



Digital Youth programme report

**World-class
research**

**Digital risk,
resilience and
interventions**

**Co-creating
change in
youth mental
health**

Find out more
digitalyouth.ac.uk

Contents

Foreword	3
Introduction: What is Digital Youth?	4
Our research challenges	6
Bringing it all together	7
Young people's involvement in our research programme	11
The Sprouting Minds story	12
Encouraging collaboration and connection across and beyond Digital Youth	18
Research project 1: Responsible research and innovation	22
Research project 2: Digital risk and resilience	26
Interlude: DeCODE – Digital debates and definitions	30
Research project 3: Dynamic interplay of online risk and resilience in adolescence	32
Research project 4: Developing resilience to self-harm and suicidality in the digital world: the role of brain, psychology and the social world	36
Interlude: Bridging gaps between research, policy and practice	40
Research project 5: Precision medicine platforms for digital interventions	42
Research project 6: SPARX: Developing precision digital cognitive behavioural therapy for young people with depression	46
Interlude: Digital Youth early career researcher training and development: A timeline	50
Research project 7: Robots to support emotional regulation for young people at risk of self-harm	52
Research project 8: CaTS-APP: A new digital tool to understand and support young people who self-harm	56
Programme outputs	60
Acknowledgements	70

Foreword

We are delighted to present the Digital Youth programme report. It has been a privilege to co-lead this programme; one of seven in the £24 million UKRI-funded Adolescence, Mental Health and the Developing Mind programme.

Digital Youth research spans digital risks and opportunities in order to create a safer and more supportive digital environment for young people. We are proud of the work in this report which represents the collaborative output of a world-class multi-disciplinary group of researchers who have co-created ground-breaking research with an inspiring team of young people, Sprouting Minds.

Our collaboration has been international, involving 12 universities from the UK and New Zealand, working across 8 projects spanning digital risk, resilience, interventions and responsible research innovation. Over 50 researchers, including 20 early career researchers (ECRs), have worked on these projects alongside 70 young people as part of Sprouting Minds and our youth panels. These projects have recruited over 1,000 young people as participants. Our core principles in working with young people and Sprouting Minds has been care, co-production and respect. It has been creative, fun, and at times challenging – with mutual learning and new insights coming from our different perspectives. We are grateful to our Sprouting Minds Chairs, Sarah, Lucy-Paige, Ayan and Lucy for their tremendous leadership.

We also acknowledge the crucial contributions of Louise Arseneault, Chair of our international Scientific Advisory Board, and Peter Fonagy who has chaired our Partners Board. The challenge of integrating learning across different projects and disciplines would not have been possible without Emily Lloyd 'bringing it all together'. We are also indebted to Tom Bailey, our artist in residence, who turned often dry and impenetrable scientific and technical language into engaging images which illustrate this report. Finally, for the fantastic work and dedication of our programme manager, Jo Gregory, without whom operations of the programme, and compilation of this report, would not have been possible.

We hope you enjoy this report and find it both offers new insights and challenges existing assumptions. While the Digital Youth programme is coming to an end, the collaborations made, and ideas and innovations generated, should help to inform research, evidence-based policy and practice innovations in the years to come.



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Higher Education partners



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Introduction

What is Digital Youth?

The digital world, perhaps the biggest change to human culture since the industrial revolution, presents both opportunities and risks for young people's development, mental health and wellbeing, and involves all aspects of their lives. Previously, no single academic discipline or organisation had the breadth and capacity to coordinate research and policy in this area.

Digital Youth, an interdisciplinary programme bringing together world-leading researchers, has been co-produced and co-designed with our young person's advisory group Sprouting Minds (known as Sprouts) and is at the forefront of these developments.

The Digital Youth team have worked to find practical solutions through understanding the complex risks and opportunities for mental health associated with young people's engagement with the digital world, with the aim of generating new preventative and therapeutic interventions.

Our vision: To harness the potential of digital technology to transform young people's mental health and wellbeing and provide a safe, and supportive, digital environment to tackle the growing humanitarian crisis of unmet need arising from mental health disorders in young people aged 10-24 years old.



- Pictured clockwise: In London for the first Digital Youth early career researchers event, July 2022. Researchers and members of Sprouting Minds at the Digital youth launch event, September 2021. Working on the DeCODE project, February 2025.

What's the problem?

Mental health problems in children and adolescents have increased dramatically over the past decade in the UK, intensified by the COVID-19 pandemic and its associated restrictions. This crisis has unfolded alongside a profound societal shift: the rise of the digital environment. For young people, being online, particularly through smartphones and social media, is now a central part of daily life. While digital platforms can offer connection, information, and peer support, links have been made to increased risks of mental health issues especially in girls and marginalised groups. However, understanding is hindered by limited causal evidence and a lack of clarity around how digital engagement interacts with mental health outcomes. Importantly, not all young people are equally vulnerable, and the experience of mental health issues may lead to certain risky types of engagement with the [digital world](#).

The Digital Youth programme has sought to understand the [key factors associated with resilience](#) to negative online experiences such as [cyberbullying](#), and has developed theoretical accounts of what contributes to resilience and [harm online](#) (DIORA). We have also developed more nuanced measures to capture digital experiences and measure their impact on mental health issues ([and vice versa](#)) (DAFI).

Face-to-face services and charities are struggling to keep pace with the demand for mental health support for young people. Digital interventions have emerged as a promising avenue to address this gap, offering scalable, accessible support. However, despite the proliferation of mental health apps, very few are grounded in robust research evidence, and even fewer are successfully implemented within NHS services.

As young people's online activity continues to rise, particularly post-pandemic, the need for trusted, evidence-based digital support is more critical than ever. Social media platforms, however, are not designed to meet these mental health needs. The Digital Youth programme has worked to change this

by co-producing interventions with young people themselves, identifying digital risks, and building resilience through innovative, research-led tools like the [CaTS-App](#) (a new digital tool to understand and support young people who [self-harm](#)), [SPARX-UK](#) (gamified CBT for young people with low mood and anxiety) investigating the benefits of adding human eCoach support to a digital intervention, and [Purrrble](#), a socially assistive robot designed to improve emotion regulation and mental health in LGBTQ+ young people at risk of self-harm.

What were our aims?

We focused primarily on depression, anxiety and self-harm as the mental health problems with high and increasing prevalence both across adolescence and during the last decade. Working together with young people we aimed to:

- identify risk and resilience factors related to troublesome online experiences and activities, to prevent or reduce the emergence of depression, anxiety, and self-harm in young people (Research project 2).
- understand how individual differences affect digital engagement (for example with social media and games) (Research project 3) and adolescent brain and psychosocial development (Research project 4).
- build, adapt and pilot a new generation of personalised and adaptive digital interventions incorporating a mechanistic understanding of human support (Research project 6) with a new digital platform (Research project 5) for personalised intervention delivery and trials in adolescent mental health conditions.
- develop and test a novel socially assistive robot to help regulate difficult emotions with a focus on young people who self-harm (Research project 7).
- develop and test a new digital tool to better assess and manage self-harm in young people (Research project 8).

Our research challenges

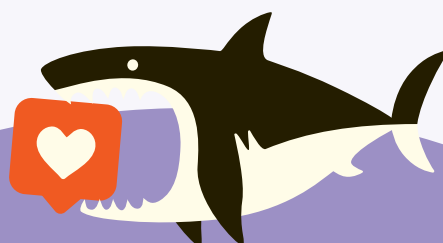
There are eight separate research projects in Digital Youth, built around two interconnected themes. The first being **digital risk and resilience** (Research projects 1-4) and the second being **preventative and personalised digital interventions** (Research projects 5-8).

1



Responsible research and innovation

2



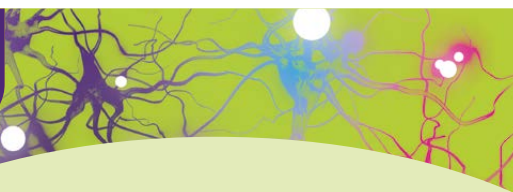
Digital risk and resilience

3



Dynamic interplay of online risk and resilience in adolescence

4



Developing resilience to self-harm and suicidality in the digital world: the role of brain, psychology and the social world

5



Precision-medicine platforms for digital interventions

6



SPARX: Developing precision digital Cognitive Behavioural Therapy for young people with depression

7



Robots to support emotional regulation for young people at risk of self-harm

8



CaTS-APP: A new digital tool to understand and support young people who self-harm

Some programme highlights

- **Friendship shields: Happiness with friends is key to cyberbullying resilience.** Our research reveals 12 resilience factors that help young people cope with cyberbullying and positive friendships stand out as a powerful protective force.
- **Online positivity prevails: But social comparison takes a toll on youth wellbeing.** Most online experiences are positive, but how young people feel and what they compare can impact mental health.
- **Purrble helps LGBTQ+ youth regulate emotions and reduce depression & anxiety.** Interactive companion shows promise in supporting mental health and emotional wellbeing among LGBTQ+ young people.
- **126 young people joined trial of innovative online game SPARX to tackle mental health with fresh recruitment approach.** Digital youth researchers test serious game SPARX using novel methods to engage youth in digital mental health support.
- **Co-created CaTS-App empowers collaborative self-harm assessment: Clinicians and young people say 'we want this'!** Clinicians and young people team up to design a digital tool for self-harm assessment and it's gaining enthusiastic support across care settings.

Bringing it all together

In February 2025, the whole Digital Youth team came together in Nottingham for a workshop with artist Tom Bailey. Each team shared their research findings and next steps. We challenged ourselves to think, as a whole team working across Digital Youth, **what we know now** that we didn't at the start of this programme. We also discussed, as a wider team, what questions we still need to address from here. We challenged ourselves to think creatively about how we might 'bring it all together' and visualise **what we have learnt together** across all the different teams which have made up Digital Youth. We are proud to share the illustration you see in the following pages as an output of these efforts.



► Pictured, left-right: Digital Youth researchers and members of Sprouting Minds at the first Digital Youth 'huddle', September 2022.

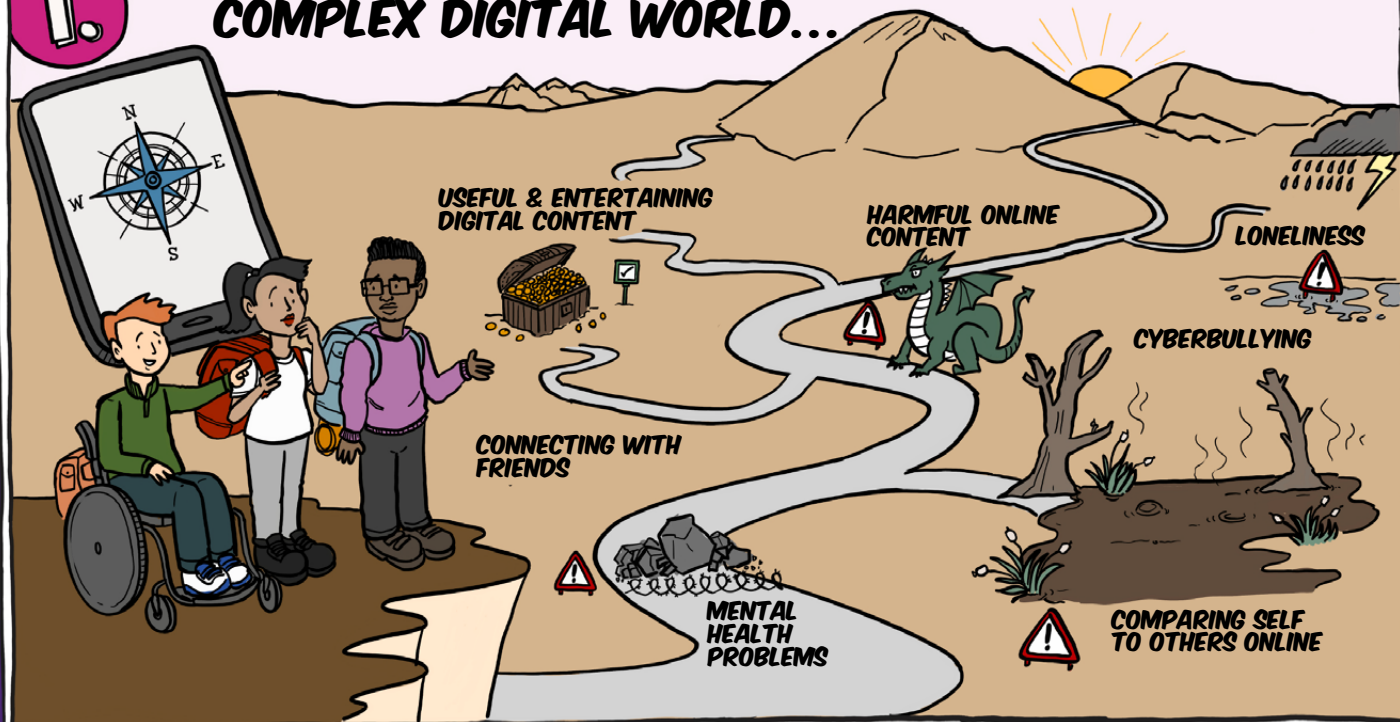
► Sprouting Minds members and the Digital Youth Patient & Public Involvement Coordinator, Dr Emma Nielsen, September 2022. And self-portrait, Tom Bailey.

► Digital Youth researchers and members of Sprouting Minds at our final Digital Youth 'huddle', February 2025.

BRINGING IT ALL TOGETHER

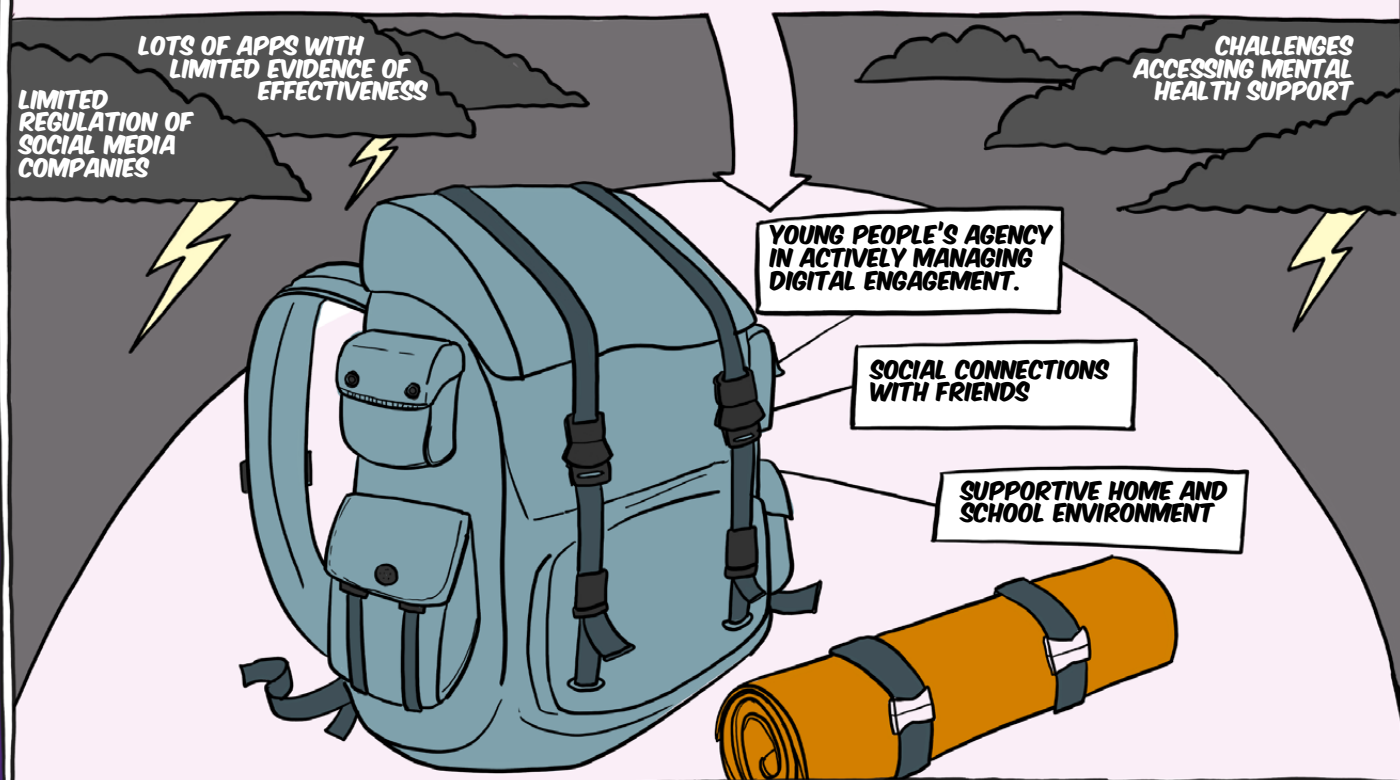
1.

YOUNG PEOPLE HAVE TO NAVIGATE THE COMPLEX DIGITAL WORLD...



