy for Prevention Sciences. Her research focuses on the interaction between digitalization and youth mental health, with a particular emphasis on (online) behavioral addictions and psychological interventions across prevention and clinical treatment. This includes interventions delivered in digital contexts, educational settings, health care settings, and family environments. She is particularly interested in identifying intervention components, mechanisms, delivery formats, and target populations that are most effective and scalable.
- **Professor Luis Augusto Rohde** is a Professor of Child and Adolescent Psychiatry at the Federal University of Rio Grande do Sul, Brasil. He is currently serving as President of IACAPAP. His research encompasses different areas of child and adolescent mental health including developmental psychopathology, ADHD, and the impact of digitalization on youth mental health, particularly using data from cohort studies in low-middle Income countries. He has published more than 500 peer-reviewed articles—cited over 60,000 times—and he is organizer/editor of 10 books on the mental health of children and adolescents in Brazil, England, Germany, and the USA.

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REFERENCES

1. Agyapong-Opoku, N., Agyapong-Opoku, F., & Greenshaw, A. J. (2025). Effects of social media use on youth and adolescent mental health: A scoping review of reviews. *Behavioral Sciences, 15*(5), 574. https://doi.org/10.3390/bs15050574
2. Capraro, V., Globig, L., Rausch, Z., Rathje, S., Wormley, A. S., Olson, J., … Van Bavel, J. J. (2025). A collective review on some potential negative impacts of smartphone and social media use on adolescent mental health: Results from a Delphi process. https://doi.org/10.31234/osf.io/b94dy_v1
3. Craig, W., Boniel-Nissim, M., King, N., Walsh, S. D., Boer, M., Donnelly, P. D., … & Pickett, W. (2020). Social media use and cyber-bullying: A cross-national analysis of young people in 42 countries. *Journal of Adolescent Health, 66*(6), S100-S108. https://doi.org/10.1016/j.jadohealth.2020.03.006
4. Cross, S., Bell, I., Nicholas, J., Valentine, L., Mangelsdorf, S., Baker, S., … & Alvarez-Jimenez, M. (2024). Use of AI in mental health care: Community and mental health professionals survey. *JMIR Mental Health*, 11(1), e60589. https://doi.org/10.2196/60589
5. Fassi, L., Thomas, K., Parry, D. A., Leyland-Craggs, A., Ford, T. J., & Orben, A. (2024). Social media use and internalizing symptoms in clinical and community adolescent samples: A systematic review and meta-analysis. *JAMA Pediatrics*, 178(8), 814-822. https://doi.org/10.1001/jamapediatrics.2024.2078
6. Ferguson, C. J. (2026). Links between social media use and mental wellness in youth are an artifact of other factors: Implications for public policy and meta-analysis. *Current Psychology*, 45, 573. https://doi.org/10.1007/s12144-026-09205-3
7. Flayelle, M., Brevers, D., King, D. L., Maurage, P., Perales, J. C., & Billieux, J. (2023). A taxonomy of technology design features that promote potentially addictive online behaviours. *Nature Reviews Psychology*, 2(3), 136-150. https://doi.org/10.1038/s44159-023-00153-4
8. Ghai, S., Magis-Weinberg, L., Stoilova, M., Livingstone, S., & Orben, A. (2022). Social media and adolescent well-being in the Global South. *Current Opinion in Psychology*, 46, 101318. https://doi.org/10.1016/j.copsyc.2022.101318
9. Gnatzy, T., Warth, J., von der Gracht, H., & Darkow, I. L. (2011). Validating an innovative real time Delphi approach-a methodological comparison between real-time and conventional Delphi studies. *Technological Forecasting and Social Change, 78*(9), 1681-1694. https://doi.org/10.1016/j.techfore.2011.04.006
10. Gordon, T., & Pease, A. (2006). RT Delphi: An efficient, "round-less" almost real time Delphi method. *Technological Forecasting and Social Change, 73*(4), 321-333. https://doi.org/10.1016/j.techfore.2005.09.005
11. Jorm, A. F. (2015). Using the Delphi expert consensus method in mental health research. *Australian & New Zealand Journal of Psychiatry, 49*(10), 887-897. https://doi.org/10.1177/0004867415600891
12. Kieling, C., Buchweitz, C., Caye, A., Silvani, J., Ameis, S. H., Brunoni, A. R., … & Szatmari, P. (2024). Worldwide prevalence and disability from mental disorders across childhood and adolescence: Evidence from the Global Burden of Disease Study. *JAMA Psychiatry*, 81(4), 347-356. https://doi.org/10.1001/jamapsychiatry.2023.5051
13. La Sala, L., Filia, K., Gao, C. X., Baker, D., Browne, V., Brennan, N., Freeburn, T., Boon, B., & Teo, S. M. (2025). *Social media and young people in Australia: Findings from the 2024 Mission Australia youth survey*. Orygen & Mission Australia. https://www.missionaustralia.com.au/what-we-do/evidence-impact-and-advocacy/research/reports/social-media-and-young-people/

14. La Sala, L., Sabo, A. V., Lamblin, M., & Robinson, J. (2024). Can #chatsafe support parents and carers beyond Australia? A qualitative study. *BMC Public Health*, 24(1), 1571. https://doi.org/10.1186/s12889-024-19040-5

15. Maheux, A. J., Burnell, K., Maza, M. T., Fox, K. A., Telzer, E. H., & Prinstein, M. J. (2025). Annual research review: Adolescent social media use is not a monolith: Toward the study of specific social media components and individual differences. *Journal of Child Psychology and Psychiatry, 66*(4), 440-459. https://doi.org/10.1111/jcpp.14085

16. Mansfield, K. L., Ghai, S., Hakman, T., Ballou, N., Vuorre, M., & Przybylski, A. K. (2025). From social media to artificial intelligence: Improving research on digital harms in youth. *The Lancet Child & Adolescent Health, 9*(3), 194-204. https://doi.org/10.1016/S2352-4642(24)00332-8

17. McGorry, P., Mei, C., Dalal, N., Alvarez-Jimenez, M., Blakemore, S. J., Browne, V., ... & Killackey, E. (2024). The Lancet Psychiatry Commission on youth mental health. *The Lancet Psychiatry, 11*(9), 731-774. https://doi.org/10.1016/S2215-0366(24)00163-9

18. McGorry, P., Gunasiri, H., Mei, C., Rice, S., & Gao, C. X. (2025). The youth mental health crisis: Analysis and solutions. *Frontiers in Psychiatry, 15*, 1517533. https://doi.org/10.3389/fpsyt.2024.1517533