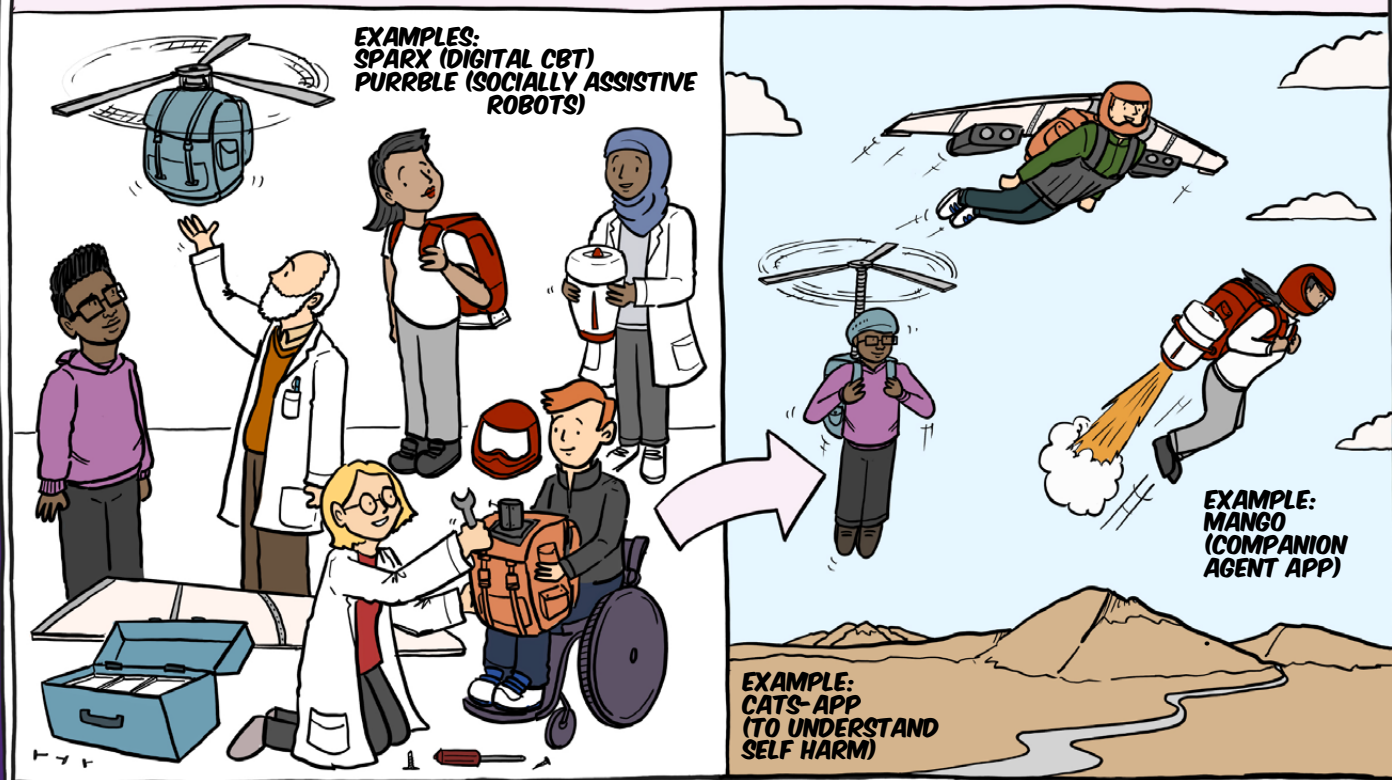
2.

DESPITE THE CHALLENGING CONTEXT, THERE ARE LOTS OF THINGS YOUNG PEOPLE ALREADY HAVE & DO THAT HELP THEM NAVIGATE THE DIGITAL WORLD...



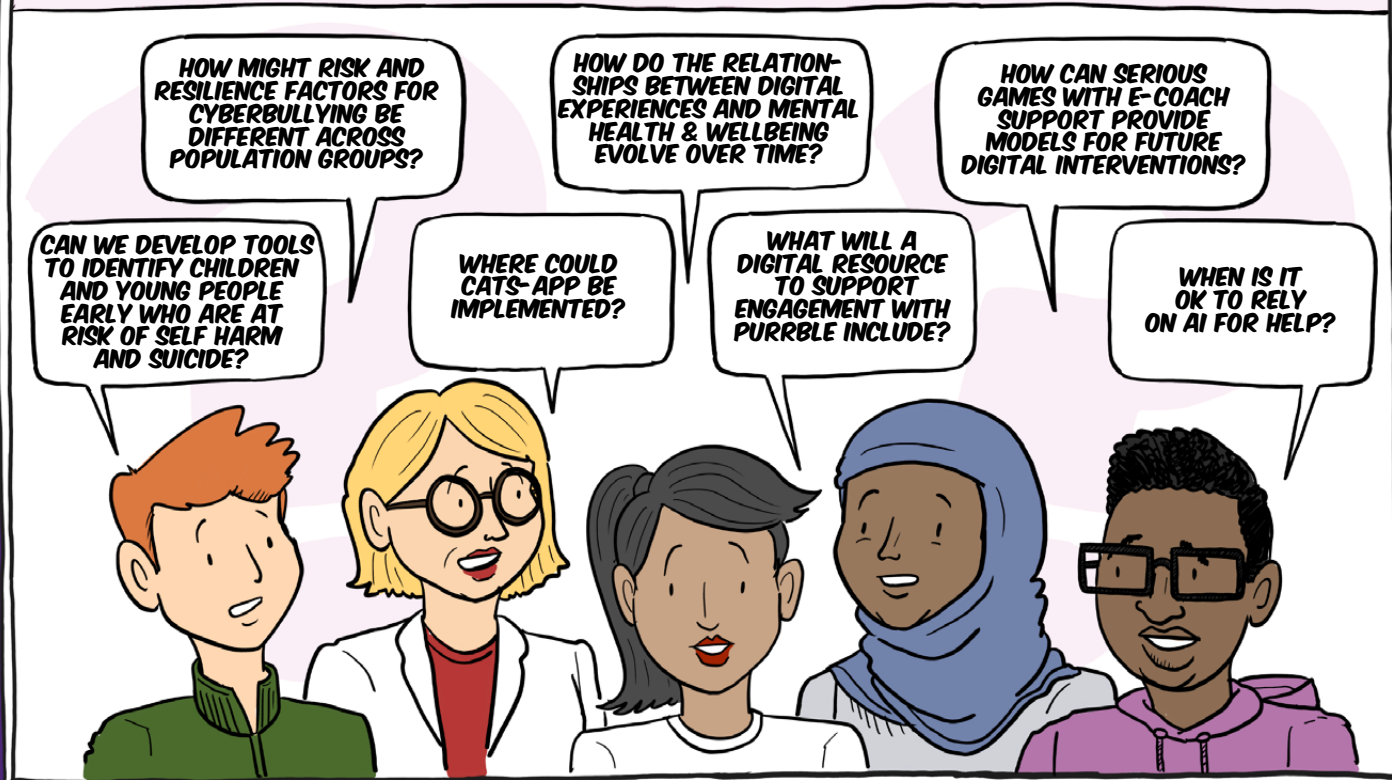
3.

RESEARCHERS, YOUNG PEOPLE AND PRACTITIONERS ARE WORKING TOGETHER TO BUILD MORE RESOURCES TO HELP THEM ON THEIR JOURNEY...



4.

THERE IS STILL MUCH WORK TO DO AND QUESTIONS TO EXPLORE...



Connecting themes

This interdisciplinary programme of research addresses two major challenges:

Research theme 1: **Digital risk and resilience**

Research questions:

1. What are the mechanisms and direction of effects between exposure to the 'digital environment' and young people's mental health?
2. How does engagement with the digital environment influence, and how is it influenced by, diversity in young people's mental health problems, brain and cognitive development?
3. What potentially modifiable factors promote mental health resilience in young people to adverse digital exposures?



Research theme 2: Preventative and personalised digital interventions

Research questions:

4. How can everyday digital platforms be designed to minimise harms to young people with mental health problems, and promote resilience to online mental health risks?
5. What are the mechanisms by which human support facilitates effective digital interventions?
6. How to develop personalised digital interventions sensitive to young people's diversity and preferences that target psychological mechanisms (for example, emotional regulation and impulsivity) and integrate human support to optimise outcomes and bridge the adolescent mental health treatment gap?



Young people's involvement in our research programme



By Becky Woodcock, Digital Youth Patient and Public Involvement Manager

Young people have been central to shaping Digital Youth from our Young Person's Advisory Group, Sprouting Minds (also called Sprouts) throughout; from developing the initial application, to championing youth-friendly outputs and exploring how we can maintain the legacy of youth co-production. Our involvement model prioritises flexible and creative opportunities, enabling young people (YP) to flourish within different roles. YP have created meaningful opportunities that reflect their lived experiences and ensure youth voices are embedded throughout our work.

Achievements

We've supported YP through tailored engagement: regular updates, bespoke research sessions, wellness plans, and mentoring. Co-designed opportunities like the Sprout's Shout Out group empower YP to shape communication strategies, with YP contributing to blogs, public speaking, data analysis and leadership roles. YP have impacted project design by influencing agent features (Research project 5), selecting outcome measures (Research project 6), and shaping safeguarding procedures (Research

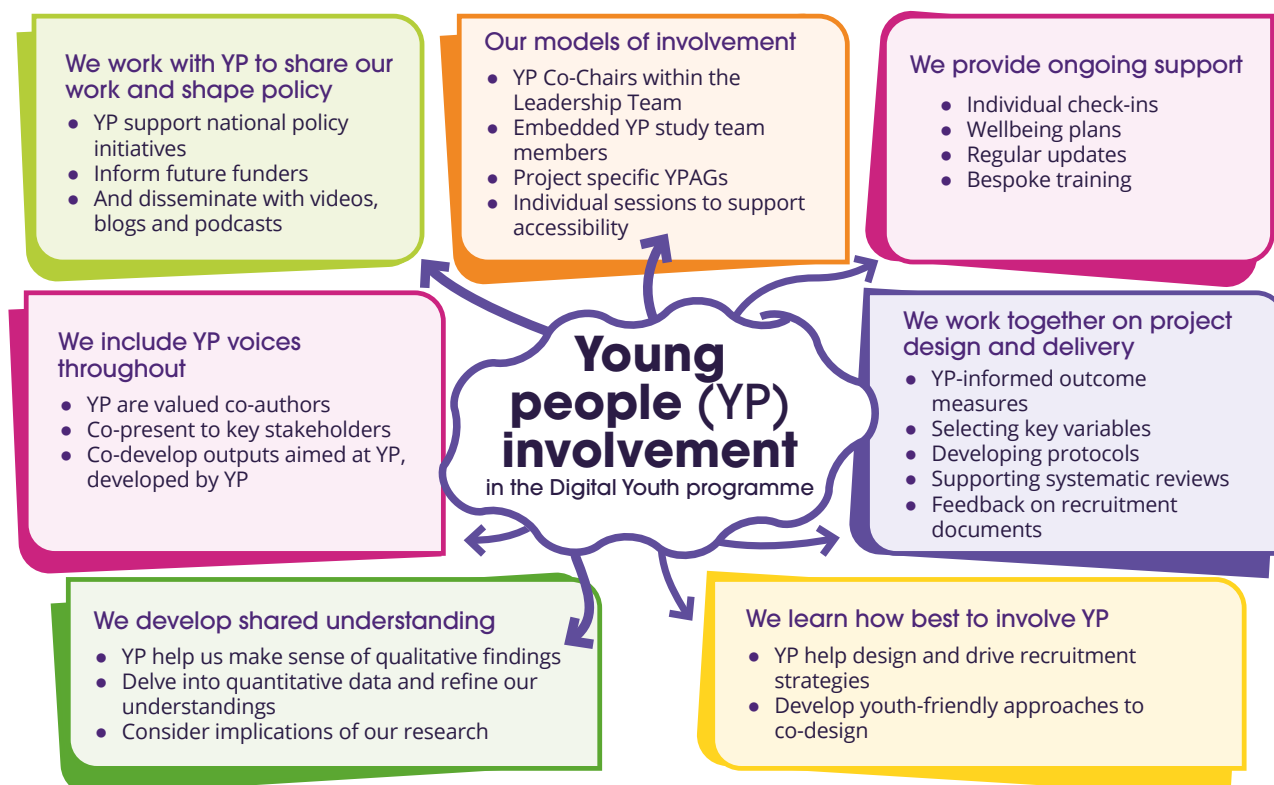
project 7). They've contributed to systematic reviews, blog dissemination, and recruitment strategies. Analysis has been co-developed with Research projects 3's youth group, and informed by CaTS workshop findings (Research project 8).

YP have influenced policy, contributing to government consultations and supporting DSIT Commission funding. A Wellcome Trust initiative builds on our co-production model to create a scalable framework for youth involvement in digital mental health.

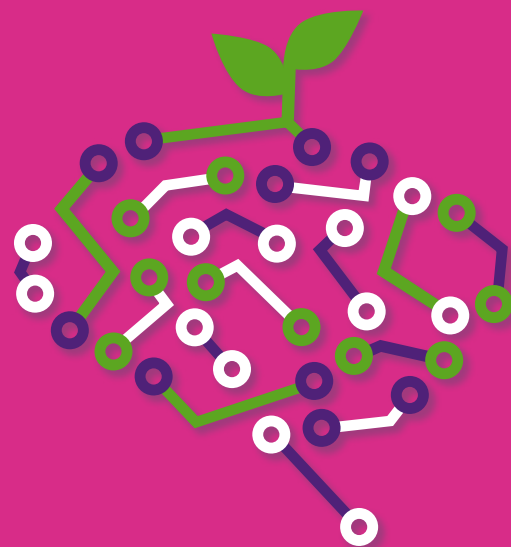
YP voices are embedded through co-authorship, reviews, youth-friendly outputs, and presentations to external partners. Co-production methodologies include planning co-design sessions and shaping supportive workshop environments.

Diversity and inclusion

Our bespoke diversity monitoring reflects broader inclusion. Sprouting Minds members span ages 19–28, with Research project 3's panel aged 13–19. The group is ethnically diverse, with varied educational and occupational backgrounds.



The Sprouting Minds story



“ Our amazing journey ”

“Sprouting Minds has been part of my development out of adolescence into adulthood. I’ve given to the project and the project has given to me.”

—NC, *Sprouting Minds* member

Reflecting on our journey: Five years of co-production

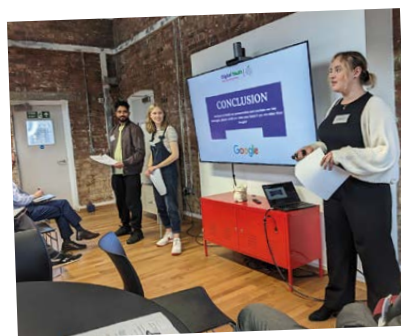


By Sarah (Chair, Sprouting Minds)

As we mark five years since the very beginning of this project even before funding was secured it feels like the right moment to pause and celebrate everything we’ve built together. From the bid stage through to today, this journey has been defined by collaboration, care, and a shared commitment to doing things differently.

The journey so far

What started as a hopeful idea has evolved into something far greater than a traditional research project. Together, we’ve challenged norms, created space for lived experience to shape every stage of the work, and built relationships that are grounded in trust and mutual respect. It hasn’t always been easy, but it has always been meaningful. We’ve all had our challenges along the way but Digital Youth has always been home.





- Photos: Left: Sarah, Nkem and Stuart running a workshop at our first 'Huddle'. Centre: Id, Lucy-Paige and Lucy present at the Digital Youth Partners meeting, October 2023. Right: Ayan, Belinda, Sarah and Emmanuel collect the Heart and Soul award on behalf of Sprouting Minds, February 2025.

What went well

There's so much to be proud of. We've held onto our values throughout from how we make decisions, to how we listen to and support each other. Our creative approaches, the accessibility of our outputs, and the strength of our partnerships speak volumes about what's possible when we truly work together.

What we've learnt

Co-production asks a lot of us. It requires time, patience, vulnerability, and a willingness to unlearn. But the learning has been about power, process, and what it means to share space with care. I've learned that real change happens not in big statements, but in the everyday commitment to showing up, listening deeply, and letting go of control.

Where we go from here

This project may be coming to a close, but the work doesn't stop here. The principles, practices, and relationships we've developed are foundations to build on. Whether through future research, community work, or individual practice, I believe we'll carry forward the spirit of this project and continue to push for more inclusive, equitable ways of working.

To everyone who has been part of this journey: thank you. Your contributions, every single one, have shaped what this project has become. I'm so proud of what we've achieved together.

Journey of discovery

Community opportunities

Inclusive networks

A poem about hope

By Ayan, Sprouting Minds Deputy Chair

What would happen if you surpassed all that you endured and you were to receive hope,

Hope to create your own destiny,

To shape the care you shall receive,

To retrieve your own memories and experiences of pain and hurt, and have the power to restore your hopes and dreams,

What if you didn't conceal your past, and you were able to reach beyond the labels and confines which extend before you,

What if you could be free?

I was living in an environment of dysfunction and I faced many disparities,

My only hope was to find hope,

To yearn to be hopeful,

To believe in this hope,

To be sustained and nourished by this hope,

The hope to have the peace of mind that one may possess when they reach the merciful, graceful touch of hope.

Hope was enough.

Hope bore stability when surrounded in fragility.

In my work, I am embodying hope, and instilling hope, witnessing the life cycle of what makes me feel alive.

Such is hope.



► Poem and painting by Ayan, Sprouting Minds



"We'd planted seeds
and we sprouted, and
now we pollinate"
—NC, Sprouting Minds

Storytelling workshop

A short story written by NC, Sprouting Minds, at the Digital Youth storytelling workshop spring 2024 which aimed to help young people and researchers narrate their experiences and research in creative and engaging ways.



► Sketch by Lucy, Sprouting Minds

A brazen, compassionate soul cares – yearns to rescue.

After being presented with the opportunity, I deliberated. A few years ago is when the voyage of my research journey commenced.

Now, I sit aboard a jostled ship as it navigates back to the set course. I'll tell you of ebbing and flowing tides and how despite the hurdles in this journey, I remained steadfast.

I acquired a taste, and along with my crewmen, we've sailed and discovered. Is my participation making a real difference?

I'll not let this journey be for nought. Not with the thought of those I set out to help constantly on my mind. I'll be a hero. Won't I?

Crashing waves and raging storms tried to deter me but I continued, my zeal strong as steel. Along the way, I gained a diverse spectrum of experiences, met people, built relationships. I'm established on this ship. My devotion is recognised. My presence on the ship is unique, irreplaceable. Every crewman has their place.

There, in the distance, comes the shape of our destination. I see it. Yes, my involvement makes a real difference.

What Sprouting Minds has meant to me

By Stuart

I joined Sprouting Minds later than most, at the age of 24/25, not through lack of interest, but due to a lack of opportunities for someone like me: a young Black male, a demographic often underrepresented in youth involvement and research spaces. Joining the group gave me more than just a platform; it gave me a sense of belonging and a genuine community of peers who were equally committed to shaping the future of youth mental health in the digital world.

Through Sprouting Minds, I gained invaluable insight into the research process and the power of meaningful co-facilitation and collaboration. I was empowered not just to contribute, but to challenge and educate,

particularly around what authentic involvement looks like for young people, especially those from marginalised backgrounds.

The experience helped me grow from being a participant to becoming a Co-PPI (Patient and Public Involvement) Lead on a national research project. That progression reflects both the ethos of Sprouting Minds and my own journey from limited access to leadership, from outsider to changemaker.

My involvement reflects Sprouting Minds' mission to amplify young voices in research and policy, drive progressive change, and create a lasting legacy of youth-led insight into digital mental health. It's a space where lived experience is valued, and where I've seen first-hand how dynamic, informed, and transformative young people can be in shaping research that truly reflects their needs.



What Sprouting Minds has meant to me

By Id

When I first joined Sprouting Minds and Digital Youth in late 2020, I wasn't entirely sure what to expect. At the time, all I could bring with me was my lived experience of mental health and neurodivergence, alongside my background in creative media production. Looking back now, I can see just how valuable those experiences were—not only for me but also for the projects I've had the privilege to contribute to.

Over the years, I've had the opportunity to collaborate with other young people to produce a wide range of multimedia content, from animations and filmed videos to online resources. These projects have been more than just creative outputs; they've been platforms for amplifying young people's voices and shaping conversations around digital mental health. The process of working together, sharing ideas, and building something meaningful as a team has been both rewarding and eye-opening.

The relationships I've built along the way have been just as important as the work itself. Connecting with other YPAG members and working alongside staff who genuinely value our perspectives has been incredibly empowering. Their encouragement and support have made me feel not only heard but also capable of making a difference. Attending in-person events has also been a real highlight, offering moments of connection, celebration, and inspiration that have stayed with me.

Overall, being part of Digital Youth and Sprouting Minds has given me the chance to shape digital mental health research from a young person's perspective. It's an experience that has helped me grow personally and creatively, and it has shown me the power of lived experience in influencing change.



"Sprouting Minds has been a safe place to share experiences and use those to help others."
—*Sprouting Minds member*



"I was impressed that the researchers took our feedback onboard, and treated us as peers in listening to our ideas."
—*Yasmin, Sprouting Minds member*

Being part of creating digital mental health resources, like animations and visual content, has allowed me to use my creative skills for a meaningful purpose. It's been rewarding to see how our ideas grow together into tools that can really support young people's mental health and wellbeing.



- [illegible]



Encouraging collaboration and connection across and beyond Digital Youth



Within the programme, a dedicated team have focused on encouraging connections and collaboration between Digital Youth teams and also with wider partners and scientific advisors.

We have helped to make the most of all the expertise we have across the different parts of the programme and beyond, to ultimately make a difference to child and young people's mental health.

Our activities have included events and meetings to bring together our Sprouting Minds youth advisory group and all our research teams from across the UK. These events have ensured we have learnt from each other's different expertise and specialisms and identified further ways to work together. Our events for partners have brought our researchers together with key stakeholders in the sector. Our scientific

advisory board has ensured that our research teams have been steered by the very best international expertise.

Our DeCODE project has provided a regular forum to bridge the gap between different disciplines and types of expertise amongst our team. We worked together to explore our different understandings of key concepts in digital youth mental health research. We also collaborated to produce a visual dictionary of definitions for key terms that we use across the programme.

Key outputs

- 3 Scientific Advisory group meetings and 5 video feedback reviews took place chaired by Professor Louise Arseneault, bringing together international experts in the field to offer advice and guidance to research teams.
- Professor Peter Fonagy hosted two in-person partner meetings in October 2023 and April 2024. These events were attended by representatives from over 13 different industry and charity partners, including

Place 2 Be, Kooth, the Mix and Mind. As well as opportunities for discussion and networking during the event there have been a number of follow up conversations and collaborations. For example, agreements to support recruitment to studies through schools and follow up meetings to discuss possible collaboration on implementation in the future.

- We hosted 7 in person 'huddles' across the course of the programme. These have brought together colleagues from across research projects and our Sprouting Minds youth advisory group. These have included scientific updates and collaborative problem solving on common challenges, and idea generation for dissemination, such as implementation. Colleagues fed back that these meetings provided valuable fresh perspectives, ideas and motivation.
- We have organised training and capacity building activities related to science

communication and public engagement. These have included: training on public engagement, two online workshops on story telling for research, and a communications skills day for members of our Sprouting Minds group.

- We have organised regular webinars with world class experts such as Dr Amy Orben, University of Cambridge, and Professor Olivia Kirtley, KU Leuven. These brought together colleagues involved in Digital Youth to enable academic debate and discussion.
- We hosted 3 workshops for our DeCODE digital debates and definitions project. These brought together researchers at all levels together with young people who have been involved in different aspects of our work. This project has resulted in collaborative illustrations and 29 accessible definitions exploring key terms such as digital engagement and resilience.



- Pictured clockwise from top left: Professor Sonia Livingstone presenting 'Online risks – Calling time on screen time?' at our partners meeting in 2023. Professor Peter Fonagy CBE leading a discussion on our partners' current priorities and challenges – October 2023. Professor James Gross, one of our Scientific Advisory Board members, presents to our team as part of the Digital Youth webinar series. Members of Sprouting Minds and our research teams in a workshop at our 'Huddle' meeting in February 2025.

Scientific Advisory Group spotlight

On behalf of the Scientific Advisory Board, I am delighted to write in support of this report from Digital Youth. It has been both enlightening and stimulating to work with this interdisciplinary programme, which explores the complex risks and opportunities that digital engagement presents for young people's mental health. Digital Youth has become a cornerstone for generating robust scientific evidence on the impact of digital technology on young people's mental health and wellbeing. This evidence is urgently needed to move beyond polarised opinions, inform the development of new preventive strategies and therapeutic interventions, and shape government policy on the regulation of digital content and usage.

Our Advisory Board comprises international experts with diverse backgrounds, including digital technology, mental health, youth wellbeing, and research ethics. We have engaged with the leadership team annually through online meetings, and provided feedback twice a year on video updates and key findings shared by all work packages. Our role has been to offer insight into the research conducted by the Digital Youth team, provide advice when challenges arose, and collaborate with the leadership team on sustainability and future directions for the network.

We have consistently been impressed by the steady progress of the work, the originality of the findings, and the collegiality among the Digital Youth scientists. The network fosters a dynamic and inclusive space for researchers to exchange ideas and collaborate. Beyond scientific excellence, Digital Youth stands out for its integration of multidisciplinary expertise and meaningful involvement of young people through Sprouting Minds. The research is informed not only by scientific advances but also by the lived experiences of young people, an essential approach in this rapidly evolving field.

The success of this initiative is evident not only in its publications but also in the development of a vibrant community of early career researchers who have grown within the Digital Youth programme. We strongly support the continuation and expansion of this important work and commend the Medical Research Council for its role in enabling such impactful research.

Louise Arseneault
Chair, Scientific Advisory
Board for Digital Youth,
Professor of Developmental
Psychology, Kings College
London



Quotes from our Scientific Advisory Board Members

"Digital Youth has set a high benchmark in how we study the intersection of digital technology and mental health. Its interdisciplinary approach is exactly what this field needs to move forward." — *James J. Gross, Ph.D, Ernest R. Hilgard Professor of Psychology, Stanford University*



"The Digital Youth team's committed approach to youth involvement combined with rigorous science has led to outstanding work and is an exceptional model for future research." — *Tamsin Ford, Professor of Child and Adolescent Psychiatry, University of Cambridge*

Next steps

- ▶ Our team will continue to support the Digital Youth team to disseminate key findings and outputs in accessible and engaging ways; in particular through social media and reaching out to key stakeholders directly.
- ▶ We will take what we've learnt in terms of fostering collaborations and use this to build our internal communities and continue through a new Digital Youth network.
- ▶ We will continue to forge collaborations with stakeholders including international researchers, young people, industry and third sector organisations, to ensure that digital mental health research for young people is relevant and useful.

Insights from our research teams

- “ The ability to get together felt so important, especially to discuss recruitment and public engagement in person. Thanks for making it so positive – these events are energising.”
—*Digital Youth programme member feedback, February 2024 Huddle*
- “ I found it very useful to share early experiences / discuss challenges and to have some time to reflect on our project.”
—*Digital Youth programme member feedback, February 2022 Huddle*

Insights from our research leads

- “ It has been fantastic to be part of this programme encouraging collaboration within and beyond the Digital Youth team. We have been impressed by the team's enthusiasm to build meaningful connections across work packages, with young people, and with other key stakeholders. This enthusiasm has driven the success of range of initiatives to enable deeper connections, understanding, and more effective collaboration.” —*Cathy Creswell, Paul Foundation Professor of Developmental Clinical Psychology, Oxford University*
- “ It has been a privilege to lead Digital Youth's engagement with charities, policy makers and industry. Our events have fostered genuine dialogue, helping researchers understand partners' priorities while sharing emerging insights to shape more relevant and impactful research.” —*Peter Fonagy CBE, Professor of Psychoanalysis and Developmental Science, UCL*



Responsible research and innovation



Project partners



As part of Research project 1, our aim was to explore how research within the Digital Youth programme could anticipate and mitigate harm, while also supporting responsible practices when developing technology or engaging with young people. Our project focused on investigating how collaboration and co-production processes with young people across the programme fostered more responsible, inclusive, and ethical approaches to their involvement in research and innovation.

Recognising the programme's core commitment to youth participation, we adopted a mixed-methods approach to map out Responsible Research and Innovation (RRI) practices and values throughout the programme.

Key activities

Our research involved three key activities:

- **A survey** with researchers and young people to explore perceptions and implementation of Responsible Research and Innovation (RRI) within the programme.
- **A systematic scoping review** analysing how PPI (Patient and Public Involvement) and RRI have been used in adolescent mental health projects, highlighting both the extent and impact of meaningful and responsible youth involvement.
- **Consultation with researchers and young people** to reflect critically on power dynamics, relationships, and the findings from our earlier activities.

Our goal is to synthesise these insights to inform an 'RRI Framework for the Responsible Involvement of Young People in Mental Health Projects, designed to support researchers and professionals' in building more inclusive and ethical collaborations.

► Pictured: Illustration by Tom Bailey

Why this matters:

- This work reinforces that young people are not passive subjects, but central players in adolescent mental health projects. It promotes accountability, inclusion, and care in all stages of research and innovation.
- By centring the best interests of young people and affirming the professional duty of care held by researchers, the framework will support safer, more meaningful youth participation.

Our findings highlight the importance of relationship-building, trust, and mutual care in co-production settings (particularly for young people with lived experience) ensuring that research processes are as impactful and protective as the outcomes they produce.

Key outputs

- 1. Survey Report on RRI Practices within the Digital Youth programme.** A mixed-methods survey capturing the perspectives of researchers and young people on the understanding and implementation RRI practices across the programme, which led to the papers *“Exploring Responsible Research and Innovation^[147] (RRI) in Youth Mental Health: Reflections from Researchers and Young People”* (under peer review) and *“Co-production is Caring: Young People’s Reflections on Responsible and Dialogic Co-production in Youth Mental Health”^[148]* (under peer review).
- 2. Systematic Scoping Review on PPI and RRI in Adolescent Mental Health Projects.^[149]** A comprehensive review identifying how PPI and RRI are conceptualised and operationalised in youth mental health research, highlighting good practices and gaps in responsible youth engagement, which led to the paper *“Involving Young People in Mental Health Research: A Scoping Review of PPI and RRI”* (under peer review).
- 3. RRI Framework for the Responsible Involvement of Young People in Mental Health Projects.^[150]** An emerging framework informed by survey data, scoping review findings, and insights from a consultation workshop with researchers and young people. It aims to guide professionals in fostering inclusive, responsible, and impactful co-production practices.

Sprouts co-production: creative reflections

One of the Sprouts collaborating with us wrote the poem below:

Co-production is caring

More than numbers, co-produced research quantifies the care for my perspective,

More than due diligence, co-produced data is designed to be purpose built, meaning empathy and responsiveness remain our shared objective,

More than “sources of data”, we are human and our experiences may be subjective, but our feelings are respected, and together,

As researchers and collaborators, we are the catalyst for change, proving co-production is caring,

Daring to challenge the status quo and redefining processes of research,

More than what meets the eye, give us the platform and you won’t believe what we will unearth.

—Ayan



Examples of co-production and co-design

Within our research project, we engaged with Sprouts as both co-researchers and consultants, and they contributed meaningfully to the design, development, and delivery of key activities.

- **Co-researcher role:** Sprouts were embedded as integral members of the research team, contributing at all stages of the RRI Survey and Scoping Review. Their involvement included co-developing research questions, shaping data collection tools, supporting the interpretation of findings, and helping to deliver results. They also collaborated in producing youth-friendly versions of some outputs, ensuring accessibility and relevance for their peers. This aligns with a “co-researcher/co-developer” model, where young people participate as experts by lived experience and share ownership over the project’s direction and outcomes.
- **Consultation role:** Sprouts also contributed through targeted consultations, offering rapid and focused feedback on materials, findings, and communication outputs. While not involved in final decision-making in this capacity, their insights directly improved the clarity, tone, and accessibility of youth-facing resources. This feedback loop made the outputs more attuned to young people’s needs and expectations.

Why this matters and the impact:

- Involving young people as co-researchers helped reframe traditional power dynamics, ensuring their perspectives were central to both process and content.
- Their contributions significantly enhanced the relevance, rigour, and accessibility of research activities and outputs, particularly those aimed at youth audiences.
- The dual role of co-research and consultation allowed for flexibility in engagement, while maintaining a strong commitment to inclusive, respectful collaboration.
- This model serves as a foundational example for how responsible involvement can shape adolescent mental health research to be more ethical, equitable, and impactful.



► Workshop illustrations by Tom Bailey.

Next steps

- Produce a youth-friendly version of the findings, and submit both for peer review and dissemination.
- Plan and deliver a consultation workshop with researchers and young people to reflect on findings and further co-develop principles of responsible involvement.
- Consolidate all data, reflections, and outputs from Research project 1 to inform the development of the ‘RRI Framework for the Responsible Involvement of Young People in Mental Health Projects’.

Insights from Sprouting Minds

- “ This is not just, obviously, data, this is like real people’s lives.”
- “ Yeah, “we are lived experience” ... we all have lived experience and it’s just asking about, you know what, could that be a barrier? How can we support? You know, being sensitive around that? And in my past experience using, like, in deploying my lived experience, those questions weren’t asked despite that. So I think it was “like” a nice change [for this project].”
- “ I remember when like Sprouts first started in, there was a lot of time spent just in terms of just ensuring that... you know, we were happy with the way that we communicated online and that it was, it was made known that like *“if you didn’t want to have your camera on, that’s completely fine.”*”
- “ I think definitely within these meetings [in the project] like even like just now I asked and I had no qualms in asking and it’s always been very like, you know like let’s start every meeting. It’s always been like *“if you don’t understand the things, please ask.”*”
- “ I have felt really valued compared to my experience in the NHS or other services which are conducting PPI [patient and public involvement] activities.”
- “ So when it’s been so long, when we first started, if I remember correctly, everyone had like well-being plans made for them. There was conversations of like how you prefer to be communicated with.”

Insights from our research team

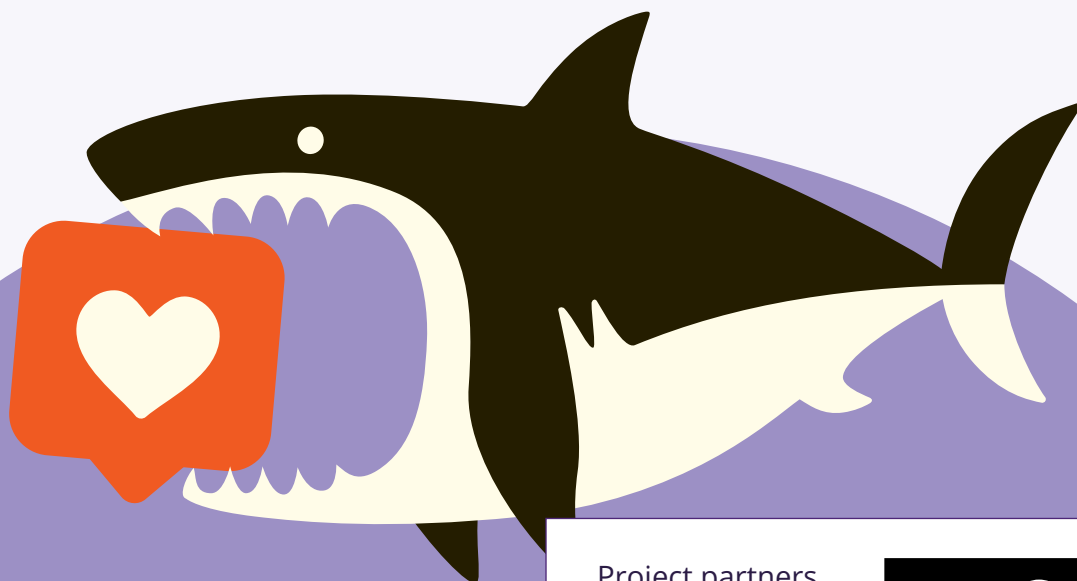
- “ Working with Sprouting Minds as co-researchers and consultants has improved our tools, our interpretation of results, and the accessibility of our outputs, demonstrating how co-production raises both rigour and real-world value”.
—Professor Marina Jirotko, Research project 1 lead



Discover more
about our research

Watch the video

Digital risk and resilience



Project partners



Young people and adolescents face increasing mental health risks from online harms, including cyberbullying. We aimed to identify which factors could reduce the risk of psychological distress in young people who are victims of cyberbullying, which could complement efforts to prevent cyberbullying altogether.

Cohort studies follow the same people over time and collect a wide range of data about their lives, health, and experiences. Most research uses these studies to examine one or two chosen factors, which can overlook important influences.

We used a new 'exposure-wide' method to scan over 1,000 factors simultaneously in large UK and Australian cohorts, helping identify potentially overlooked resilience factors to identify those most promising for future research and interventions.

Resilience factors could be any influence that might buffer the impact of cyberbullying on psychological distress, which we categorised as being in either the individual, family and friends, structural, learning environment, or community domains (or areas).

Key findings

- **We found 12 resilience factors** across all five domains that may reduce the mental health impact of cyberbullying, such as increased happiness with friends and parental supervision. The multidimensional nature of these factors highlights the complexity of mental health resilience.
- **Resilience factors came from multiple domains.** While resilience factors identified in our study came from many domains, most came from the individual domain which typically refers to a young person's behaviours, thoughts, or emotions (possibly also reflecting the fact that more of these were available in these existing

datasets that we analysed). These factors are more amenable to certain interventions than other domains. For example, system-level changes would be required to intervene on household income (structure) or school curricula (learning environment).

- **Happiness with friends and life in general were particularly strong buffers.** These findings highlight a promising direction for future research to examine methods schools, families, and communities can promote young people's wellbeing.