19. Montag, C., Demetrovics, Z., Elhai, J. D., Grant, D., Koning, I., Rumpf, H. J., ... & van den Eijnden, R. (2024). Problematic social media use in childhood and adolescence. *Addictive Behaviors, 153*, 107980. https://doi.org/10.1016/j.addbeh.2024.107980

20. Odgers, C. L., Schueller, S. M., & Ito, M. (2020). Screen time, social media use, and adolescent development. *Annual Review of Developmental Psychology, 2*(1), 485-502. https://doi.org/10.1146/annurev-devpsych-121318-084815

21. Online Safety Amendment (Social Media Minimum Age) Bill 2024 (Aus). https://www.legislation.gov.au/C2024A00127/asmade/text

22. Orben, A., Meier, A., Dalgleish, T., & Blakemore, S. J. (2024). Mechanisms linking social media use to adolescent mental health vulnerability. *Nature Reviews Psychology, 3*(6), 407-423. https://doi.org/10.1038/s44159-024-00307-y

23. Przybylski, A. K., & Weinstein, N. (2017). A large-scale test of the goldilocks hypothesis: Quantifying the relations between digital-screen use and the mental well-being of adolescents. *Psychological Science, 28*(2), 204-215. https://doi.org/10.1177/0956797616678438

24. Przybylski, A. K., Orben, A., & Weinstein, N. (2020). How much is too much? Examining the relationship between digital screen engagement and psychosocial functioning in a confirmatory cohort study. *Journal of the American Academy of Child & Adolescent Psychiatry, 59*(9), 1080-1088. https://doi.org/10.1016/j.jaac.2019.06.017

25. Robinson, J., La Sala, L., Kenny, B., Cooper, C., Lamblin, M., Spittal, M., ... & John, A. (2025). How do Australian social media users experience self-harm and suicide-related content? A national cross-sectional survey comparing young people and adults. *BMC Public Health*. https://doi.org/10.1186/s12889-025-25646-0

26. Shin, H. D., Kemp, J., Kassam, I., Pape, C., Goonasekera, S., Modha, V., ... & Strudwick, G. (2026). A scoping review of the characteristics, responsibilities, implementations and evaluations of digital navigators in healthcare. *NPJ Digital Medicine*. https://doi.org/10.1038/s41746-026-02647-w

27. Statista. (2023). *Digital population worldwide as of January 2023* [Graph]. Statista. Retrieved December 17 2025 from https://www.statista.com/statistics/617136/digital-population-worldwide/

28. Stevic, A., Chen, Y. A., Lee, A. Y., Liu, X., Smith-Russack, Z., Cairns, K., ... Hancock, J. (2026). *Evaluation of the social media minimum age on Australian young people: A study protocol*. PsyArXiv. https://doi.org/10.31234/osf.io/u5zn6_v2

29. Teague, S., Somoray, K., Shatte, A., Miller, D., Moss, K., Crawford, A., ... & Hutchinson, D. (2026). Digital media use and child health and development: A systematic review and meta-analysis. *JAMA Pediatrics*. https://doi.org/10.1001/jamapediatrics.2026.0085

30. The Future Literacy Company. (n.d.). 4CF Halnyx 2.0: The ultimate Real-Time Delphi platform. https://4cf.eu/real-time-delphi-platform-halnyx/

31. Tiezzi, J.T., & Tiezzi, M.T. (2025). Associação entre uso excessivo de redes sociais e transtorno depressivo maior em adolescentes: Uma revisão sistemática e meta-análise em rede. *Revista ft, 29*(150), 6-7. https://doi.org/10.69849/revistaft/ch10202509262306

32. Torous, J., & Cipriani, A. (2025). A paradigm shift in progress: Generative AI's evolving role in mental health care. *JMIR Mental Health*, 12, https://doi.org/10.2196/82369

33. Torous, J., & Topol, E. J. (2025). Assessing generative artificial intelligence for mental health. *The Lancet, 406*(10504), 683. https://doi.org/10.1016/S0140-6736(25)01237-1

34. United Nations Children's Fund (UNICEF), & World Health Organization (WHO). (2025). *UNICEF and WHO joint programme on mental health and psychosocial well-being and development of children and adolescents: Summary report*. World Health Organization. https://www.who.int/publications/m/item/summary-report-for-unicef-who-joint-programme-on-mental-health-of-children-and-adolescents

35. 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. https://doi.org/10.1016/j.copsyc.2021.08.017

36. World Health Organization. (2025). *Addressing the digital determinants of youth mental health and well-being: Policy brief* (No. WHO/EURO: 2025-12187-51959-79685 (PDF)). World Health Organization. https://www.who.int/europe/publications/i/item/WHO-EURO-2025-12187-51959-79685

APPENDIX A: SAMPLE CHARACTERISTICS

TABLE 1. Demographic and professional characteristics of the professional panel (*n* = 22)

Characteristic	Category	n	%
Gender identity	Woman	14	63.6
	Man	8	36.4
	Non-binary	0	0.0
	Another identity	0	0.0
	Prefer not to say	0	0.0
Country of residence	High-income countries	21	95.5
	Upper-middle-income countries	0	0.0
	Lower-middle-income countries	0	0.0
	Low-income countries	1	4.5
WHO Region	Eastern Mediterranean Region (EMR)	0	0.0
	European Region (EUR)	14	63.6
	African Region (AFR)	1	4.5
	Region of the Americas (AMR)	4	18.2
	South-East Asian Region (SEAR)	0	0.0
	Western Pacific Region (WPR)	3	13.6
Engagement with digital environments	Very high	8	36.4
	High	9	40.9
	Moderate	4	18.2
	Low	1	4.5
	Very low	0	0.0
	Prefer not to say	0	0.0
General perspective on digital environments and youth mental health	Mostly positive	0	0.0
	More positive than negative	2	9.1
	Mixed/depends	16	72.7
	More negative than positive	4	18.2
	Mostly negative	0	0.0
Professional role*	Researcher/academic	18	81.8
	Clinician	4	18.2
	Policy/strategy	2	9.1
	Educator	3	13.6
	Advocate/lived experience professional	0	0.0

Table continues

Characteristic	Category	n	%
	Industry/technology	1	4.5
	NGO or youth-sector practitioner	1	4.5
	Other	1	4.5
Primary work focus	Research	19	86.4
	Policy	0	0.0
	Clinical practice	0	0.0
	Technology/platform	1	4.5
	Mixed roles	2	9.1
Area of expertise*	Youth mental health	14	63.6
	Digital mental health	13	59.1
	Online safety/technology policy	5	22.7
	Child and adolescent health	5	22.7
	Suicide prevention	5	22.7
	Human/digital rights	2	9.1
	Public health	7	31.8
	Other	2	9.1
Years of experience	0–2	1	4.5
	3–5	6	27.3
	6–10	5	22.7
	11–20	6	27.3
	20+	4	18.2

*Percentages may sum to >100% due to multiple responses permitted.

TABLE 2. Demographic and digital characteristics of the youth panel *(n = 26)*

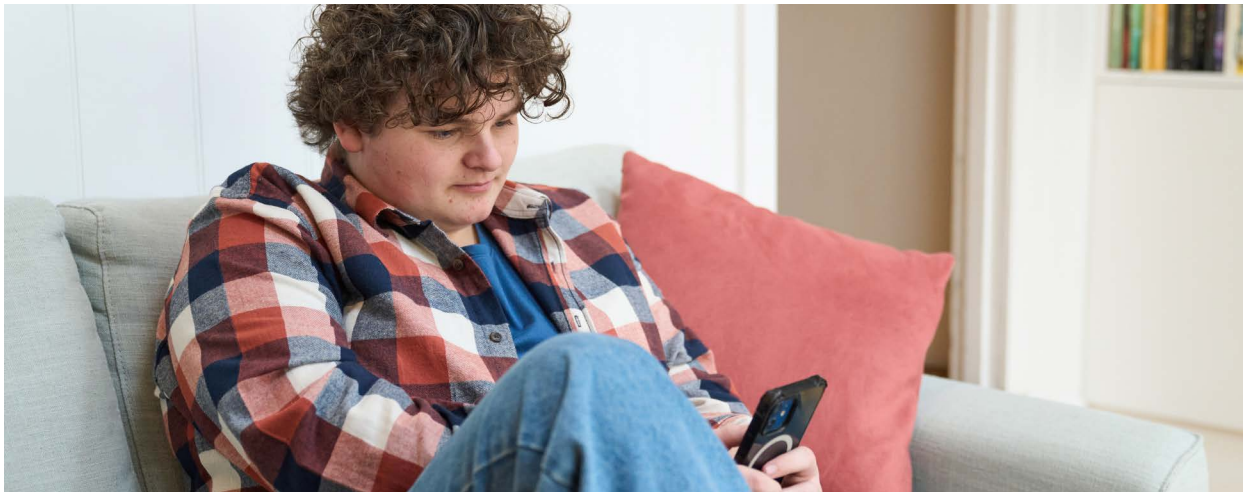
Characteristic	Category	n	%
Age (years)	16	3	11.5
	17	2	7.7
	18	5	19.2
	19	7	26.9
	20	9	34.6
Gender identity	Woman/girl	17	65.4
	Man/boy	7	26.9
	Non-binary	2	7.7
	Another identity	0	0.0
	Prefer not to say	0	0.0
Country of residence	High-income countries	22	84.6
	Upper-middle-income countries	3	11.5
	Lower-middle-income countries	1	3.8
	Low-income countries	0	0.0
WHO Region	Eastern Mediterranean Region (EMR)	1	3.8
	European Region (EUR)	2	7.7
	African Region (AFR)	3	11.5
	Region of the Americas (AMR)	7	26.9
	South-East Asian Region (SEAR)	0	0.0
	Western Pacific Region (WPR)	13	50.0
Engagement with digital environments	Very high	20	76.9
	High	6	23.1
	Moderate	0	0.0
	Low	0	0.0
	Very low	0	0.0
	Prefer not to say	0	0.0
Digital environments used regularly*	Social media platforms	25	96.2
	Messaging apps	23	88.5
	Video-sharing/streaming platforms	20	76.9
	Online gaming environments	8	30.8
	Generative AI tools	21	80.8
	Online learning platforms	15	57.7
	Online forums/discussion communities	14	53.8
	Virtual worlds/metaverse platforms	2	7.7
	Digital wellbeing/mental health apps	8	30.8
	News or information platforms	16	61.5
	Other	0	0.0
	Prefer not to say	0	0.0

Table continues

Characteristic	Category	n	%
General perspective on digital environments and youth mental health	Mostly positive	2	7.7
	More positive than negative	6	23.1
	Mixed/depends	14	53.8
	More negative than positive	4	15.4
	Mostly negative	0	0.0
Current education/employment status*	Secondary school student	7	26.9
	Tertiary/college/university student	15	57.7
	Employed full-time	1	3.8
	Employed part-time	9	34.6
	Not in education or employment	1	3.8
	Other	2	7.7
Lived or living experience of mental health challenges	Yes	22	84.6
	No	3	11.5
	Prefer not to say	1	3.8
Type of lived/living experience†	Personal lived experience	7	26.9
	Supporting someone else	3	11.5
	Both	11	42.3
	Prefer not to say	1	3.8
Hours spent online per day	<2	0	0.0
	2–4	3	11.5
	4–6	8	30.8
	6–8	10	38.5
	≥8	5	19.2

* Percentages may sum to >100% due to multiple responses permitted.

† Asked only of participants who indicated lived or living experience (*n* = 22).



APPENDIX B: FINAL DELPHI SURVEY ITEMS

Item	Professionals Median (IQR)	Youth Median (IQR)	High priority by professionals?	High priority by youth?	High priority overall (i.e., Included)?
Section 1: Definitions and measurement					
Research should establish universal definitions for commonly used language related to use of digital environments (e.g., problematic use, low/medium/high use, misuse, active/passive use)	8 (2)	5 (2.75)	Yes	No	No
Professionals: Research should establish universal definitions for 'addiction' as it relates to digital environments (e.g., social media or gaming addiction) **Youth:** Research should establish universal definitions for what "addiction" means in relation to digital environments (e.g., social media or gaming addiction)	7 (3)	7 (2)	No	Yes	No
Professionals: Research should use consistent measures across studies (including for outcome variables and sample characteristics), to allow for comparisons and pooling of data **Youth:** Research should use consistent measures across studies (including for outcome variables and sample characteristics) so results can be compared and combined	7 (3)	7 (3)	No	No	No
Professionals: Research should move beyond holistic measures that quantify digital environment use (e.g., duration and frequency) and instead disentangle the type and quality of use (including specific exposures and experiences) **Youth:** Research should go beyond general measures like "time spent online" and instead examine the type and quality of use (including specific exposures and experiences)	7.5 (2)	7 (1)	Yes	Yes	Yes