Co-production and co-design in our research

Young people have played a central role in co-producing our research. We held a dedicated workshop on resilience factors to shape the study design, and we maintain ongoing engagement with youth through Sprouting Minds, including participation in Huddles and other Digital Youth events.

Yasmin Rahman, a young person with lived experience, is a core member of our research team, contributing throughout the design and research process, including helping to define key terms—such as prevention—to ensure they are accessible and meaningful to a non-academic audience. She is also a co-author on the paper.



- From top: 'Prevention' definition poster by Tom Bailey. Updating researchers and young people, February 2025.

Key outputs

- Kandola A., Mansfield R., Kelly Y. *et al.*, **Identifying resilience factors for adolescent mental health with cyberbullying victimisation as a risk factor.**^[16] doi.org/10.1101/2024.11.18.24317457.
- We have produced an infographic (see next page) to depict how we identified the mental health resilience factors of cyberbullying.
- We are designing a workshop in collaboration with research project 4 which focuses on the use of large data sets to support adolescent mental health research.



Identifying the mental health resilience factors of cyberbullying

Cyberbullying victimisation increases mental health risks. Analysing 1,000s of variables from 14,000+ teens in the UK and Australia, **this study found 12 possible ways to bolster mental health resilience**, such as increasing self-esteem and trust in others.

We analysed...

Ages
14-15
(Baseline)

Ages
16-17
(Follow-up)

1,466
modifiable
baseline factors

We identified...

478

factors associated with
subsequent mental health

► **UK millennium cohort of around 10,000.** 40% report experiencing cyberbullying victimisation at age 14.

We found...

31 possible mental health
resilience factors of
cyberbullying

We harmonised & replicated...

25 factors
harmonised
in the Longitudinal
Study of Australian
Children for
replication

Around 4,000 individuals

We conclude...

12 resilience factors
were consistent
in both cohorts
across individual, family and
friends, community, and
structural domains

Highlighting the complex
multifaceted nature of resilience.

► **Infographic:** how we identified the mental health resilience factors of cyberbullying.

Next steps

- ▶ We are investigating how the risk and resilience factors for cyberbullying victimisation that we examined might be different across population groups that have different experiences, including based on sex, sexuality and ethnicity.
- ▶ We would like to examine whether the associations between digital risks and mental health are experienced differently across different countries (most current research is done in a few high-income countries).
- ▶ Dr Aaron Kandola is collaborating on a project with colleagues in the Digital Youth team focusing on bridging the gap between research findings and implementation in services.

Insights from Sprouting Minds

“It was great to be part of Research project 2 and to see how encouraging the findings are. Seeing that factors such as happiness with friends can help protect young people from the psychological impact of cyberbullying shows just how important everyday relationships are. It highlights the need to create environments where young people feel supported and connected including at home, in schools, and in communities to protect against the effects of cyberbullying.”

—Yasmin, *Sprouting Minds*

Insights from project leads

“It was very interesting for us to work alongside the other research teams in this project, learn from them and share our findings with them. The joined-up approach across many disciplines and areas of mental health research and working with Sprouting Minds was a highlight of this project for our team.”

—Praveetha Patalay, *Professor of Population Health and Wellbeing, UCL*



Discover more
about our
research

Interlude

DeCODE – Digital debates and definitions

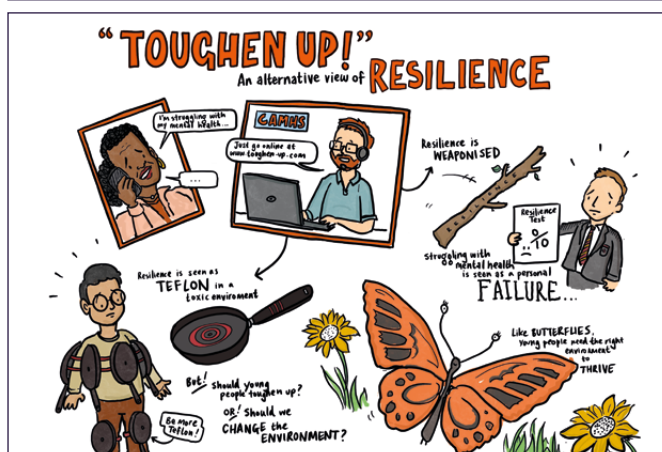


We hosted 3 inter-disciplinary workshops for our **DeCODE: Digital debates and definitions** project between September 2023 and February 2025. These each brought together young people who have been involved in different Digital Youth projects and researchers from across the programme. Across this work we collaborated with artist Tom Bailey to share our outputs in a visual and engaging way.

- **Workshop 1:** We chose to explore the term digital resilience and what it meant to us.
- **Workshop 2:** We next focused on the concept of digital engagement and our different understandings of this term.
- **Workshop 3:** We worked together to co-produce 29 accessible definitions of key terms for digital youth mental health research such as prevention, brain imaging, digital activity and emotional regulation.

The DeCODE project has resulted in a range of accessible definitions and engaging illustrations exploring key terms and concepts in digital youth mental health research. Beyond that, the project has helped foster understanding and learning between researchers and young people across Digital Youth.

Digital resilience workshop illustrations



What our researchers and young people had to say

- “The workshops and small groups I got to work in really opened my eyes to other perspectives and let me understand rather than agree.”
- “Talking with others, feels validating and interesting to get other and similar perspectives. Tom's drawings! Amazing! Felt like a wonderful conclusion to summarise our ideas and thoughts.”
- “I definitely learnt a lot by both listening and talking to others but also being able to think to myself about meaningful digital engagement.”
- “Having the opportunity to be creative and collaborate in ways that show new ways of thinking and seeing things.”
- “Very fun and engaging workshop. Definitely helped generate some thoughts and things I hadn't previously thought about.”



► All illustrations by Tom Bailey — Instagram @mrtombailey

Dynamic interplay of online risk and resilience in adolescence



Project
partners



THE LONDON SCHOOL
OF ECONOMICS AND
POLITICAL SCIENCE



Queen Mary
University of London



THE UNIVERSITY
of EDINBURGH



The DIORA (Dynamic Interplay of Online Risk and Resilience in Adolescence) project investigates how young people's online activities shape their mental health and wellbeing.

Co-designed with adolescents, it uses innovative tools – the Digital Activity and Feelings Inventory (DAFI) and Managing My Life Online (MYLO) – to move beyond simplistic screen time metrics and to offer a richer understanding of what young people do online, how it makes them feel, how they actively manage digital risks and what the consequences are for their mental health and wellbeing.

The project draws on a pilot study with 383 adolescents and young adults aged 16–25, and a longitudinal study of 552 Year 9 students (aged 13–14), surveyed three times over the course of one year. It also includes a qualitative strand involving focus groups with 110 children aged 13–14, offering in-depth insights into their everyday digital experiences and strategies for coping online.

► Above: 'Digital Activity' definition poster by Tom Bailey.

Key findings

Our research shows that young people's digital lives are deeply interwoven with their mental health and offline behaviours – in both positive and negative ways.

1. What young people do online and how it makes them feel matters

- Associations between screen time and mental health are negligible and not significant once digital activities and emotional reactions are considered. **It's not about how long children spend online but what they do and how it affects them.**
- Social engagement such as chatting with family and friends and sharing posts, is the most common digital activity and is **modestly associated with better wellbeing.**
- Social comparisons, such as comparing appearance or popularity, are frequent and **strongly associated with increased depression and lower wellbeing.**

- **Negative feelings about the self** (for example, feeling judged, insecure, rejected) and feeling stressed are common, and strongly linked to poorer mental health.
- Conversely, **positive feelings** (for example, feeling calm, supported, or loved) are also frequent and associated with lower depression and higher wellbeing.
- Importantly, **feelings and thoughts** evoked by online experiences **predict mental health outcomes far more effectively** than screen time alone.

2. Young people show agency in managing digital risks

- **78% of the young people in our study were worried** about the impact of digital activity on their mental health, and **82% took at least one action** to address this in the past two weeks.
- Actions included **seeking positive content, avoiding harmful interactions**, taking social media breaks, blocking or reporting others.
- These strategies were more common among those with higher **anxiety symptoms** or recent exposure to **risky digital content**, indicating that **youth agency acts as a protective response**.
- Notably, those who had both **positive and negative experiences** online were more likely to engage in risk management suggesting a **nuanced, reflective relationship with digital media**, not a passive one.

3. Social comparison is a strong correlate of depression and anxiety symptoms

- Young people who engage in more risky digital activities, including **risky content, risky interactions, and social comparison**, tend to have higher depressive and anxiety symptoms.
- **Social comparison** is most strongly associated with depression and anxiety symptoms, after considering the influence of other digital, as well as non-digital activities. This was found both in younger (aged 13-14) and older (aged 16-25) adolescents.
- Engaging in more **social comparison** online **predicts** subsequent increases in depressive and anxiety symptoms in adolescents.

Together, these findings show that **digital activities and their emotional impacts significantly shape mental health in young people**. Risky digital activities, especially social comparison, are linked to higher symptoms of depression and anxiety. While risks are real, so too is the potential for support, connection, and positive development online.

Crucially, we find that young people do not remain passive when exposed to online risks, but show **substantial agency in actively managing their digital lives**. Supporting this agency, improving digital literacy, and recognising emotional responses – rather than merely restricting screen time – are essential for promoting resilience and wellbeing in the digital age.

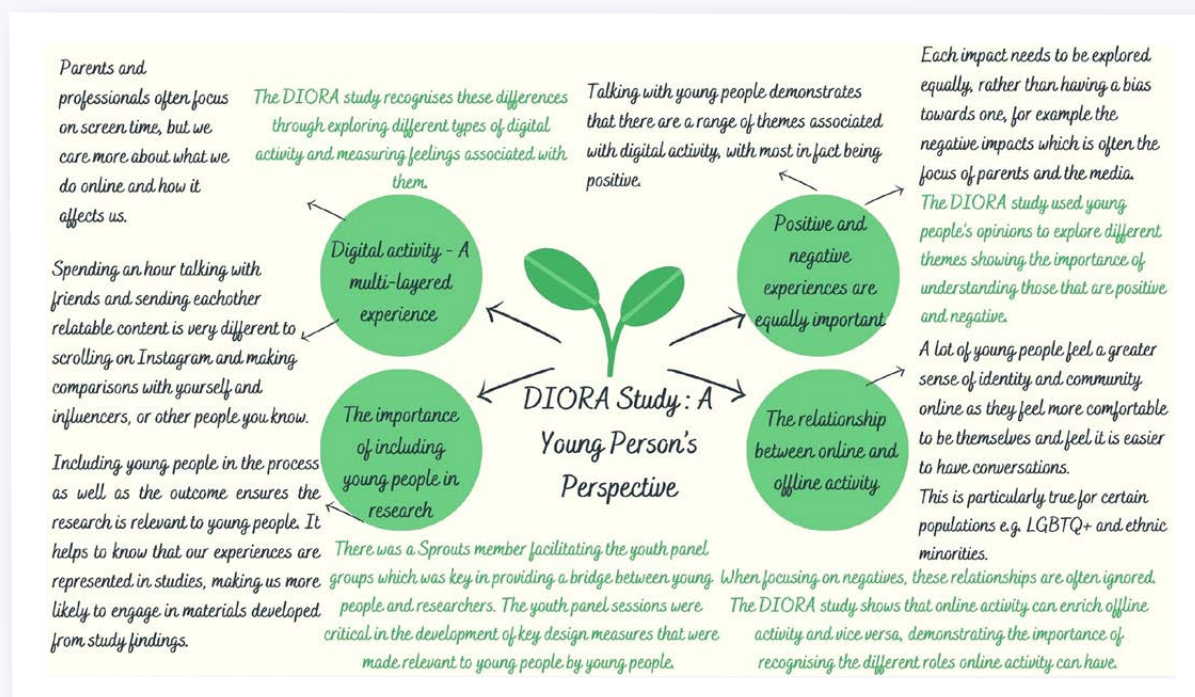
Key outputs

- Kostyrka-Allchorne, K., Bourgaize, J., Murray, A. *et al.*, **Understanding youth online experiences and mental health: Development and validation of the Digital Activity and Feelings Inventory (DAFI)**.^[6] *International Journal of Methods in Psychiatric Research*, 34(2), e70028 (2025). doi.org/10.1002/mpr.70028.
- Sonuga-Barke, E., Stoilova, M., Kostyrka-Allchorne, K. *et al.*, **Pathways between digital activity and depressed mood in adolescence: Outlining a developmental model integrating risk, reactivity, resilience and reciprocity**.^[3] *Current Opinion in Behavioral Sciences*, 58: 1-7 (2024). doi.org/10.1016/j.cobeha.2024.101411.
- Kostyrka-Allchorne K., Stoilova M., Bourgaize J. *et al.*, **Digital experiences and their impact on the lives of adolescents with pre-existing anxiety, depression, eating and non-suicidal self-injury conditions - a systematic review**.^[5] *Child and Adolescent Mental Health*, 28(1):22-32 (2023). DOI: [10.1111/camh.12619](https://doi.org/10.1111/camh.12619).
- Stoilova, M., *et al.*: **Exploring Adolescents' Digital Activity and Mental Health: Insights from the DIORA Study**.^[79] Briefing for schools bit.ly/DIORAfirstlook

Co-production and co-design in our research

Co-production was central to the DIORA project, with a youth panel of 14 adolescents aged 12–17 closely involved in developing the Digital Activity and Feelings Inventory (DAFI) and Managing My Life Online (MYLO) tools. Through interactive workshops, card-sorting tasks, and feedback sessions, panel members shaped the language, relevance, and structure of the measures, ensuring they reflected real, contemporary online experiences. Their insights led to the inclusion of both widely shared and often-overlooked emotional responses, making the tools both meaningful and credible to young people themselves.

► Case study by Eliz, Sprouting Minds member. (Transcript supplied in the digital version).



Next steps

- **Longitudinal analysis:** We will examine how digital experiences, mental health, and wellbeing evolve over time, identifying the temporal relationships between them and the role of feelings evoked by digital experience. These will give directions for possible early intervention.
- **Integrating qualitative insights:** We will analyse data from the focus groups with 110 young people to enrich the quantitative findings, with a focus on how youth interpret and respond to online risks in their own words.
- **Tool dissemination:** We aim to scale up the use of the DAFI and MYLO tools in other research, offering comparative data.
- **Policy engagement:** We will share insights with policymakers, schools, and digital platforms to move beyond screen time narratives and promote approaches that recognise young people's agency and emotional experiences online.
- **Youth engagement:** We are working on co-creating a set of **short animations** with young people to share the research findings in a youth-friendly and accessible way. These animations will not only **raise awareness** of how digital activity can impact young lives, but **provide strategies** that young people can use to better manage their online experiences and activity.

Insights from teachers

“ This research is extremely valuable, made more so by being grounded in issues that affect our students. It was a valuable learning experience for our students too, giving their views on an issue that affects them and having their ideas and concerns listened to and hopefully informing policy!”
—Teacher, participating school

“ It is great for the school to work in partnership with teams such as yourselves to support positive outcomes for young people and we have been delighted to be part of this.”
—Teacher, participating school

“ It’s really interesting stuff, and a topic the school is particularly involved in. I’m very glad we were able to help.”
—Teacher, participating school

Insights from our research team

“ To fully understand the impact of digital activity on adolescent mental health and wellbeing, we should recognise both its negative and positive aspects. Our research shows that the most frequent digital activities young people engage in are positive, and some can even promote wellbeing. We should harness this to create supportive digital environments that enhance the benefits of online engagement, while also protecting those who may be more vulnerable to harm.”
—Dr Kasia Kostyrka-Allchorne, co-investigator

“ We are working to determine whether it is internet use that drives mental health, or whether mental health states drive internet use. This is essential for designing sensible interventions to improve mental health.” —Professor Edmund Sonuga-Barke, co-lead

“ Our emerging findings show that, instead of simplistic screen time measures, what matters to children’s and young people’s wellbeing is their emotional and cognitive reactions to online experiences. In other words, it’s not how long you spend online, but what you do and how it makes you feel.”
—Professor Sonia Livingstone, co-lead



Discover more
about our
research

Developing resilience to self-harm and suicidality in the digital world: the role of brain, psychology and the social world

Project partners



Although there have been important advances in our understanding of suicide risk in young people, many gaps remain. These gaps have limited our ability to support young people who are struggling with suicidal thoughts. Our research addresses these limitations by exploring how psychological, social, and brain development factors interact to shape vulnerability—or resilience—to self-harm and suicide.

Key activities

Working with the large U.S. ABCD cohort study, we are identifying risk and protective factors in children aged 9–13, including patterns in impulsivity, screen use, and developmental synchrony across brain regions.

We are especially focused on the “transition” from thinking about self-harm or suicide to acting on such thoughts. This transition remains poorly understood. Our recent systematic review is the first to rigorously examine which factors explain why some young people act on such thoughts while others do not. With digital life increasingly woven into adolescence, this work also brings us a step closer to identifying what helps—and hinders—mental health in real-world, connected lives.

Importantly, young people have co-led this research through the Sprouting Minds group—shaping the questions we ask, the factors we prioritise, and how we communicate findings. For example, their input flagged loneliness and rumination (repetitive focus on negative thoughts and feelings) as key risk themes.

In addition to advancing science, our findings will inform the development of better tools to provide early support to young people who may be struggling.

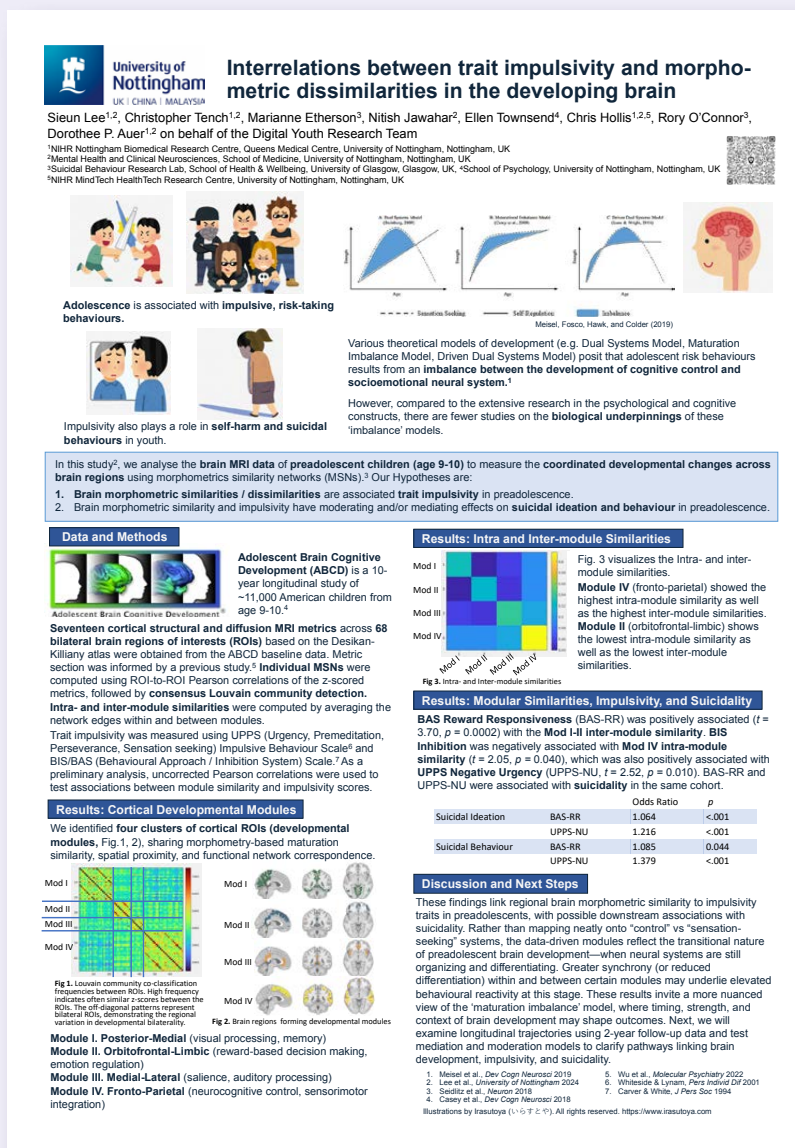
Key findings

- Our research highlights key factors shaping suicide and self-harm risk in young people.
- Our review found that factors including non-suicidal self-injury (NSSI), abuse, violence, and family conflict increased the likelihood of acting on suicidal thoughts, while family connection and academic success were protective. Being female, exposure to others' self-harm, and impulsivity increased the risk of acting on thoughts of self-harm.
- We investigated various factors, such as screen use, impulsivity, and brain development in relation to suicidality in the ABCD dataset.

- Cyberbullying, social media addiction, and video streaming were found to increase the risk of suicidality; sleep disturbance further amplified these effects.
- Emotional impulsivity (rapid reactions to strong feelings) and behavioural impulsivity (for example, sensation seeking,) were associated with suicidality, while cognitive and motor impulsivity were not. Structural synchrony in brain regions involved in memory and emotion were linked to impulsive traits also related to suicidality.
- When tracking children over time, those with a history of NSSI were more likely to progress to suicidal behaviours and follow unstable paths, underscoring NSSI as an important risk factor.

Key outputs

- Etherson, M. E., Lee, S., Loney, K. J. *et al.*, Exploring risk and protective factors which distinguish suicidal and self-harm behaviours from suicidal and self-harm ideation in young people: A systematic review.^[7] *PLOS ONE*, 20(9):e0326381 (2025). doi. [org/10.1371/journal.pone.0326381](https://doi.org/10.1371/journal.pone.0326381).
- Lee, S., Tench, C., Etherson, M. E. *et al.*, Interrelations between trait impulsivity and morphometric dissimilarities in the developing brain.^[97] Poster, (2025). digitalyouth.ac.uk/research/research-projects/developing-resilience-to-self-harm-and-suicidality-in-the-digital-world. (Poster, right).
- Etherson, M. E. and O'Connor, R. C., Suicide and self-harm are rising among young people: What factors are associated with whether young people will act on their thoughts of self-harm and suicide?^[85] Blog, *Suicidal Behaviour Research Laboratory*, September 2025. suicideresearch.info/2025/09/23/suicide-and-self-harm-are-rising-among-young-people-what-factors-are-associated-with-whether-young-people-will-act-on-their-thoughts-of-self-harm-and-suicide/.



Sprouts co-production and co-design in our research

We have actively involved Sprouting Minds in shaping our research direction. Together, we have explored which additional factors young people feel are important to consider beyond those available in the ABCD dataset. While our current work is limited to variables measured in that dataset, the group's insights have helped guide our thinking for future analyses.

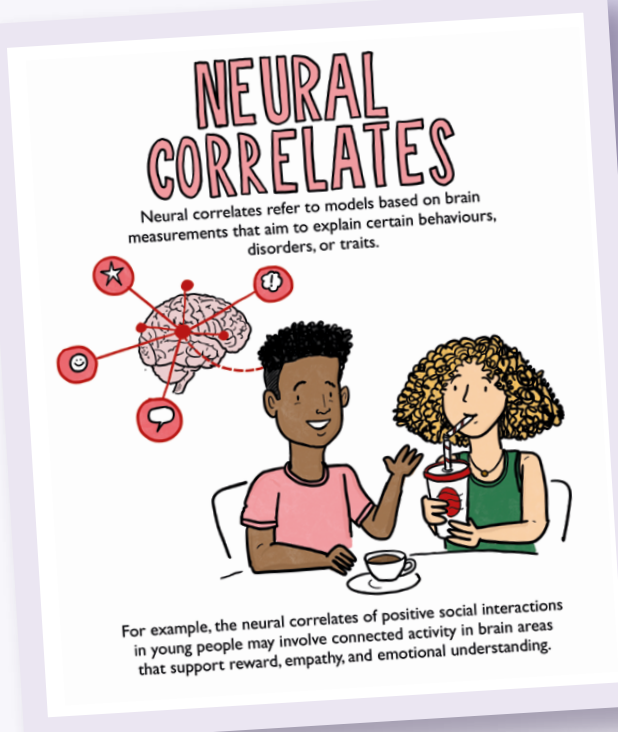
One member of Sprouting Minds has been particularly engaged in our research project. They provided detailed feedback on our findings, highlighted key areas they believe are important to explore further, and co-developed artwork and a blog article which helped to ensure our research was accessible and meaningful to a general audience.



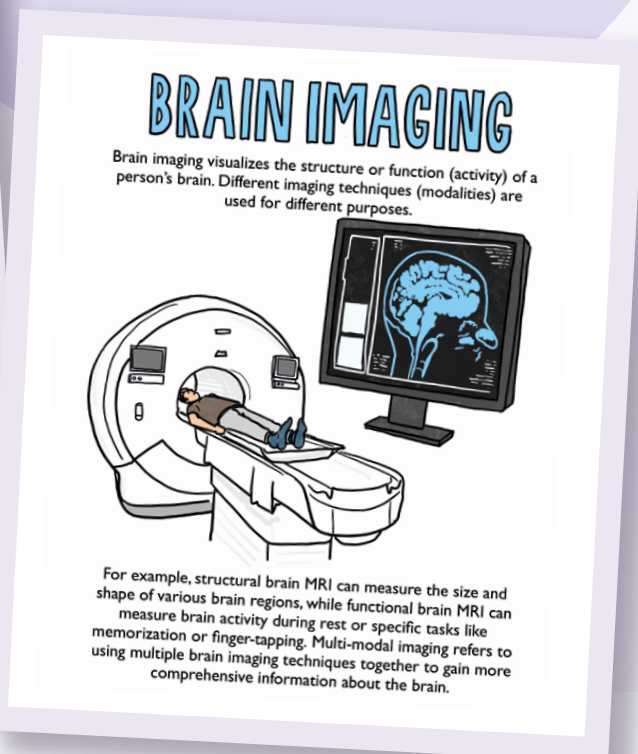
“ ”

“I am immensely grateful for my experience working within this project. This has allowed me to challenge my own pre-existing understanding of suicidality, to consider the complexity and nuances of suicidal ideation and action. And to understand that we will need to continue to learn by challenging our understandings, to expand our knowledge, as the world around us continues to evolve.”

—Ayan, Sprouting Minds



- From top: Members of our research team including Sprouting Minds at the Digital Youth Huddle meeting February 2025. 'Neural Correlates' and 'Brain Imaging' definition posters by Tom Bailey.



Next steps

- Focus on digital engagement, especially social media addiction, as a risk factor for transition between suicidal ideation to action. We will also explore the development of early risk detection tools that combine psychological traits, digital behaviours, and brain development patterns to better identify children who may be on a path toward self-harm and suicidal behaviour.
- Expand our work with young people to co-create tools and communication strategies. Our goal is not just to understand suicide risk, but to contribute to earlier, more tailored support for children—especially in an increasingly online world.



- Dr Marianne Etherson presenting at the 19th Annual Scientific Meeting of the UK Society for Behavioural Medicine, March 2024, Glasgow UK.

Insights from our research team

“ I really enjoyed working on this ambitious project to shed light on what may help to reduce suicide risk and self-harm in youth. We blended psychological theory with brain imaging to start tracking the dynamic neural underpinnings of risk and resilience to harmful behaviour in childhood.”

—Professor Dorothee Auer, Co-Lead, Research project 4

“ It has been great to see how the different aspects of the research project have come together in a synergistic way. Embracing a biopsychosocial perspective, our findings have advanced understanding of suicide risk and self-harm in young people, which will inform intervention development.”

—Professor Rory O'Connor, Co-Lead, Research project 4



Discover more
about our
research

Interlude

Bridging gaps between research, policy and practice



By bringing together such a wide range of expertise – interdisciplinary, international, early-career researchers, world-leading specialists, industry and charity partners, and young people – the programme has been in a unique position to have significant influence.

Policy initiatives have generally been hampered by uncertainty regarding mechanisms and the direction of effects linking the use of digital technology to risks for mental health problems in young people. The lifespan of Digital Youth has also coincided with high-profile policy discussions around this topic, as successive governments have considered a new Online Safety Act, and potential mobile phone bans in schools.

Throughout the programme, the team have aimed to provide nuance by avoiding black-and-white thinking, (for example the idea that phones and social media are simply bad). Instead, they've contributed to a more robust evidence base showing both the risks and the potential benefits of digital technology for young people. This balanced approach is helping shape future rules, guidance, and systems that better reflect the real impact of the digital world on youth wellbeing.



► Pictured: Professor Chris Hollis and Nkem from Sprouting Minds meet Lilian Greenwood MP at UK Parliament Evidence Week, November 2022. Digital Youth researchers and members of Sprouting Minds discuss SPARX, CaTS-APP and Purrble with Lilian Greenwood MP, March 2023.

March 2022

Members of the programme including leads Professors Ellen Townsend, Chris Hollis, and Peter Fonagy, were invited by the Number 10 Policy Unit to lead a round table discussion on social media and mental health. Following the event, the team shared a wide-ranging [policy briefing](#), covering recommendations for improving online mental health for government, technology companies, education, health service providers, the third sector, and research.

September 2022

Dr Joanna Lockwood and Dr Camilla Babbage (Research project 8) were invited to present to the Medical Research Council's (MRC) senior team about the [CaTS](#) tool and its potential for implementation. The Council were particularly interested in understanding how co-production is integral to evolving CaTS from a paper tool to an online resource. Following the event, the MRC shared plans to feed findings into its ongoing policy and strategy development.

November 2022

During [Evidence Week](#), Nkem from Sprouting Minds and Professor Chris Hollis [visited Westminster](#) to speak with MPs, including former Science Minister George Freeman and Lilian Greenwood MP.

They highlighted how the digital world affects young people's mental health and showcased [Purrrble](#) (Research project 7).

Their aim was to influence the Online Safety Bill and promote and promote the adoption of evidence-based digital technologies to bridge gaps in provision and support young people's mental health.

March 2023

Following Evidence Week, researchers and young people from the Digital Youth programme hosted [Lilian Greenwood MP](#) to discuss the team's research including CaTS-APP (Research project 8).

The roundtable focused on ways to strengthen the translational impact of the programme's work, and Ms Greenwood offered to support the team in taking their work further in parliament.

October 2023

The team [submitted written evidence](#) to the UK government in response to call for evidence on screen time and its impact on education and wellbeing in young people.

The response was led by Professor Sonia Livingstone (Research project 3, DIORA), who consulted with the youth panel of the DIORA project and researchers across Digital Youth, and synthesised this with the latest research evidence available. Points included the need to differentiate online risks and recognise online opportunities, and why a ban on mobile phones in schools would likely be ineffective.

January 2025

Professors Ellen Townsend, Chris Hollis and Sonia Livingstone, members of Sprouting Minds, and PPI Manager Becky Woodcock backed a successful [DSIT Commission](#) funding bid on the impact of social media and smartphone use on young people's health and wellbeing.

The project was initiated following the UK Chief Medical Officer's 2019 review, which found insufficient evidence linking children's mental health and digital use. Professors Ellen Townsend, Chris Hollis and Sonia Livingstone contributed to the DSIT Commission Report led by Professor Amy Orben, University of Cambridge.

Next steps

- ▶ Understand the barriers services face in adopting digital tools (for example, public attitudes and worries over potential harms, underfunding, or the way services work).
- ▶ Support evidence-based policy and research to reduce potential harms of digital engagement (for example social media) through better platform design, regulation, and new measures of digital engagement and interventions.
- ▶ Continue adding to the growing evidence-base that harnessing the potential of digital tools can be a cost-effective route to increasing access to support.

“ ”

“We are developing a suite of new digital tools to help support good mental health and wellbeing in young people. These are sorely needed to help plug the gap between demand for youth mental health support and what services can currently offer.”

—Professor Chris Hollis

Precision medicine platforms for digital interventions



Project partners



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NEW ZEALAND



We have been looking at ways that digital technologies could encourage and support a young person to use a self-help app more consistently and effectively. Lots of young people use smartphones, and there are many mobile or online apps designed to help those struggling with mental health issues like anxiety or low mood. However, many people give up using these apps before they have had a chance to help; this is our first challenge.

Key activities

Working with Sprouting Minds and other co-design volunteers we have made a chatbot app featuring “Mango”, a talking gecko, that encourages the young person to use an existing self-help app more consistently. We

chose a talking gecko because it was friendly and relatable, without making young people feel excluded if they were different to a human character we chose.

We have also been looking for ways to make testing mental health apps easier for researchers and participants. We have made a simple web platform to use alongside REDCap (a survey and database tool used for lots of research studies) and the app being tested. For example, the platform helps participants to install the right app and know when to use it.

The team also provided technical support for the SPARX and CaTS-App studies (Research projects 6 and 8). We extended the original SPARX app from the University of Auckland for use in the Digital Youth study. We improved the user controls and made a simple dashboard for e-Coaches to control access to the different modules in SPARX and monitor participants' progress. We also helped the CaTS-App team to design ways of using digital cards. We programmed the working version of CaTS-App based on their wireframes (design drawings).

Key findings

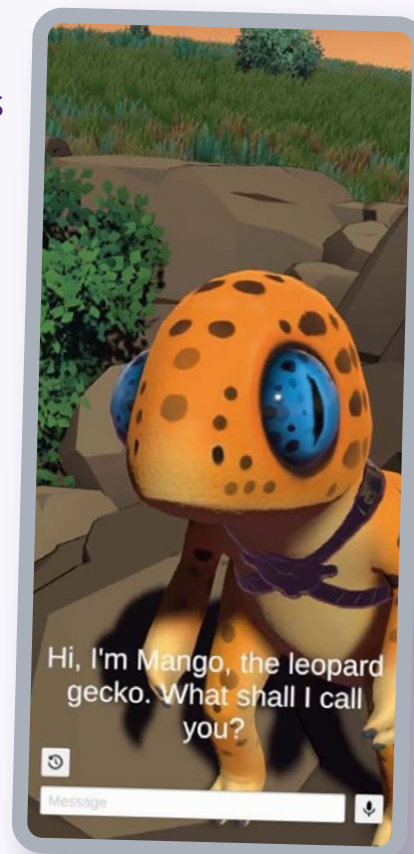
- From our co-design work we have found that a companion agent app like Mango could be acceptable to young people.
- We have also found that getting the right agent persona and timing of interaction is tricky, and may be quite specific to the person and situation.
- While developing Mango we have found that current generations of conversational AI using Large Language Models (LLMs) sound very convincing, but are also unpredictable. For the time being we are only using LLMs to help understand what people might be saying; everything that Mango says is pre-authored so that we can be sure it is safe.
- We have found that widely used study tools (like REDCap) don't always provide much direct support for study participants, and we have developed a possible solution to this.

Key outputs

- The software for a complete working version of the Mango chatbot app,^[76] set up to encourage consistent use of another widely used self-help app.
- Wanniarachchi, V., Greenhalgh, C., Choi, A. *et al.*, **Personalization variables in digital mental health interventions for depression and anxiety in adolescents and youth: A scoping review.**^[8] *Frontiers in Mental Health*, Vol 7 (2025). [DOI=10.3389/fdgth.2025.1500220](https://doi.org/10.3389/fdgth.2025.1500220).
- The software for an extension to REDCap^[77] that helps participants in research studies of digital interventions (such as Mango).

Insights from our young people and participants

- “ I think the positive demeanour of the bot is perfect as it doesn't feel too forceful or like it's pressuring the user.” —*Co-design participant*
- “ Making a fun and interactive app would also help to reduce any shame or stigma young people feel about their mental health.” —*Co-design participant*
- “ It helped me a lot with stress so I will probably continue to use it.” —*Pilot user*
- “ I think overall the length, word choice and tone is perfect as it's the right level of positivity and encouragement and also very simple to understand so would be appropriate for all ages.” —*Focus group participant*



► Above: Mango Opening Screen

Next steps

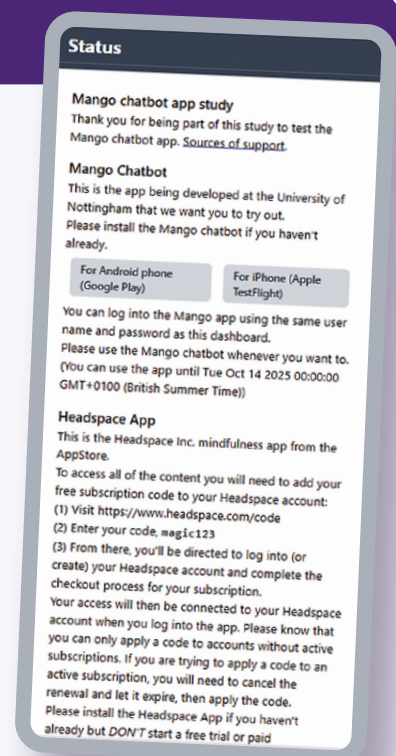
- ▶ As this report goes to press we are running an initial study to find out if having the Mango app alongside an existing self-help app would be acceptable and could help a young person use the self-help app more consistently.
- ▶ Once we have the results from this we will be talking to companies that offer and support digital mental health interventions, to see if they want to adopt the work we have done with Mango.
- ▶ We are also promoting our study participant support software to the REDCap Consortium members, for other researchers to use.