Table continues

Item	Professionals Median (IQR)	Youth Median (IQR)	High priority by professionals?	High priority by youth?	High priority overall (i.e., Included)?
Section 1: Definitions and measurement					
Research should use (or develop) established measures to assess specific features of digital environment use (e.g., motivation for use, quality of interactions, responses to content)	7 (1)	7 (1)	Yes	Yes	Yes
Research should use objective measures of digital environment use (e.g., app usage data, real-time tracking, screen-time monitors, wearable devices), rather than relying on youth self-report	6 (2)	6 (2)	No	No	No
Research should extract actual transactions from digital environments (e.g., likes and comments on social media) to measure online social support objectively	5 (2.75)	6 (3.25)	No	No	No
Research should clearly report the specific digital environment/s under investigation, rather than using generic terms (e.g., "social media")	7 (1.75)	7 (2)	Yes	Yes	Yes
Researchers should establish norms of young people's digital wellbeing through testing of large samples	5.5 (3)	7 (1.25)	No	Yes	No
Research examining social media should focus on a range of platforms, rather than only one platform (e.g., Facebook) which may cause bias and limit generalizability of findings	7 (1.75)	9 (1)	Yes	Yes	Yes
Research examining social media should NOT focus on specific platforms and instead attend more to specific features that appear consistently across platforms	6 (3)	5 (2)	No	No	No
Section 2: Identifying the nature of relationships between digital environments and mental health					
Research should establish whether there is a causal relationship between digital environments and youth mental health, and the strength and direction of the relationship	7 (2)	7 (1.5)	Yes	Yes	Yes
Research should focus on both the positive and negative impacts of digital environments	9 (2)	9 (2)	Yes	Yes	Yes
Research should aim to establish the relative impact of digital environments compared to the broader social determinants of mental ill-health	7 (3.75)	7 (1.5)	No	Yes	No
Research should examine the short-term effects of digital environments on youth mental health	5 (2)	7 (2)	No	Yes	No

Table continues

Item	Professionals Median (IQR)	Youth Median (IQR)	High priority by professionals?	High priority by youth?	High priority overall (i.e., Included)?
Section 2: Identifying the nature of relationships between digital environments and mental health					
Research should examine the long-term effects of digital environments on youth mental health	7.5 (1)	8 (1.5)	Yes	Yes	Yes
Professionals: Research should aim to understand the specific mechanisms (including mediators and moderators) underpinning the relationship between digital environments and mental health outcomes **Youth:** Research should aim to understand the specific mechanisms (including what makes the impact stronger or weaker for different people) underpinning the relationship between digital environments and mental health outcomes	7 (2)	7 (1)	Yes	Yes	Yes
Research should examine individual differences in the relationship between digital environments and youth mental health	7 (2)	7 (2)	Yes	Yes	Yes
Section 3: Variables and outcomes of interest					
Research should establish which specific digital environments (or features of digital environments) are associated with different mental health outcomes	7 (1.75)	7 (2.5)	Yes	No	No
Research should examine how the following digital environments impact youth mental health:					
a. Conversational AI (e.g., publicly available multi-purpose chatbots such as ChatGPT)	7 (3.75)	8 (1)	No	Yes	No
b. Massively multiplayer online gaming (i.e., involving large numbers of players interacting in a persistent virtual world)	6 (2)	7 (1)	No	Yes	No
c. Other online gaming platforms	5 (2.25)	6 (2)	No	No	No
d. Multimedia messaging apps (e.g., Snapchat, WhatsApp)	7 (2)	7 (1.5)	Yes	Yes	Yes
e. Community-based chat platforms (e.g., Discord, Reddit)	6 (2)	7 (2)	No	Yes	No
f. Augmented reality environments	5 (4)	6 (2.5)	No	No	No
g. Smart watches and other wearables	3.5 (2.25)	4 (4)	No	No	No
h. Live streaming platforms (e.g., Twitch)	5 (2)	6 (2.5)	No	No	No
i. Podcasts	3 (2)	5 (3.5)	No	No	No

Table continues

Item	Professionals Median (IQR)	Youth Median (IQR)	High priority by professionals?	High priority by youth?	High priority overall (i.e., Included)?
Section 3: Variables and outcomes of interest					
(continued) **Research should examine how the following digital environments impact youth mental health:**					
j. Short-form content platforms (e.g., TikTok)	7 (2)	9 (1)	Yes	Yes	Yes
k. Long-form content platforms (e.g., YouTube, streaming services)	6 (2)	6 (2)	No	No	No
l. Highly-visual digital environments (e.g., Instagram, Pinterest)	7.5 (2.25)	7 (1.5)	No	Yes	No
m. Dating apps or websites	6 (2)	7 (2.5)	No	No	No
n. Online gambling platforms	7 (3)	7 (3.5)	No	No	No
o. Online pornography platforms	7 (3)	9 (1.5)	No	Yes	No
Research should examine how the following features of digital environments impact youth mental health:					
a. Content creation	6 (2)	7 (1.75)	No	Yes	No
b. Algorithms (i.e., that continuously personalize, curate, and suggest media content)	8 (2)	8 (2)	Yes	Yes	Yes
c. Recommender systems (e.g., TikTok's "For You" page)	8 (2)	9 (2.75)	Yes	Yes	Yes
d. Image filters	7 (2)	7 (2)	Yes	Yes	Yes
e. AI-generated content	7 (2)	8 (2)	Yes	Yes	Yes
f. Idealized images	6 (3)	7 (2.5)	No	No	No
g. Reward systems (e.g., likes, streaks)	7 (2)	7 (1.75)	Yes	Yes	Yes
h. Online shopping and in-app purchases (e.g., TikTok shop)	5 (3)	6 (2)	No	No	No
i. Loot boxes (i.e., gambling in gaming)	6 (4)	6 (3)	No	No	No
j. Links to age-inappropriate content (e.g., gambling, pornography)	7 (2)	8.5 (2)	Yes	Yes	Yes
k. Digital phenotyping (i.e., the use of data from personal digital devices, like smartphones and wearables, to create a detailed, objective picture of a person's behaviour and health)	7 (2)	7 (3.75)	Yes	No	No
Research should examine the financial implications of digital environments (e.g., due to influencers, targeted product ads, in-app purchases, or gambling) and how they relate to youth mental health	6 (2)	7 (2)	No	Yes	No