Sprouts co-production

The idea for the Mango chatbot app came from initial conversations at one of the project “huddles” with members of Sprouting Minds. They helped us to test and develop the idea in an initial round of project planning (PPI) meetings. We surveyed 54 sixth-form students from three schools and colleges to see what they thought of the idea.

We also made a first working prototype of the Mango app. We then worked with a group of young people, including two Sprouts and three other teenage volunteers, over six online sessions, to decide how to improve the prototype. For example, we looked at different options for choice of animal, character and voice, and we discussed the kind of personality Mango should have and the things Mango should say.

Once we had a complete prototype, one of our teenage volunteers tested it carefully for us to check that it worked and made sense to them.



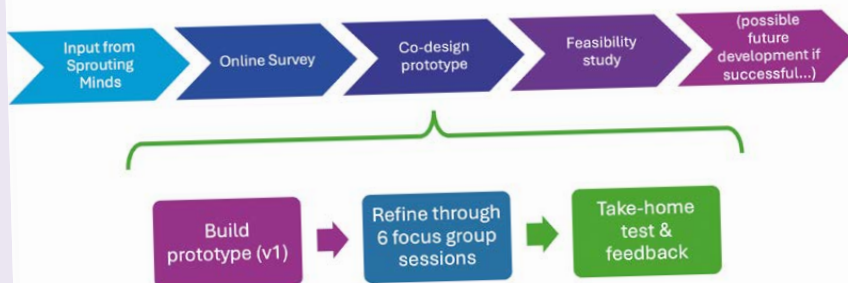
- ▶ Above: Our interface for study participants

We surveyed
54
sixth-form students
from three schools
and colleges

We tested the
prototype over
6+
online sessions

Insights from our research team

- “Mango should be engaging, encouraging, inclusive and safe, without being addictive; and that takes a lot of careful co-design.” —Chris Greenhalgh, Professor of Computer Science
- “The development of a companion agent such as Mango could make a huge difference in improving the usability of self-help mental health apps.” —Kapil Sayal, Professor of Child and Adolescent Psychiatry
- “The goal with Mango has been to create an agent that is supportive and motivating for young people to act to improve their mental wellness... while not being so dull that they tune out.” —Jim Warren, Professor of Health Informatics



► Left: The Mango co-design process

► Right: Existing REDCap researcher interface

Record Status Dashboard (all records)

Displayed below is a table listing all existing records/responses and their status for every data collection instrument (and if longitudinal, for every event). You may click any of the colored buttons in the table to open a new tab/window in your browser to view that record on that particular data collection instrument. Please note that if your form-level user privileges are restricted for certain data Access Groups, you will only be able to view those instruments, and if you belong to a Data Access Group, you will only be able to view records that belong to your group.

Dashboard displayed: [Default dashboard] | Create custom dashboard

Displaying record: Page 1 of 1: "1" through "1" of 6 records | ALL (6) | records per page

Record ID	EDC	Event	Log	Withdraw	day1	day2	day3	day4	day5	day6	day7	day8	day9	day10	day11	day12	day13	day14	End of Day week
1	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
2	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
3	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
4	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
5	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
6	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●



Discover more
about our research

Watch the video

SPARX: Developing precision digital cognitive behavioural therapy for young people with depression



Project partners



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SPARX is a serious game developed by researchers in New Zealand offering support to young people with low mood or depression, as an alternative to in-person cognitive behavioural therapy (CBT). Players navigate through seven levels in a fantasy world, completing different tasks based on CBT, to learn mood-management strategies. Accessed via an app or the internet, SPARX can help deliver support on a larger scale, making it more accessible and appealing to young people who may be hesitant about in-person therapy.

SPARX has been shown to have positive results supporting young people globally, both in New Zealand and other areas of the world, and we now want to see whether SPARX may be helpful for young people in the UK.

We also want to know if SPARX can be made more engaging and attractive to young people, as one of the difficulties with SPARX is that players sometimes don't complete the game and therefore do not receive the full benefit of CBT. We are interested in whether having human support via an eCoach, providing remote motivational support to the young person, might be more engaging than playing it alone. Therefore, an exploratory study is underway to help determine what works and what doesn't, so the findings can inform a larger future trial.

► Pictured above: characters from the SPARX game

Key findings

- The recruitment methods employed by the trial team led to 126 young people taking part in the study. This is interesting as it suggests a serious game to provide CBT with eCoach support is feasible and acceptable to young people and parents, and this could provide a model for future youth mental health digital interventions.
- 22% of participants taking part in SPARX were from the NIHR BioResource register, whereby volunteer families who have consented to be contacted about research projects were identified and sent information about SPARX.
- The trial introduced a new way for study settings to recruit participants into the trial using verbal consent to contact, which enabled many more participants to be referred into the trial. This process might be a more convenient or acceptable method for services, such as community mental health teams, when suggesting research to potential participants, and a viable way for research and NHS settings to work together.
- The study team employed various methods to improve engagement of recruitment sites with the trial. For each site, methods included: identifying a site champion at each site; 4-6 weekly meetings with site champions; creating internal and external competitions, including a box of sweets, chocolates and SPARX merchandise (for example, pens, pencils and notebooks) for reaching target numbers of participants; and delivering certificates to members of study settings who recruit well. Across sites, we sent out a monthly newsletter, and we had friendly competitions between sites to encourage recruitment. Incentives were well received, they were also a positive way to boost morale and to praise the hard work of the recruitment sites.
- In total, 10 eCoaches were promptly recruited from NHS CAMHS suggesting there is an appetite for the role in providing low level input to support young people for digital health interventions. Previous eCoaches reported the role supported them with gaining valuable experience for career development opportunities.

Key outputs

- Khan, K., Hall, C. L., Babbage, C. *et al.*, **Precision computerised cognitive behavioural therapy (cCBT) for adolescents with depression: A pilot and feasibility randomised controlled trial protocol for SPARX-UK.**^[9] *Pilot Feasibility Studies*, 10, 53 (2024). doi.org/10.1186/s40814-024-01475-7.
- Khan, K., Babbage, C. M., Sprange, K. *et al.*, **Precision computerised cognitive behavioural therapy (cCBT) intervention for adolescents with depression (SPARX-UK): Protocol for the process evaluation of a pilot randomised controlled feasibility trial.**^[10] *BMJ Open*, 15(8), e092483 (2025). doi.org/10.1136/bmjopen-2024-092483.
- **Games & mental health in the spotlight as D-CYPHR brings in study participants for SPARX UK.**^[145] News article, *NIHR BioResource*, October 2024. www.bioresource.nihr.ac.uk/news/sparx-uk/



► Pictured: SPARX being presented at ISRII Conference Limerick, June 2024

Co-production and co-design in our research

We involved Sprouting Minds (as a collective we use the term PPI) at all stages in our research including:

- All PPI members were invited to contribute to our publications.
- All PPI members were invited to play SPARX and give feedback on the game. Our young people felt that SPARX encouraged self-reflection and management of mood, and that it was suitable for different gaming abilities. PPI members requested that all notes should be downloadable from the game and suggested that email updates, blogs and vlogs would encourage those in the control arm to remain engaged with the trial.
- All PPI members reviewed the participant information sheets and gave feedback including, avoid phrases such as: 'like you', 'computerised', 'cognitive behavioural therapy', including positive feedback such as 'each group is equally important', using images, and giving an opportunity to talk through the information with a team member. All suggestions were included and the feedback was also applied to the parent and young person manuals, including additional feedback related to removing potentially triggering language, the placement of signposting information, and how to promote parental involvement.
- All PPI members were offered the opportunity to select the main outcome measure for the study, which was used for the trial.
- All PPI members were also involved in the development of the signposting information for SPARX, ensuring that there were direct lines to contacting services, and the addition of links that can help in a crisis. A variety of platforms were suggested, so that a young person could access signposting through text, websites or phone-lines. The term 'crisis' was not felt to be useful and changed to be less ambiguous, for example feeling suicidal.



► Examples of different levels within the SPARX game.

Next steps

- We have allocated six months (September 2025 to March 2026) to cleaning and analysing the data, and writing up the main trial paper.
- From January 2026 onwards, time will be spent analysing the process evaluation data, which will be divided into two separate publications.
- We are continuing to write up papers from the pre-engagement project with involvement of early career researchers as co-authors.
- We continue to meet regularly for analysis and dissemination conversations with members of our PPI group, and will discuss future directions for SPARX-UK, once we have the results from the trial.

Insights from study participants and parents

- “ I'd say give it a try... If you don't like it, then you don't like it, but if it does help you, then it does help you. Because I think it's a good concept... appealing to people with like stuff to do with mental health, I think that's a pretty good idea.” —*Young person*
- “ I'd definitely recommend it, because it just helped so much... and also just the support that comes with it as well. It's very helpful.” —*Young person*
- “ Even just doing the SPARX programme and him realising that this programme's been written so he's not the only one who has these sort of feelings... I think it helped him to realise that he's not the only one that feels the way he feels.” —*Parent*
- “ I think we're lucky to have had the chance for him to do it. And yeah, I hope you do roll it out because it will be a good tool for lots of people to be able to have... As well as it being a way that more kids might want to engage with, it is also just really hard to get face-to-face. You know, the waiting lists are really, really long... so any anything that can be rolled out to help because there's so many kids struggling with this stuff, it's great. So yeah, definitely.” —*Parent*

Insights from our research team

- “ Input from Sprouting Minds has been valuable at every level and has undoubtedly contributed to the project's success. It was especially helpful in selecting assessments that balanced thoroughness with participant burden, and in preparing materials that were clear and credible. Perhaps the most significant impact came during problem-solving, particularly when we faced early recruitment challenges. The range of perspectives has been incredibly helpful.” —*Professor Paul Stallard, Professor of Child and Family Mental Health at the University of Bath*



**Find out more
about our research**

Watch the video

Interlude

Digital Youth early career researcher training and development: A timeline



A key priority of the Digital Youth programme was to support the development and careers of our early career researchers (ECRs). Our group has been a driving force in fostering a vibrant, collaborative, and supportive research culture across our interdisciplinary programme.

Recognising the unique challenges faced by early career researchers working at the intersection of youth mental health and digital innovation, we have prioritised opportunities for leadership, professional development, and meaningful academic exchange. Through dedicated events, writing retreats, public engagement, and international collaboration, the group has

not only strengthened individual career trajectories but also contributed to shaping the wider research agenda. This timeline captures key milestones in our journey, illustrating how the ECR group has grown into a dynamic and empowering community that champions emerging voices and advances impactful research.

“Serving as an ECR Lead has been a pivotal step in my development. It expanded my network across the programme, created space to practise leadership, and opened routes for collaboration with peers. The dedicated time in retreats and webinars has been especially valuable for exchanging knowledge and protecting focused time to move work forward as we progress in academic careers.” —*Dr Josimar de Alcantara Mendes, Oxford University, ECR Co-Lead 2024-present*

2022

We held a dedicated event for our early career researchers (ECRs) in July 2022 which provided networking opportunities, interdisciplinary exchange, and exploration of collaborative research across research themes, as well as being an opportunity for mentoring and professional development.

2023

We set up our Digital Youth ECR network with ECRs taking on rotating leadership roles throughout, and hosted a writing retreat where our researchers could focus on collaborative projects including a collective response to a debate article focused on whether [academics should collaborate with digital companies to improve young people's mental health](#), which then led to a [paper published^{\[1\]}](#) in 2025. We also launched our webinar series which has been really successful and a great way of sharing knowledge and research across our interdisciplinary and international programme.



I've really valued the opportunity to be a Digital Youth ECR co-lead. Most of my previous work has been within individual research groups, so this was the first time I could properly connect and collaborate with fellow ECRs across a large research programme. Meeting peers from different backgrounds and disciplines and sharing our challenges as well as our ideas was inspiring and energising. Organising webinars, retreats, and projects gave me the chance to contribute while building new skills, and taking part in leadership and stakeholder meetings offered invaluable insight into the bigger picture of research."
—Dr Sieun Lee, ECR Co-Lead 2023-25

2024

We designed and facilitated workshops for public engagement events including the [Nottingham Festival of Science and Curiosity](#), and continued to invest in training and development opportunities including wellbeing training for academic researchers working in mental health research, international exchange visits, and opportunities to learn and collaborate with other ECR groups. Our Digital Youth webinar series included presentations from Scientific Advisory Board members Professors James Gross (Stanford) and Candice Odgers (California Irvine).

2025

ECRs co-authored a paper in collaboration with Professor Sonia Livingstone asking the question "[What guidance is needed by academics who collaborate with digital companies to improve youth mental health?](#)" We also attended and presented at several workshops organised by our funders and continued to organise the Digital Youth webinars. We hosted our second writing retreat which included career development sessions facilitated by Professor Ellen Townsend focused on grant writing and fellowships, and dedicated time to work on Digital Youth projects and papers.



Being a co-lead and member of the ECR Digital Youth group has been an incredibly rewarding experience. It has provided a unique opportunity to strengthen both my leadership and academic skills – through organising webinars, collaborating on projects, and learning from experts in the field. Digital Youth has not only provided key opportunities for development but has actively championed its early career researchers." —Dr Marianne Etherson, Glasgow University, ECR Co-Lead 2022-23

Robots to support emotional regulation for young people at risk of self-harm



► Pictured: A Purrble

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Research project 7 considers the impact of a socially assistive robot, Purrble, as a means of supporting emotion regulation, mental health, and self-harm among LGBTQ+ young people. This is particularly important as emotion dysregulation is associated with the development and maintenance of poor mental health outcomes, namely anxiety, depression, and self-harm.

Key findings

- Purrble is considered a feasible and acceptable intervention among LGBTQ+ young people with experiences of self-harm. This means that Purrble is likely to be an intervention which LGBTQ+ young people are happy to engage with.
- Purrble is significantly associated with reduced difficulties with emotion regulation, anxiety, and depression when compared to waitlist control. Therefore, Purrble could be a potential solution to support LGBTQ+ young people dealing with several mental health difficulties and enhance emotion regulation skills. By supporting these skills, young people should be better equipped to manage their mental health.
- Qualitative findings indicate young LGBTQ+ people use Purrble to prevent and manage self-harmful thoughts and behaviours, despite no statistical evidence of this. This is particularly important as to our knowledge, no interventions currently prevent self-harmful thoughts. So further investigation is needed to understand the utility of Purrble to prevent self-harm.



Key outputs

- Williams, A. J., Rhodes, A., Cleare, S. *et al.*, The effectiveness of a socially assistive robot on emotion regulation difficulties among LGBTQ+ youth with self-harm thoughts: a randomised controlled trial.^[161] Paper under review in *Nature Medicine*.
- Williams, A. J., Townsend, E., Naeche N. *et al.*, Investigating the feasibility, acceptability and appropriation of a socially assistive robot among minority youth at-risk of self-harm: pilot studies.^[12] Accepted: *JMIR Formative Research* (2023). formative.jmir.org/2023/1/e52336.
- Visit to No.10 Downing Street to present Purrble and related research to reception of politicians, directors, and designers.^[146] Article, *KCL News*, June 2023. www.kcl.ac.uk/news/purrble-visits-no-10.

Insights from Sprouting Minds

“We met where we were, mentally and practically”
—Lucy, *Sprouting Minds*

Lucy joined our team in 2023 and has been supporting us with the randomised controlled trial and the co-design project which followed. One example is that Lucy offered insightful and critical consideration of the RCT study design and analysis. In an analysis walkthrough with our statistician, Lucy queried how measures were operationalised and translated to meaningful experiences, creating new opportunities for our research team to think about what our findings mean in the real world. She has also supported facilitation of co-design

Purrble

Emotion regulation intervention for young LGBTQ+ people at-risk of self-harm

01 What is Purrble?

Purrble is an interactive plush toy-robot, which was co-designed with children to support emotion regulation in the moment. Using a series of haptic vibrations and sensors, the robot mimics an anxious creature, producing small squeaks. When gently soothed through touch, Purrble's "heartbeat" will slow, it will calm, and start to purr. This offers users, a moment to ground and self-soothe themselves; enhancing their emotion regulation abilities.

02 Our Project

This project used a sequential mixed-method design; wherein each study built on the previous one. Stage 1 focused on establishing the feasibility and acceptability of Purrble with young people at-risk of self-harm. In stage 2, we focused on evaluating Purrble efficacy within young LGBTQ+ people with self-harm ideation, using a randomised controlled trial. Our final stage is co-designing a digital cognitive wrapper to sit around Purrble, support engagement and enhance emotion regulation abilities.

Objectives

- * Explore acceptability and feasibility
- * Evaluate efficacy
- * Co-design cognitive wrapper

03 Main findings

Stage 1: Minority youth found Purrble to be a feasible and acceptable intervention to support their emotion dysregulation and mental health. LGBTQ+ youth appeared more receptive to Purrble than racial and ethnic minority young people, therefore we focused on LGBTQ+ populations.

Stage 2: Participants who received Purrble within a 13-week trial; reported significantly lower emotion regulation difficulties ($B = -3.04, t = -3.20, p = .002$), anxiety ($B = -1.35, t = -2.04, p = .044$), and depression ($B = -2.60, t = -3.64, p < .001$) scores compared to waitlist controls. No differences were found for self-harm. However, interview data suggests participants used Purrble to prevent self-harmful thoughts and behaviours.

Stage 3: We are still in the process of co-designing the cognitive wrapper, looking to be an emotion regulation app aimed at enhancing Purrble engagement and reappraisal.

04 Conclusions

Purrble is a promising intervention to support LGBTQ+ young people with their emotion dysregulation, with associated effects relating to anxiety and depression. Participant accounts, across studies, indicate that Purrble is a potentially unique resource, as it has the ability to prevent self-harm thoughts - a very rare impact of interventions. Given these findings, future research will be conducted with Purrble; trying to optimise the impacts for young people in difficult circumstances.