Table continues

Item	Professionals Median (IQR)	Youth Median (IQR)	High priority by professionals?	High priority by youth?	High priority overall (i.e., Included)?
Section 3: Variables and outcomes of interest					
Research should examine the impact of exposure to the following types of content on youth mental health:					
a. Violence	7 (1)	8 (2)	Yes	Yes	Yes
b. Pornography	7 (1)	9 (1)	Yes	Yes	Yes
c. Suicide or self-harm	9 (1)	9 (1)	Yes	Yes	Yes
d. Disordered eating	8 (2)	8.5 (2)	Yes	Yes	Yes
e. Other types of harmful content	6.5 (1)	7 (0.75)	No	Yes	No
f. Prosocial	6 (3)	6 (2)	No	No	No
g. Educational	6 (2)	5.5 (2)	No	No	No
h. Other types of beneficial content	6 (2.25)	5 (2.75)	No	No	No
Research should examine the impact of the following on youth mental health:					
a. Motives for using digital environments	5 (2)	7 (2)	No	Yes	No
b. Attitudes towards digital environments	5 (2)	6.5 (2.75)	No	No	No
c. Duration of digital environment exposure	6 (3)	7 (1.75)	No	Yes	No
d. Chronicity of digital environment exposure	6 (2)	8 (1.75)	No	Yes	No
e. Intensity of digital environment exposure	6 (1.25)	7 (2)	No	Yes	No
f. Patterns of digital environment use (e.g., active vs passive use)	6 (0.5)	7 (2.75)	No	No	No
Research should examine the impacts of social media on the following outcomes:					
a. Cognitive and neural functioning (e.g., attention and focus, neural structures)	7 (3.5)	9 (1.75)	No	Yes	No
b. Social and interpersonal functioning (e.g., loneliness, social connectedness)	8 (2)	9 (1.75)	Yes	Yes	Yes
c. Emotional and psychological health (e.g., emotion regulation, disordered eating)	8 (3)	9 (1.75)	No	Yes	No
d. Self and development (e.g., autonomy, competence, identity development)	7 (3)	7 (1.75)	No	Yes	No
e. Risk and safety outcomes (e.g., suicidal ideation, self-harm, substance abuse, addictive behaviours)	8 (2)	9 (1.75)	Yes	Yes	Yes
f. Physical health (e.g., sedentary behaviours)	7 (1)	7 (1)	Yes	Yes	Yes

Table continues

Item	Professionals Median (IQR)	Youth Median (IQR)	High priority by professionals?	High priority by youth?	High priority overall (i.e., Included)?
Section 3: Variables and outcomes of interest					
Research should examine the impacts of publicly available generative AI on the following outcomes:					
a. Cognitive and neural functioning (e.g., attention and focus, neural structures)	6 (3)	9 (1)	No	Yes	No
b. Social and interpersonal functioning (e.g., loneliness, social connectedness)	7 (2.5)	8 (2)	No	Yes	No
c. Emotional and psychological health (e.g., emotion regulation, disordered eating)	7 (2)	8 (2)	Yes	Yes	Yes
d. Self and development (e.g., autonomy, competence, identity development)	6 (2.25)	8 (2)	No	Yes	No
e. Risk and safety outcomes (e.g., suicidal ideation, self-harm, substance abuse, addictive behaviours)	7 (2.25)	9 (1)	No	Yes	No
f. Physical health (e.g., sedentary behaviours)	5 (1.5)	7 (1.75)	No	Yes	No
Research should examine the impacts of online gaming on the following outcomes:					
a. Cognitive and neural functioning (e.g., attention and focus, neural structures)	6 (4)	7 (1)	No	Yes	No
b. Social and interpersonal functioning (e.g., loneliness, social connectedness)	7 (1.75)	8 (2)	Yes	Yes	Yes
c. Emotional and psychological health (e.g., emotion regulation, disordered eating)	6 (2)	8 (2)	No	Yes	No
d. Self and development (e.g., autonomy, competence, identity development)	5 (2)	7 (3)	No	No	No
e. Risk and safety outcomes (e.g., suicidal ideation, self-harm, substance abuse, addictive behaviours)	7 (2.25)	9 (2)	No	Yes	No
f. Physical health (e.g., sedentary behaviours)	6 (3)	8 (2)	No	Yes	No
Research should examine the concept of "digital stress" (e.g., stress arising from managing online communication, self-presentation, and social expectations in digital environments) and how it relates to youth mental health	7 (1)	9 (2)	Yes	Yes	Yes

Table continues

Item	Professionals Median (IQR)	Youth Median (IQR)	High priority by professionals?	High priority by youth?	High priority overall (i.e., Included)?
Section 3: Variables and outcomes of interest					
Research should establish a detailed diagnostic criterion of anxiety and depression in adolescents in direct relation to social media use	5 (4)	7 (1.75)	No	Yes	No
Research should examine the impact of the following social media behaviours or experiences on youth mental health:					
a. Content engagement (e.g., scrolling, reading, posting)	6 (2)	7 (0.75)	No	Yes	No
b. Social connection and interaction (e.g., following/unfollowing, friending/unfriending, tagging/untagging)	7 (1)	7 (1)	Yes	Yes	Yes
c. Self-presentation and disclosure (e.g., online self-disclosure)	6.5 (2)	7.5 (2.75)	No	No	No
d. Negative online experiences (e.g., cyberbullying, being stalked or groomed, having images shared without consent)	8 (2)	9 (1)	Yes	Yes	Yes
Research should examine the impact of the following features of publicly available generative AI on youth mental health:					
a. Personalization and adaptive responses (e.g., tailoring to user mood, history, identity, targeted emotional responses)	6 (3)	7 (1)	No	Yes	No
b. Human-likeness and relational roles (e.g., empathic/supportive language, social presence, friendship-like or companion roles)	7 (2)	7 (1)	Yes	Yes	Yes
c. Therapeutic or support-like functions (e.g., providing psychological advice, structured interventions, or acting as a primary support tool)	7 (2)	8 (2)	Yes	Yes	Yes
d. Romantic or sexualised interactions (e.g., AI being perceived as a romantic partner or sexual entity)	7 (2)	9 (1)	Yes	Yes	Yes
e. Content quality, reliability, and safety (e.g., hallucinations, contradictory advice, misinformation, unsafe suggestions, crisis responses)	7 (3)	8 (2)	No	Yes	No
f. Bias and identity-related effects (e.g., stereotypes, cultural/gender assumptions, impacts on identity exploration)	6 (2.25)	8 (1)	No	Yes	No
g. Influence on self-perception and behaviour (e.g., idealized bodies, social comparison, persuasive nudges, behaviour-shaping)	6 (2.25)	7 (1)	No	Yes	No

Table continues

Item	Professionals Median (IQR)	Youth Median (IQR)	High priority by professionals?	High priority by youth?	High priority overall (i.e., Included)?
Section 3: Variables and outcomes of interest					
(continued) **Research should examine the impact of the following features of publicly available generative AI on youth mental health:**					
h. Dependence, privacy, and trust-related impacts (e.g., emotional over-reliance, privacy concerns, misunderstandings about data or memory)	6 (2.25)	7 (1)	No	Yes	No
Section 4: Demographics/sampling					
Research should examine gender differences in:					
a. Motivations for engaging with digital environments	6 (3)	7.5 (3.5)	No	No	No
b. Patterns and types of digital engagement	6 (3)	7 (1.75)	No	Yes	No
c. Youth mental health outcomes associated with digital engagement	7 (3)	8 (1.75)	No	Yes	No
Research should examine age differences in:					
a. Motivations for engaging with digital environments	7 (2)	7 (0.75)	Yes	Yes	Yes
b. Patterns and types of digital engagement	6 (2)	7 (1.75)	No	Yes	No
c. Youth mental health outcomes associated with digital engagement	7 (1)	7.5 (2)	Yes	Yes	Yes
Research should delineate developmental stages (e.g., early, mid, and late adolescence) to yield more nuanced insights and capture important information in relation to different experiences with digital environments and youth mental health across the ages	8 (3)	8 (3)	No	No	No
Research should examine digital environments and mental health in younger young people (i.e., children)	8 (2)	9 (1)	Yes	Yes	Yes
Research should be conducted in geographically diverse populations (i.e., non-Western countries, low- and middle-income countries)	7 (2)	9 (2)	Yes	Yes	Yes
Research should report adequate information about the racial and ethnic distribution of the sample, because young people from racial and ethnic minority communities are increasingly vulnerable to negative psychosocial experiences online, and are more likely to experience cyberbullying	7 (1)	8 (2)	Yes	Yes	Yes

Table continues

Item	Professionals Median (IQR)	Youth Median (IQR)	High priority by professionals?	High priority by youth?	High priority overall (i.e., Included)?
Section 4: Demographics/sampling					
Research should analyze digital environment use from a range of countries and cultures where the availability of technology may differ	7 (2)	8 (2)	Yes	Yes	Yes
Research should examine the impacts of digital environments on young people with different mental health conditions	7 (2)	9 (1)	Yes	Yes	Yes
Research should account for the norms of the specific sociocultural setting in which online interactions within digital environments are being examined	6 (2)	7.5 (2)	No	Yes	No
Section 5: Promoting safe engagement with digital environments					
Research should develop tools or resources:					
a. To support young people to safely and effectively interact with others in digital environments	7.5 (3)	8 (2)	No	Yes	No
b. To support young people to practice online social skills	7 (1.5)	8 (3)	Yes	No	No
c. To address "digital stress" (e.g., stress arising from managing online communication, self-presentation, social expectations in digital environments)	7 (1.5)	9 (2)	Yes	Yes	Yes
d. To reduce overall use of digital environments	5 (3.25)	6 (4)	No	No	No
e. To reduce problematic use of digital environments	7 (4)	9 (1)	No	Yes	No
f. To address addictive behaviours in digital environments (e.g., gaming, gambling, social media addiction)	7 (3)	9 (1)	No	Yes	No
g. To improve social media literacy	7 (2)	8 (2)	Yes	Yes	Yes
h. To improve AI literacy	7 (1.25)	8 (2)	Yes	Yes	Yes
i. For **families and carers** to support young people within digital environments	7 (2.25)	8 (1)	No	Yes	No
j. For **clinicians** to support young people within digital environments	6 (3)	7 (3)	No	No	No
k. For **educators** to support young people within digital environments	6 (1)	8 (2)	No	Yes	No
l. For **policymakers** to support young people within digital environments	7 (0.75)	7 (2)	Yes	Yes	Yes

Table continues

Item	Professionals Median (IQR)	Youth Median (IQR)	High priority by professionals?	High priority by youth?	High priority overall (i.e., Included)?
Section 6: Research frameworks, partnerships, and policy alignment					
Research should involve partnerships with industry (e.g., social media or tech companies) to allow access to data to better understand the harms and benefits	7 (4)	7 (3)	No	No	No
Research and public health agenda should be independent from industry influence	9 (2)	8 (2)	Yes	Yes	Yes
Research should meaningfully engage young people with relevant lived experience	7.5 (2)	9 (2)	Yes	Yes	Yes
Research should build on interdisciplinary theoretical frameworks that integrate elements of developmental and clinical psychology, social media, and computer-mediated communication theories (e.g., self-determination theory, identity development theory)	7 (3)	8 (2)	No	Yes	No
Research should understand the impact of regulatory changes influencing digital environments	7 (1.25)	7 (1)	Yes	Yes	Yes
Research should develop standards or frameworks for regulation of digital environments (e.g., that should inform policy decisions)	8 (2)	8 (2)	Yes	Yes	Yes

SUPPLEMENTARY FILE 1

METHODS

OVERVIEW OF APPROACH

To inform a global research agenda on digital environments and youth mental health, this project involved:

1. A rapid scan of systematic reviews published in the last five years on digital environments and youth mental health. The findings generated an initial evidence base to inform item development for the RTD study; and,
2. A RTD study with two international panels (youth and professionals), which developed consensus regarding research priorities relating to digital environments and youth mental health.

In contexts characterized by limited consensus, heterogeneous evidence, and rapidly evolving fields, structured consensus methodologies such as Delphi approaches are widely used to synthesize expert and stakeholder perspectives and establish shared priorities.

A RTD approach was particularly well suited to this, enabling rapid, iterative feedback and global participation within a short timeframe.

RAPID REVIEW AND ITEM GENERATION

The rapid review sought to answer the following question: What recommendations are proposed in the current literature regarding future research that will advance our understanding of the impact of digital environments on youth mental health?