Logos: UKRI, Medical Research Council, Kings College London, Digital Youth, Sprouting Minds

workshops with LGBTQ+ stakeholders, bringing together the perceptions and experiences of clinic researchers and charity workers in relation to a co-design cognitive wrapper for Purrble. Lucy will be presenting the findings of this project with Dr Amy J Williams (Jess) at the MindTech conference in November 2025.

Next steps

- ▶ We will be continuing our work with LGBTQ+ young people and stakeholders to co-design a digital resource to support emotion regulation and Purrble engagement. This is shaping up to look like an app which will feature; i) psychoeducation materials on emotion regulation; ii) an action plan of how to incorporate Purrble meaningfully into daily life; iii) a writing exercise to support another specific emotion regulation – reappraisal. A key element of this work with Jess, our research assistant, moving institutions is to find a meaningful stopping point for participants.
- ▶ Given the promising findings of Purrble as an emotion regulation intervention among young LGBTQ+ people, Jess aims to conduct a chunk of PPI work with clinicians and young people to explore the feasibility and acceptability of Purrble as a waiting list intervention, alongside a pilot study. This will form the foundation of a grant for follow-on Purrble investigations.

Co-production and co-design in our research

We have been engaging with Sprouting Minds members to ensure that the work we do is meaningful and impactful for young people. For example, we developed a reactive safeguarding strategy for our randomised controlled trial to balance the concerns young people have about triggering safeguarding versus doing our duty of care to participants.

A key stream throughout our project has been co-designing digital resources with LGBTQ+ young people who have taken part in our studies. This is important to understand what is needed to better support emotion regulation and Purrble engagement, beyond the simple device. A common issue with Purrble is that young people are concerned about taking it out and about in their daily lives; therefore the proposed co-design resource should be able to fill this void. In phase 1, young people suggested an app or Tamagotchi version of Purrble; so that it could be used when others were around. In phase 2, we are working towards an app design with specific thoughts around feature which would build on the cognitive changes youth were beginning to experience with Purrble. For example, Purrble was supporting them to think differently about how they responded to situations, so the proposed design would scaffold how to do this effectively.

- ▶ Pictured: Purrble's big day out to No.10, and Purrble workshop at Nottingham College; Festival of Science and Curiosity, February 2023.



Insights from our research team

“ I’m delighted that the work we’ve conducted as part of Digital Youth Research project 7 appears to have an impactful and supportive outcome for LGBTQ+ young people’s mental health and emotion regulation. Purrble has been shown to be associated with an improvement of emotion regulation skills, and a reduction of anxiety and depressive symptoms. Most excitingly for me, despite not having statistical evidence(!), is the fact that within both our pilot and RCT, young LGBTQ+ people have told us Purrble helped them prevent self-harmful thoughts and behaviours.



► Pictured: Jess showcasing Purrble at Nottingham College; Festival of Science and Curiosity, February 2023.

EMOTION REGULATION

Being able to manage emotions effectively, in relation to an emotional trigger or event.



Emotion regulation strategies such as grounding (focussing and staying present in the moment) and distraction (moving attention away from the source of negative emotions) can be supported through digital tools and interventions, such as Purrble.

I’ve really valued the project’s inclusion of having Sprouting Minds members embedded in our work from the onset. It’s rare to experience a project-wide push to ensure young people’s voices are heard within research. It’s also been a great opportunity to push forward my ideas and passions (for example working with LGBTQ+ young people) as an early career researcher with guidance from so many field experts.”

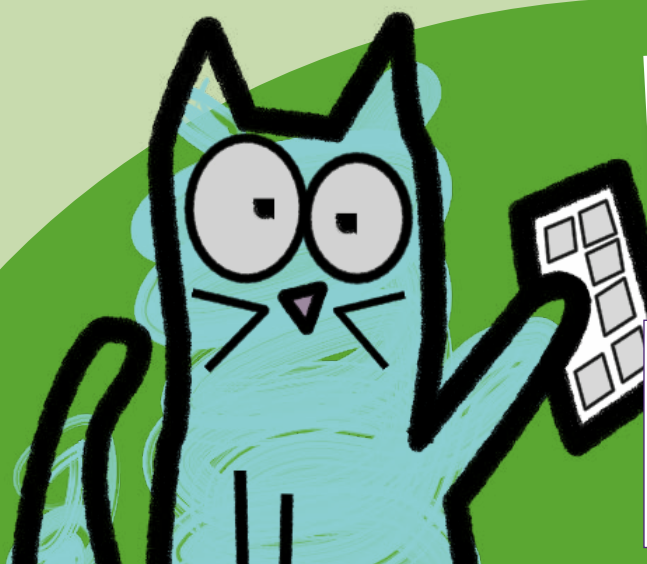
—A. Jess Williams, postdoctoral researcher

► Picture: Emotion regulation as defined by our research team and Sprouting Minds as part of our DeCODE: Digital Definitions and Debates project. Illustrated by Tom Bailey.



Discover more about our research

CaTS-APP: A new digital tool to understand and support young people who self-harm



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In our project we worked to understand the key ingredients required for a digital collaborative understanding and assessment tool for adolescent self-harm (an app). In this case, where a young person and practitioner works together during their care journey. This was based on the Card-Sort Task for Self-harm (CaTS), a tool previously developed for research.

Our work has been driven by being comprehensive, responsible and engaging with our involvement and co-production methods, which have also been adopted across the Digital Youth programme.



We completed three phases of work, each informed by the involvement of our Sprouts:

Phase 1: Planning and preparation – understanding attitudes towards CaTS.

Supported by Sprouting Minds we consulted professionals across healthcare, education, social care, and the third sector to gather feedback on CaTS and its digital adaptation. Insights were collected via surveys, interviews, focus groups, and workshops. Young people aged 17–24 participated in co-production workshops to shape the app's design, functionality and delivery context.

Phase 2: Design and Development – to co-develop a working prototype of the app.

We focused on developing the prototype through co-production workshops with our young people, translating their recommendations into a web-based app in collaboration with Computer Science partners.

Phase 3: Feasibility. This involved a small-scale, multimethod study to assess the app's acceptability, usability, and user experience in clinical and community settings, and evaluating its integration into routine care for adolescents.

Key findings

- We've gained critical knowledge about optimum conditions (such as design, content, setting and delivery) through co-production with proposed end-users (key frontline staff and adolescents seeking help for self-harm) which has informed the development of our prototype. This matters because there are a lack of evidence-based interventions for adolescent self-harm that demonstrate effectiveness or appeal, and a systemic failure to include key stakeholders in decision making around development and implementation of perceived sensitive interventions.
- We've shown there is appetite for the proposed CaTS-App evidenced by support for our proposals via survey data, and interview and focus group findings. (See posters right).
- Our dyad-study brings a first-of-its-kind real-world prototype testing of a co-produced collaborative assessment and intervention tool. This matters because working collaboratively and comprehensively to develop a shared understanding of patient needs is the crucial foundation to clinical provision as set out in NICE guidelines for practitioners. Real-world testing offers an early evaluation opportunity of CaTS-App as an assessment and understanding tool, taking into account how it interacts with the context within which it will be implemented, and how it can be further refined to suit implementation.



Key outputs

1. Babbage, C.M., Lockwood, J., Roberts, L. *et al.*, Cultivating participatory processes in self-harm app development: A case-study and working methodology.^[15] *JCPP Advances*, e12295 (2024). doi.org/10.1002/jcv2.12295.
2. Lockwood, J. Babbage, C.M., Roberts, L. *et al.*, CaTS-App phase 2 app development: Findings from co-production workshops and professional stakeholders.^[82] Digest report, October 2024. digitalyouth.ac.uk/wp-content/uploads/2024/11/Phase-2-CaTS-Report-Digest-October-2024.pdf
3. **Dr Sock Videos:**^[94] 'A How to video series for intrepid researchers' created with and by young people commissioned by Bath University. A series of informational training videos and resources for research staff setting out good practice in youth PPIE and co-production in digital mental health research via an Enhancing Research Culture and Participatory Research funding grant. This work involved collaboration with young creative directors and youth content developers to script and produce video content.

Co-production and co-design in our research

We recruited five young people (Sprouts) from our young person's advisory group, Sprouting Minds to join our project. Having involvement from Sprouts from the beginning has enabled us to ensure all aspects of the co-production workshops were designed and tailored to how young people believed would be the most supportive and productive for other young people involved in our project. This involvement has improved the level of co-production throughout the project, and we

believe has had an instrumental impact on helping to retain young people to the project and keep them safe.

Co-production workshops

Our Sprouts also helped us to conduct a series of three online and face-to-face co-production workshops with young people aged 17-24 years with lived experience of self-harm. Together we explored how the CaTS-App should look and feel, and how best to use the tool.

Extract from 'Feeling Bleu?' by NC, Sprouting Minds

Was not feeling good.

In fact, I was feeling awful. I nestled into the blanket, wanting a reprieve from life even if for a fleeting moment. As my thoughts were readying to take a tumble down that dark hole, a knock sounded. I huffed out a humourless laugh. Could I not have even this moment? The knocking came more incessantly, I had to turn to peer at the window where the sound was coming from. I almost fell out of bed at the sight before me. *ROFL* I thought inwardly, the cadence of my thoughts dry and sarcastic. No, but seriously, was I further losing sense of mind? Because a blue cat was glaring at me through the glass. I glared back.

"I really don't want to get out of bed right now bluey". I said, not knowing if the cat could hear from the other side of the closed window or have any idea what I was saying given I was human. The cat huffed. Really? Was this cat giving me attitude?

Whatever, kitty seemed to have vanished, so I rolled over, nestling back into the sheets.

I lay there contemplating life, feeling like I was drowning in an abyss.

My wallowing was abruptly interrupted when my door swung open and bluey strutted in like they owned the place. *What the hell?* I jumped up in surprise.

"Right so since you didn't let me in through the window, I knocked on the front door, and with my cute looks and charm, dazzled your mum into letting me in and now I'm here".

After getting over my utter shock, I said

"Get out bluey, I'm not in the mood to talk, least of all to a blue cat who's-".

"My name isn't bluey so stop calling me that".

"Oh pardon me" I retorted "but you haven't

told me a single thing about who you are and why you're here".

"Forgive my absolute rudeness, I was only matching yours".

Oh did I seethe. That blighter! But he continued.

"I'm Bleu, but spelt B-L-E-U and I'm from Cheshire". He extended a paw and I instinctively reached my hand out to shake it, feeling comforted by the contact.

"Can I cuddle you?" I asked. At that, he promptly dashed to the other end of the room. This cat, did he think he was boujie or something with a name like that? And you'd expect a blue cat from Cheshire to be smiling, but at that moment, I couldn't say that about Bleu.

"You can cuddle me later, but we need to go on a mission - and urgently".

I didn't know how it was possible but I seemed to dig my feet more firmly into the ground though I was already firmly planted. No way was I going on a mysterious mission with a stranger. One who was now licking his paws in the corner of my room.

"Okay" I conceded "but I need to know more".

"I was sent here for two reasons, the first was to make you feel better which I'd have a chance to do if only you'd let me. It's my job to make young people like you feel better. The second is because your expertise is crucial to the success of this very *urgent* mission".

"Expertise?" I wavered incredulously.



Next steps

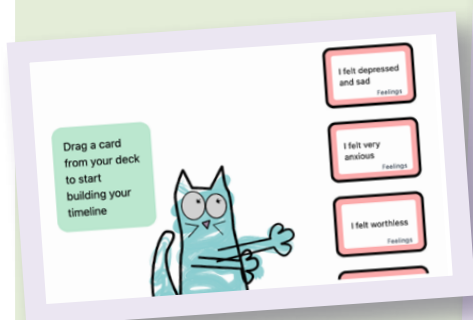
- ▶ We will be looking to carry out further evaluation of CaTS-App considering feasibility to implement CaTS-App within various settings, focusing on where the CaTS-App might be implemented, for example, pathways, and understanding the effectiveness of CaTS-App.
- ▶ We are looking at developing the wraparound materials and training approach for how practitioners will be using the CaTS-App based on the feedback from the Dyad Study.
- ▶ We will write up papers based on the Dyad Study and PPIE as part of this research project.
- ▶ We will consider the application of the CaTS-App to other settings and next phases of development after the current work is finalised.



Insights from the project team

“My experience has been positive and meaningful. I feel proud to be part of the group, but nervous before sessions and anxious about keeping up with tasks. I think it has been a hugely positive experience, and the anxiety has made it feel more important of a role which is positive. I've learnt confidence in my ability to make a meaningful difference.” —*Young person*

“It's incredibly exciting to see the CaTS-App come to life through the Digital Youth programme, developed in close collaboration with our brilliant Sprouts. The level of engagement from all stakeholders has been outstanding, and it's clear that this is a much-needed tool, one that both young people and frontline staff are eager to use.” —*Ellen Townsend, Professor of Psychology, Digital Youth Co-Lead*



Discover more
about our
research

▶ Images from the CaTS-App Prototype

Programme outputs

Publications

Papers

1. Bourgaize, J., Andrews, J., Babbage, C. *et al.*, What guidance is needed by academics who collaborate with digital companies to improve youth mental health? *Child & Adolescent Mental Health*, 30: 313-316., (2025). doi.org/10.1111/camh.12779 (Research projects 1, 3, 4, 6, 7 and 8).
2. de Alcântara Mendes, J.A., Lucassen, M., Adams, A. *et al.*, Patient and Public Involvement (PPI) and Responsible Research and Innovation (RRI) approaches in mental health projects involving young people: A scoping review protocol. *Research Involvement and Engagement*, 10, 60 (2024). doi.org/10.1186/s40900-024-00591-1 (Research project 1 and Sprouting Minds).
3. Sonuga-Barke, E., Stoilova, M., Kostyrka-Allchorne, K. *et al.*, Pathways between digital activity and depressed mood in adolescence: Outlining a developmental model integrating risk, reactivity, resilience and reciprocity. *Current Opinion in Behavioral Sciences*, 58: 1-7 (2024). doi.org/10.1016/j.cobeha.2024.101411 (Research project 3).
4. Kostyrka-Allchorne, K., Stoilova, M., Bourgaize, J. *et al.*, Dynamic Interplay of Online Risk and Resilience in Adolescence (DIORA): A protocol for a 12-month prospective observational study testing the associations among digital activity, affective and cognitive reactions and depression symptoms in a community sample of UK adolescents. *BMJ Open*, 14(9):e085061 (2024). [doi: 10.1136/bmjopen-2024-085061](https://doi.org/10.1136/bmjopen-2024-085061) (Research project 3).
5. Kostyrka-Allchorne K., Stoilova M., Bourgaize J. *et al.*, Digital experiences and their impact on the lives of adolescents with pre-existing anxiety, depression, eating and non-suicidal self-injury conditions - a systematic review. *Child and Adolescent Mental Health*, 28(1):22-32 (2023). doi.org/10.1111/camh.12619 (Research project 3).
6. Kostyrka-Allchorne, K., Bourgaize, J., Murray, A. *et al.*, Understanding youth online experiences and mental health: Development and validation of the Digital Activity and Feelings Inventory (DAFI). *International Journal of Methods in Psychiatric Research*, 34(2), e70028 (2025). doi.org/10.1002/mpr.70028 (Research project 3).
7. Etherson, M. E., Lee, S., Loney, K. J. *et al.*, Exploring risk and protective factors which distinguish suicidal and self-harm behaviours from suicidal and self-harm ideation in young people: A systematic review. *PLOS ONE*, 20(9):e0326381 (2025). doi.org/10.1371/journal.pone.0326381 (Research project 4).
8. Wanniarachchi, V., Greenhalgh, C., Choi, A. *et al.*, Personalization variables in digital mental health interventions for depression and anxiety in adolescents and youth: A scoping review. *Frontiers in Mental Health*, Vol 7 (2025). doi.org/10.3389/fdgth.2025.1500220 (Research project 5).
9. Khan, K., Hall, C. L., Babbage, C. *et al.*, Precision computerised cognitive behavioural therapy (cCBT) for adolescents with depression: A pilot and feasibility randomised controlled trial protocol for SPARX-UK. *Pilot Feasibility Studies*, 10, 53 (2024). doi.org/10.1186/s40814-024-01475-7 (Research project 6 and Sprouting Minds).
10. Khan, K., Babbage, C. M., Sprange, K. *et al.*, Precision computerised cognitive behavioural therapy (cCBT) intervention for adolescents with depression (SPARX-UK): Protocol for the process evaluation of a pilot randomised controlled feasibility trial. *BMJ Open*, 15(8), e092483 (2025). doi.org/10.1136/bmjopen-2024-092483 (Research project 6).
11. Williams, A. J., Cleare, S., Borschmann, R. *et al.*, Enhancing emotion regulation with an in-situ socially assistive robot among LGBTQ+ youth with self-harm ideation: Protocol for a randomised controlled trial. *BMJ Open*, 14(1):e079801 (2024). [doi: 10.1136/bmjopen-2023-079801](https://doi.org/10.1136/bmjopen-2023-079801) (Research project 7 and Sprouting Minds).
12. Williams, A. J., Townsend, E., Naeche N. *et al.*, Investigating the feasibility, acceptability and appropriation of a socially assistive robot among minority youth at-risk of self-harm: pilot studies. Accepted: *JMIR Formative Research* (2023). formative.jmir.org/2023/1/e52336 (Research project 7).

13. Lockwood J., Babbage C., Bird K. *et al.*, **A comparison of temporal pathways to self-harm in young people compared to adults: A pilot test of the Card Sort Task for Self-harm online using Indicator Wave Analysis.** *Frontiers in Psychiatry*, 13:938003 (2023). [doi:10.3389/fpsyt.2022.938003](https://doi.org/10.3389/fpsyt.2022.938003) (Research project 8).
14. Loades, M. E., Lockwood, J., Babbage, C. *et al.*, **Creating a series of videos coproduced with young people to support the growth of coproduction amongst youth mental health researchers.** *International Society for Research on Internet Interventions 12th Scientific Meeting (ISRII 12)*, 248, pp.112–117 (2024). doi.org/10.1016/j.procs.2024.10.370 (Research project 8 and Sprouting Minds).
15. Babbage, C.M., Lockwood, J., Roberts, L. *et al.*, **Cultivating participatory processes in self-harm app development: A case-study and working methodology.** *JCPP Advances*, e12295 (2024). doi.org/10.1002/jcv2.12295 (Research projects 1 and 8 and Sprouting Minds).

Book chapters

16. Hollis C., Hall C.L., and Loades M., **Digital technology: Assessment and treatment** in *Rutter's Child and Adolescent Psychiatry and Psychology*, Seventh Edition, ed. Thapar A. T. *et al.* (2025); Wiley & Sons Ltd.

Preprints

17. Kandola A., Mansfield R., Kelly Y. *et al.*, **Identifying resilience factors for adolescent mental health with cyberbullying victimisation as a risk factor.** doi.org/10.1101/2024.11.18.24317457 (Research project 2).

Registered protocol

18. Kandola, A., Yang, Yi., Mansfield, R. *et al.*, **Examining resilience factors in the associations between cyberbullying and mental health across sex, sexuality, and ethnicity in adolescents.** (2024). doi.org/10.17605/OSF.IO/TNYWK (Research project 2).
19. Kostyrka-Allchorne, K., Bourgaize, J., Livingstone, S. *et al.*, **Differentiating digital experiences, and their impact, in the lives of adolescents with different types of emotional disorders: A systematic review of the evidence.** *PROSPERO*, CRD42022318672 (2022). www.crd.york.ac.uk/prospERO/display_record.php?ID=CRD42022318672 (Research project 3).
20. Etherson, M. E., Townsend, E., Auer, D. P. *et al.*, **Risk and protective factors which distinguish those who have thoughts of self-harm or suicide from those who act on them: A systematic review in young people.** *PROSPERO*, CRD42022332224 (2024). www.crd.york.ac.uk/PROSPERO/view/CRD42022332224 (Research project 4).
21. Lee, S. Tench, C., and Auer, D., **Investigating the link between brain maturation imbalance, impulsivity, and suicidal and non-suicidal self-harm behaviour in preadolescent children.** *Nottingham Research Data Repository* (2024). doi.org/10.17639/nott.7479 (Research project 4).

Presentations

International conference presentations

22. de Alcântara Mendes, J.A, **Integrating PPI and RRI: Crafting innovative digital tools to empower youth mental health.** Workshop, *15th EUSPR Conference and Members' Meeting*, Cremona, September 2024 (Research projects 1 and 8).
23. de Alcântara Mendes, J.A, **Advancing community-based prevention through Responsible Research and Innovation: Introducing the CoPYP Framework.** Oral presentation, *15th EUSPR Conference and Members' Meeting*, Cremona, September 2024 (Research projects 1 and 8).
24. de Alcântara Mendes, J.A, **RRI-YPMH: An RRI framework for the responsible involvement of young people in mental health projects.** Oral presentation, *European Conference on Developmental Psychology*, Vilnius, August 2025 (Research project 1).
25. Bourgaize, J., Stoilova, M., Kostyrka-Allchorne, K. *et al.*, **If not "screen time", then what? A new approach to researching the link between young people's digital activities, mental health, and psychological wellbeing.** Oral presentation, *International Conference on Social Media & Society*, London, July 2024 (Research project 3).

26. Bourgaize, J., Kostyrka-Allchorne, K., Murray, A.J. *et al.*, **Moving beyond screen time: Digital activities, affective and cognitive reactions and adolescent mental health.** Oral presentation, *ECREA Annual Conference*, Ljubljana, September 2024 (Research project 3).
27. Azeri, E., Kostyrka-Allchorne, K., Stoilova, M. *et al.*, **Exposure to on-line risk in adolescence – Independent contributions of ADHD and conduct problem symptoms.** Presentation, *Eunethydis Annual Conference*, Cagliari, October 2024 (Research project 3).
28. Livingstone, S., **Children’s development and competence in the digital environment: A child rights approach.** Keynote presentation, *Digymatex Final Conference ‘Growing up on Screens’*, Vienna, December 2024 (Research project 3).
29. Livingstone, S., **Latest developments in online safety policy - advocacy and industry practice, and key considerations for regulatory frameworks and implementation.** Keynote and chair, Westminster eForum policy conference: *Child online safety in the UK - next steps for regulation, policy and practice*, London, January 2025 (Research project 3).
30. Livingstone, S., **Safeguarding children in the digital age 2025.** Debate, *Children & Young People Now Conference*, Online conference, January 2025 (Research project 3).
31. Livingstone, S., **The role of social sciences, arts and humanities in delivering public interest.** Chair, *AI Fringe event, British Academy*, London, February 2025. www.youtube.com/watch?v=9s1vsLkzYaU (Research project 3).
32. Livingstone, S., **Tackling violence against children in the digital environment.** Webinar speaker, Child Online Protection Fundamentals, *UNICEF*, April 2025 (Research project 3).
33. Livingstone, S., **Protection of minors online.** Public hearing speaker, *Committee on the Internal Market and Consumer Protection (IMCO)*, Brussels/online, April 2025. www.europarl.europa.eu/committees/en/protection-of-minors-online/product-details/20250402CHE13045 (Research project 3).
34. Livingstone, S., **Education and children’s wellbeing in the digital environment.** Keynote, *Cetic.br 20-Year International Seminar: Data and Analysis for an Inclusive Digital Future*. Sao Paolo, May 2025. www.youtube.com/live/v3Qs7_Ww_vl?t=6390s (Research project 3).
35. Stoilova, M., **Empowerment online: Digital literacy and digital wellbeing in the 21st Century.** *Digital Education Stakeholder Forum 2025: Tap into Europe’s Digital Potential*, European Commission, Brussels, June 2025 (Research project 3).
36. Livingstone, S., **Child rights by design.** Keynote, *Nordic and EU expert meeting on digital media and health among children and adolescents*, The Swedish Public Health Agency and the Finnish Institute for Health and Welfare, Brussels, June 2025. www.youtube.com/live/XKo6oUYnUqU (Research project 3).
37. Livingstone, S., **Building a safe digital environment for children.** Plenary session, Plenary Session:, *World Congress on Family Law and Children’s Rights*, Cambridge, July 2025 (Research project 3).
38. Livingstone, S., **Impact of social media and online environment on young people.** Speaker, *European Parliament CULT Committee*, July 2025 (Research project 3).
39. Kostyrka-Allchorne, K., Bourgaize, J., Murray, A. *et al.*, **Moving beyond screen time: A new approach to researching the link between adolescent digital experiences, mental health, and psychological wellbeing.** Oral Presentation, *European Conference on Developmental Psychology*, Vilnius, August 2025 (Research project 3).
40. Tang, P., Kostyrka-Allchorne, K., Murray, A. *et al.*, **Young people’s awareness of, and attempts to manage, the negative impact of digital activity on their mental health: The Managing My Life Online questionnaire.** Oral presentation, *European Conference on Developmental Psychology*, Vilnius, August 2025 (Research project 3).
41. Livingstone, S., Keynote speaker and panellist, *Education flagship conference on well-being and digitalization*, Danish Presidency, Council of the European Union, Copenhagen, September 2025 (Research project 3).
42. Stoilova, M., **Perils and possibilities: Understanding AI’s Impact on children’s wellbeing, AI and healthy and thriving learners: Co-creating guiding principles for health education tools.** Online presentation, *Digital Learning Week – Open Ideas Lab*, UNESCO, September 2025 (Research project 3).

43. Etherson, M. E., Lee, S, Jawahar, N. *et al.*, **Risk and protective factors that distinguish young people who have thoughts of self-harm or suicide from those who act on them: A systematic review.** Presentation, *32nd World Congress of the International Association for Suicide Prevention*, Piran, September 2023 (Research project 4).
44. Babbage, C., Roberts, L., Griffiths, H. *et al.*, **Exploring stakeholder views of a serious self-help game for children and adolescents with low mood.** Poster presentation, *ISRII 11*, Pittsburgh, September 2022 (Research project 6).
45. Lucassen, M., Stasiak, K., Fleming, T. *et al.*, **Around the world with SPARX: Lessons in digital therapy for adolescents.** Symposium, *ISRII-12*, Limerick, June 2024 (Research project 6).
46. Gregory J. *et al.*, **The effectiveness of a socially assistive robot for improving emotion regulation among LGBTQ+ youth experiencing self-harm thoughts: A randomised controlled trial.** Poster presentation, *International Society for Research on Internet Intervention*, San Diego, August 2025 (Research project 7).
47. Gregory J. *et al.*, **Supporting emotion regulation in LGBTQ+ youth with self-harmful thoughts: Qualitative findings from a Purrble intervention randomised controlled trial.** Poster presentation, *International Society for Research on Internet Intervention*, San Diego, August 2025 (Research project 7).
48. Babbage, C. and Lockwood, J., **Co-production CaTS-based research.** Oral presentation, *Institute of Mental Health Research Day*, Nottingham, May 2023 (Research project 8).
49. Babbage, C. *et al.*, **Creative approaches to digital PPI and co-production with young people: 3 case studies for digital mental health.** Symposium, *ISRII-12*, Limerick, June 2024 (Research project 8).
50. Loades M.E., Lockwood, J., Babbage, C. *et al.* **Using digital methods to enable digital coproduction with young people.** Talk, *ISRII-12*, Limerick, June 2024 (Research project 8).
51. Loades M.E., Lockwood, J., Babbage, C. *et al.*, **Creating a series of videos coproduced with young people to support the growth of coproduction amongst youth mental health researchers.** Conference proceeding, *ISRII-12*, Limerick, June 2024 (Research project 8).
52. Roberts, L., Babbage, C., Lockwood, J. *et al.*, **Exploring stakeholder views of a novel assessment and intervention tool for adolescent self-harm: The card sort task for self-harm.** Poster presentation. *EMCRF Self-harm and Suicide*, Glasgow, June 2025 (Research project 8).
53. Roberts, L., Babbage, C., Lockwood, J. *et al.*, **Exploring stakeholder views of a novel assessment and intervention tool for adolescent self-harm: The card sort task for self-harm.** Oral presentation, *11th Harmless Conference*, Nottingham, June 2025 (Research project 8).

Invited presentations and workshops

54. de Alcântara Mendes, J.A. **Youth engagement in digital mental health research: A reflexive exploration of RRI principles.** Oral presentation, *Adolescence, Mental Health and the Developing Mind Networking and Knowledge Sharing Conference*, Birmingham, September 2024 (Research project 1).
55. Livingstone, S., **Can young children benefit from digital technology or is it time for a ban?** Guest lecture, *Joyce Morris Early Years Legacy Forum*, Norwich, November 2024 (Research project 3). Watch online: www.youtube.com/live/PhPMvoir06w.
56. Stoilova, M., **Navigating the digital playground: children's wellbeing, online engagement and resilience in a connected world.** Online workshop *Parenting in a digital world – understanding online risks and opportunities for children and young people*, WISE KIDS, February 2025 (Research project 3).
57. Stoilova, M., **Click, scroll, cope: The role of digital engagement for children's mental health and wellbeing.** Seminar, *CANDY Group*, London, March 2025 (Research project 3).
58. Stoilova, M., **Screen time, safety, and skills? Helping your child thrive in the digital age.** Webinar. *Digital Parenting: What Parents Need to Know*, Media and Learning Association, March 2025 (Research project 3).
59. Sonuga-Barke, E., **Adolescent digital activity and mental health: A new developmental theory and some initial data.** Oral presentation, Hong Kong University, April 2025 (Research project 3).

60. Kostyrka-Allchorne and K., Azeri, E., **Beyond screen time: Navigating the complex links between digital activity and adolescent mental health and wellbeing - a shared perspective.** Webinar, *Health Professionals for Safer Screens*, Online, June 2025 (Research project 3).
61. Stoilova, M., **How to ensure the deployment of generative AI benefits children's wellbeing and progression: Learning from the evidence.** Briefing. *LEGO Group's AI Breakfast Roundtable*, London, September 2025 (Research project 3).
62. Etherson, M. E. *et al.*, **Risk and protective factors which distinguish those who have thoughts of self-harm or suicide from those who act on them.** Paper presentation, *19th Annual Scientific Meeting of the UK Society for Behavioural Medicine*, Glasgow, March 2024 (Research project 4).
63. Slovak, P and Greenhalgh, C., **The value and problems presented by artificial intelligence in the youth digital world.** Oral Presentation. *Digital Youth Partners' Meeting Session*, London, April 2024 (Research projects 5 and 7).
64. Williams, A. J., Rhodes, A., Posoda, L. *et al.*, **Evaluating the impact of an in-situ robot supporting emotion regulation among LGBTQ+ youth with experiences of self-harm.**, *Born in Bradford*, December 2024 (Research project 7).
65. Williams, A. J., **Purrble, an emotion regulation intervention.** Oral presentation, *Nottingham Gender Clinic*, June 2025 (Research project 7).
66. Babbage, C., Lockwood, J., Roberts, L. *et al.*, **Cultivating participatory (or creative) processes in research.** Workshop, *MindTech HTC Symposium*, London, November 2022 (Research project 8).
67. Lockwood, J. and Babbage, C.M., **Foundational CaTS-App work.** Poster presentation *MRC Dissemination Event*, Birmingham, September 2022 (Research project 8).
68. Babbage, C., Lockwood, J. and Townsend, E., **CaTS-App - Codeveloping a digital assessment and intervention app for self-harm.** Oral presentation. *9th Harmless Conference*, Nottingham, March 2023 (Research project 8).
69. Lockwood, J., **Co-production approach.** Oral presentation. *International Summit on Suicide Research*, Barcelona, October 2023 (Research project 8).
70. Lockwood, J., **CaTS work.** Oral presentation *29th British Isles Workshop on Research on Suicide and Self-Harm*, Oxford, December 2023 (Research project 8).
71. Lockwood, J., **Digital Youth programme and CaTS.** Visiting scholar presentation, *Curtin University, Murdoch University, and Orygen Centre of Excellence*, Australia, July 2023 (Research project 8).
72. Lockwood, J. and Babbage, C.M., **Cultivating participatory processes in self-harm app development: A case-study and working methodology.** Oral presentation *EMCRF Self-harm*, Glasgow, June 2024 (Research project 8).
73. Lockwood, J. and Babbage, C.M., **Exploring temporal pathways to self-harm - a pilot test of CaTS-online using Indicator Wave Analysis.** Poster presentation. *EMCRF Self-harm*, Glasgow, June 2024 (Research project 8).
74. Hitcham, L., Babbage, C., Lockwood, J. *et al.*, **The design and development of the CaTS-App for understanding self-harm: Learnings from Phase 2 co-production.** Oral presentation. *Digital Mental Health and Wellbeing Conference*, Granada, May 2025 (Research project 8).
75. Lockwood, J., Babbage, C., Roberts, L. *et al.*, **Developing the CaTS-App - the finale! Real-world testing of a collaborative assessment app for self-harm.** Oral presentation *10th Harmless Conference*, Nottingham, February 2025 (Research project 8).

Digital tools

76. **Prototype chatbot app** (client and server source code and dialog definitions), 2024. Currently private GitHub repositories to protect IP pending impact/exploitation planning (Research project 5).
77. **Research participant interface extension to REDCap** (source code), 2024. Currently private GitHub repository pending discussion with the REDCap Consortium (Research project 5).
78. **Randomised Control Trial of a socially assistive robot with LGBTQ+ youth who have self-harmful thoughts.** ClinicalTrials.gov: NCT06025942 (Research project 7).

Media and public engagement

Reports

79. Stoilova, M., *et al.*, Exploring adolescents' digital activity and mental health: Insights from the DIORA study. Briefing for schools, bit.ly/DIORAfirstlook (Research project 3).
80. Livingstone, S., **A life behind the screens: Uncovering the realities of digital childhood**. Forward, *Cybersafe Kids Ireland*, September 2025. www.cybersafekids.ie/wp-content/uploads/2025/08/CSK_TU-24-25_Web.pdf (Research project 3).
81. Lockwood, J. Babbage, C.M., Roberts, L. *et al.*, **CaTS-App findings from the planning and discovery phase of our work with professional stakeholders and youth**. Report briefing, May 2024. digitalyouth.ac.uk/wp-content/uploads/2024/05/CaTS-Report-Briefing.pdf (Research project 8).
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Blogs

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DeCODE: Digital debates and definitions

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 - Resilience workshop:
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 - 'Resilience: Core characteristics'
 - "'Toughen up! An alternative view of resilience'
 - 'Digital resilience'
 - Digital engagement workshop:
 - 'Meaningful digital engagement'
 - 'Digital tools'
 - 'When digital gets difficult'
 - Accessible definitions:
 - 'Co-production', 'Co-design' and 'Responsible Research and Innovation (RRI)' (Research project 1 and Sprouting Minds)
 - 'Prevention' (Research project 2 and Sprouting Minds)
 - 'Digital activity' (Research project 3 and Sprouting Minds)
 - 'Brain imaging' and 'Neural correlates' (Research project 4 and Sprouting Minds)
 - 'Companion agent' (Research project 5 and Sprouting Minds)
 - 'E-coach' (Research project 6 and Sprouting Minds)
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Upcoming outputs

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148. **'Co-production is caring': Young people's reflections on responsible and dialogic co-production in youth mental health.** Paper in preparation (Research project 1 and Sprouting Minds).
149. **Involving young people in mental health research: A scoping review of 'Patient and Public Involvement' (PPI) and 'Responsible Research and Innovation' (RRI) approaches.** Paper in preparation (Research project 1 and Sprouting Minds).
150. **RISE-UP framework: Responsible framework for Involvement, Safeguarding and Engagement – Uplifting young people participation in mental health projects.** Paper in preparation (Research project 1).
151. **'Managing My Life Online' (MYLO): a novel tool to illuminate young people's agency in the digital world.** Paper in preparation (Research Project 3).
152. **Testing reciprocal pathways between different digital activities and symptoms of depression and generalised anxiety in adolescence: A 12-month longitudinal study.** Paper in preparation (Research project 3).
153. **The development and validation of the Personal Experiences in Everyday Life questionnaire.** Paper in preparation (Research project 3).
154. **Development and preliminary validation of the Digital Activities and Feelings Inventory Brief Version (DAFI-B).** Paper in preparation (Research project 3).
155. **DIORA findings.** Animations for young people and key stakeholder brief in preparation (Research project 3).
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158. Greenhalgh, C. *et al.*, **Co-design of an embodied conversational agent for a young person to encourage adherence with a digital mental health intervention.** Paper in preparation for submission to *JMIR Formative Research* (Research project 5).
159. Babbage, C., Roberts, L., *et al.*, **Exploring stakeholders' views of how a serious game (SPARX) for children and adolescents with low mood should be implemented in the UK.** Paper invited to a collection in *BMC Paediatrics* (Research project 6).
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► Researchers and members of Sprouting Minds group photograph, February 2025.



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