RAPID REVIEW APPROACH

A rapid review was conducted to identify recent evidence on digital environments and the mental health of children and young people. The purpose of this work was to generate a clear, contemporary evidence base from which the Delphi item bank could be developed. The review focused on systematic, scoping, and umbrella reviews published in English between January 2019 and September 2025. Reviews were eligible if they examined freely accessible digital environments such as social media platforms, online communities, messaging applications, gaming environments, virtual reality spaces, or emerging AI-enabled tools. Reviews were restricted to those focusing on young people aged 0-18 (defined as having a sample mean age of <18 years). Reviews of purpose-built therapeutic or clinical interventions (e.g., digital cognitive behavioural therapy [CBT] programs), narrative commentaries, or reviews focused exclusively on general screen-time measures were excluded.

The search strategy was developed in consultation with a University of Melbourne research librarian. Searches were conducted across four databases (MEDLINE, PsycINFO, Scopus, and Web of Science) using combinations of terms relating to digital environments, young people, and mental health. Due to time constraints, searches were restricted to peer-reviewed journal articles published in English. All records identified across the four databases were imported into Covidence for de-duplication and screening. The full search strategy is provided in Table 1.

SCREENING AND ITEM GENERATION

Title and abstract screening commenced with dual screening of 20% of all articles to ensure consistency in applying eligibility criteria (see Table 2). Agreement across this dual-screened subset was 95% (Cohen's kappa = 0.83), after which the remaining titles and abstracts were single-screened. Any disagreements within the dual-screened subset were resolved through consensus discussion with the project team. Full-text screening followed the same approach: 20% of articles were dual-screened, agreement was 83% (Cohen's kappa = 0.67) and the remainder were single-screened once sufficient alignment in application of the eligibility criteria was established. Similarly, disputes in the dual-screened full-text set were resolved through discussion. Reasons for exclusion were recorded, and the overall screening process is summarized in Table 3.

For all included reviews, one researcher extracted bibliographic information and, where possible, verbatim statements outlining authors' recommendations for future research. All extracted recommendations were collated into a comprehensive list. Two researchers then undertook a staged, iterative categorization process in which recommendations were grouped into broad categories (e.g., interventions, mechanisms, methodology), then into more specific sub-categories (e.g., qualitative design, geographic diversity, men's body image), and finally into granular topic areas (e.g., long-term effects of social media, active and passive social media use, harms and benefits). During this process, regular meetings were held with the

broader project team to ensure consistency and agreement across the categories and items. Recommendations were de-duplicated and refined to produce a consolidated set of unique research recommendations.

These items were subsequently refined for clarity and suitability for both youth and professional panels. Youth advisors contributed to this process by reviewing and providing feedback on the appropriateness and ease of understanding for each item. They were asked to consider global young people aged 16-20 in this process and to provide suggestions for alternate wording or identify items that were difficult to understand. Project advisors also contributed their subject-matter expertise to this process, including Professor John Torous, Professor Luis Augusto Rohde, and Professor Katajun Lindenberg, as well as WHO and Safe Online staff. These experts were asked to consider the wording of each item, the categorization of items, and to identify any gaps or redundant inclusions.

The resultant set of unique, refined items formed the item bank uploaded to the 4CF Halnyx RTD platform for rating by project participants. The full item list can be found in Appendix B.

REAL-TIME DELPHI

An international RTD consensus study took place between December 2025 and January 2026. Delphi studies are widely regarded as a rigorous approach for obtaining expert consensus and informing guidelines, particularly on topics with limited evidence or agreement (Jorm, 2015). While Delphi studies are time consuming and resource intensive, RTD studies retain their methodological rigour while reducing timelines and costs. They allow for continuous feedback, iterative revision of judgments, and real-time tracking of consensus stability across diverse, international panels (Gordon & Pease, 2006; Gnatzy et al., 2011; Varndell et al., 2021). This RTD aimed to produce international consensus from young people and professionals regarding digital environments and youth mental health.

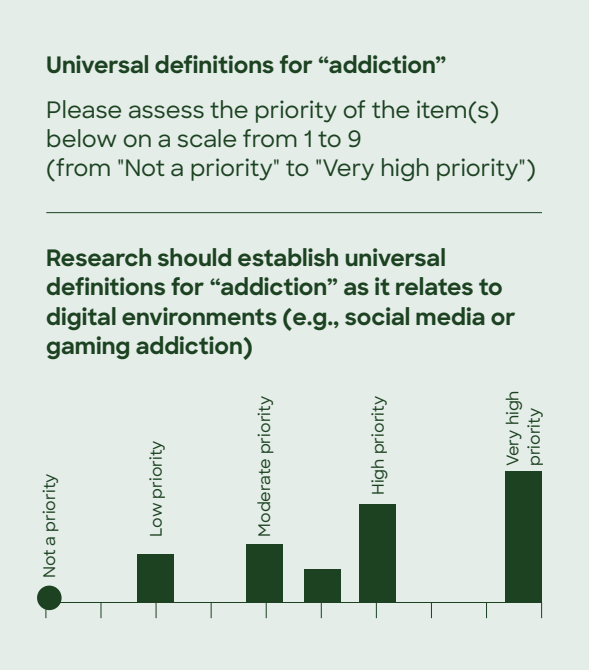
SAMPLE SIZE AND POWER

The sample sizes for this RTD were n = 22 for the professional panel and n = 26 for the youth panel, which is consistent with previous Delphi studies on similar topics (Cox et al., 2016; Robinson et al., 2018). These panel sizes typically allow for a meaningful consensus to be reached (Hasson, Keeney and McKenna, 2000) and align with research suggesting that sample sizes of 20-30 per stakeholder group are sufficient for replicability, with limited gains from increased sample sizes (Manyara et al., 2024).

ANALYSIS AND CONSENSUS CRITERIA

All participants who completed any part of the RTD within 4CF Halnyx were included in the analysis. Within the 4CF Halnyx platform, each item was summarized with medians (middle score) and IQRs (spread/consensus) for level of priority. For items to be included in the guidelines, they required a median score of ≥7 and IQR of ≤2 at the conclusion of the RTD period.

Figure 1. Example item as it appeared in the 4CF Halnyx dashboard. Participants were asked to rate each item from 1 ("Not a priority") to 9 ("Very high priority"). Participants were also welcome to leave a comment contextualising their response.




Observe

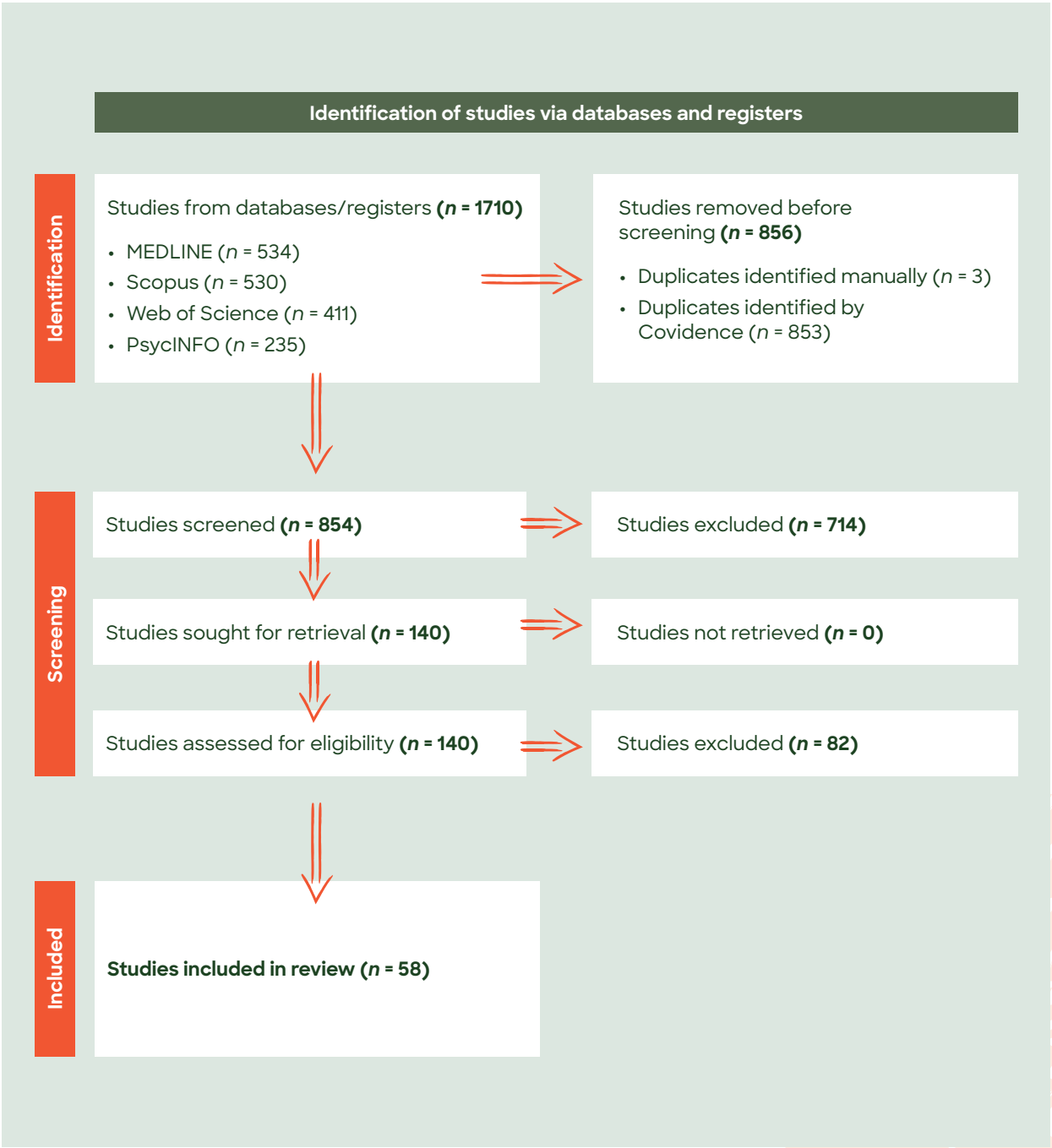
TABLE 1: SEARCH STRATEGY

Concept	Search terms
Digital environments	TI “internet” or KW “internet”
	TI “social media” or KW “social media”
	TI “online” or KW “online”
	TI “web” or KW “web”
	TI “cyber” or KW “cyber”
	TI “digital” or KW “digital”
	TI “virtual reality” or KW “virtual reality”
	TI “VR” or KW “VR”
	TI “artificial intelligence” or KW “artificial intelligence”
	TI “AI” or KW “AI”
Young people	TI “adolescen*” or KW “adolescen*”
	TI “teen*” or KW “teen*”
	TI “youth” or KW “youth”
	TI “young people” or KW “young people”
	TI “student” or KW “student”
	TI “child*” or KW “child*”
Mental health	TI “wellbeing” or KW “wellbeing”
	TI “wellbeing” or KW “wellbeing”
	TI “psychological distress” or KW “psychological distress”
	TI “distress” or KW “distress”
	TI “mental” or KW “mental”

TABLE 2: ELIGIBILITY CRITERIA FOR INCLUDED REVIEWS

	Screening Question	Yes = Continue	No = Exclude	Notes
1.	**Is the publication in English?**	Continue	Exclude	
2.	**Was the review published between January 2019 – September 2025?**	Continue	Exclude	
3.	**Is the study design a systematic, scoping, or umbrella review (with or without meta-analysis)?**	Continue	Exclude	
4.	**Does the review involve human participants?**	Continue	Exclude	
5.	**Are the participants aged 18 or under, or are findings disaggregated for this age group, or is the sample mean age 18?**	Continue	Exclude	Record if broader age range but includes adolescents
6.	**Is the review focused on a digital environment?**	Continue	Exclude	
7.	**Is the focus on broader environments rather than stand-alone interventions (e.g., online CBT only)?**	Continue	Exclude	
8.	**Are there mental health-related outcomes?**	Continue	Exclude	

TABLE 3: PRISMA FLOW DIAGRAM



WHO IS ORYGEN?

Leading the revolution in youth mental health

At Orygen, we believe that every young person deserves to grow into adulthood with optimal mental health. Everything we do is focused on delivering this outcome.

Orygen is Australia's Centre of Excellence in Youth Mental Health and the world's largest research and knowledge translation organisation focused on mental ill-health in young people.

We believe in treating early and focusing on recovery. Pioneering reform to deliver real-world practical solutions.

Our research is world-leading, impactful and creates change. Working directly with young people, their families and friends, we pioneer new, positive approaches to the prevention and treatment of mental disorders.

We advocate to make sure policymakers understand the need and cost of mental ill-health in young people. And we educate to ensure our research and evidence-based practice is used to develop innovative training programs and resources.

Our goal is to see all young people with mental ill-health get well and stay well.

REVOLUTION IN MIND orygen

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