

Empowering students and clinicians with mental health data

Opportunities for tech-enabled
innovation in student mental health



Shift

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Foreword

Obi Felten and Kit Yee Au-Yeung
X, the moonshot factory

(the Alphabet company formerly known as GoogleX)

Since 2017, our small, multidisciplinary team at X has been developing prototype technologies to improve mental health. Our journey started by asking the question: what if we could make brain waves as easy to measure and interpret as blood glucose, and use them as an objective measurement of depression? As product managers working on cutting-edge technology throughout our careers, we knew how important it was to figure out early on who the technology's users would be and what problem we were solving for them.

We partnered with Shift on this research into student mental health to learn more about the experiences of students and clinicians working in higher education settings. We tested how our proposition of introducing a new, more objective measure of depression and anxiety would resonate with clinicians and students with lived experience of mental health problems: how they might use it in their daily lives and professional practice, and what the challenges might be in introducing such a radical new approach.

We chose to focus on student mental health because there is a crisis on both sides of the Atlantic. Greater numbers of college and university students in the UK and US are presenting with mental health problems, and higher education institutions are struggling to keep up with the demand for support. These challenges are set

against — and exacerbated by — a backdrop of multiple societal crises, including the climate emergency, racial injustice, systemic inequity, and now a global pandemic.

This means there is great need for change and even greater potential for innovation. We found student mental health to be a fertile ground for tech-enabled innovation for several reasons. Firstly, there is growing unmet need for college mental health services. Students have also been pushing for change in mental health and are often early adopters of technology. Finally, universities have both a moral and financial incentive to improve their student mental health systems.

**"We chose to focus on
student mental health
because there is a
crisis on both sides
of the Atlantic."**

This report explores the key challenges college mental health services face, the need to optimise therapeutic interactions between students and clinicians, and the role that better mental health data can play in empowering both students and clinicians. We emerge with three clear recommendations for those working to improve student mental health:



i

Support students to track their own subjective data



ii

Introduce objective data into therapeutic interactions



iii

Make data accessible and interpretable for students and clinicians

We're publishing this report as we wrap up our project at X following three years of exploration. By sharing our insights and open-sourcing our technology, we hope to inform and enhance the work of other researchers and innovators striving to improve mental health services and outcomes for students. We also hope to encourage much-needed investment into further research, tools, and services to improve student mental health, accelerating systemic change towards a world where all students can get the mental health support they need.

About this report

This report is the result of research undertaken by the social innovation charity Shift between 2018 and 2020, sponsored by X. By surfacing and exploring the experiences and reflections of students and clinicians in college mental health systems, we aim to identify challenges and opportunities for innovation in this space.

Our research involved students and clinicians at colleges across both the UK and the US. These two college systems, whilst in many ways different, have many similarities. To ensure the insights and opportunities presented in this report are as useful as possible and lead to action, we focus here on commonalities in the two mental health systems and their users' needs.

Direct quotations are from our research participants, unless a reference is noted. All quotations are anonymised.

Chapter 01 explores the wider context of our research and unearths three key challenges faced across the college mental health system. **Chapter 02** dives deeper into one of these key challenges, exploring the nature of therapeutic interactions between students and clinicians, how they could be optimised, and each user's specific needs. **Chapter 03** documents users' reactions to the idea of using data to improve support for students' mental health at college, including their hopes and fears. We then share our recommendations in **Chapter 04**, so head there for ideas and opportunities for fuelling innovation in student mental health.

A note on the terms we use in this report

The mental health space is varied and complex, especially when studied through the lens of different countries and cultures. Here, we explain the terms we use in this report.

Student

A person undertaking higher education, such as at a university or college, after completing secondary education or high school.

Clinician

A healthcare professional who is qualified to provide mental health support and directly involved in care and treatment. There are different kinds of clinicians, including psychologists, psychiatrists, psychotherapists, therapists, and counsellors ([see Appendix 2](#)).

Colleges

A catch-all term for institutions of higher education, commonly termed universities in the UK and colleges or universities in the US.

Counselling centre

A physical or virtual space where clinicians offer services and students access mental health care, treatment, and other forms of support.

Therapeutic interactions

When students and clinicians come together, communicate, and undertake diagnostic processes or treatment.

Subjective data

Information collected through observation, self-reporting, or clinical judgement. When described as 'tech-enabled', we mean it may be collected, processed, or presented digitally.


Objective data

Measurable information such as physiological data (e.g., brain waves, heart rate) and behavioural data (e.g., sleep and activity patterns), which may be collected, processed, or presented digitally.

Methodology

The journey of this research began with a specific enquiry designed to test and validate the work of [Project Amber](#), X's exploration into the potential for a tech-enabled, objective measurement of depression. In our first research phase, we focused on understanding how this concept would be received and used in the real world, both by clinicians and people with experience of mental health problems. The resulting learnings helped us design the second research phase, which focused on the use of mental health data in therapeutic interactions between college students and clinicians.

We used mixed methodologies across the two research phases, including:



In-depth interviews
with 28 students and
60 clinicians

Online diary study
with 40 students

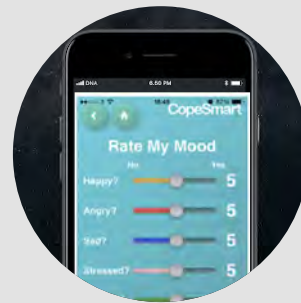
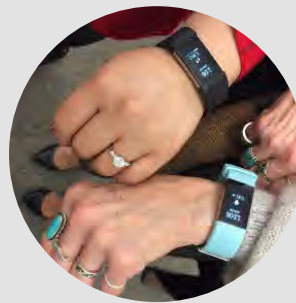
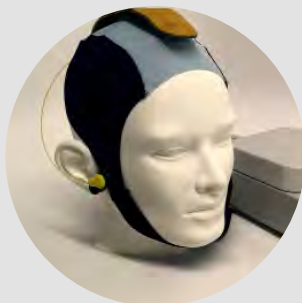
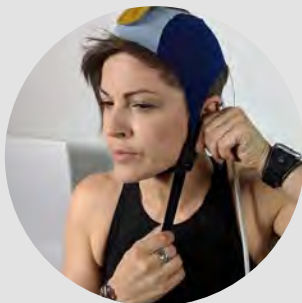
Online survey
with 60 students

In interviews, we took a qualitative, open-ended approach to generate user insights. Interviews began with questions about the individual's experiences delivering or accessing mental health services in a college system. We also explored participants' views on the concept of using data in college mental health settings. To do this, we shared prompts and visuals (see examples below) of concepts including:

- An electroencephalogram (EEG) device designed to monitor symptoms of anxiety and depression
- A mobile app that captures data such as sleep and steps from a wearable device
- A mobile app that would allow students to record their behaviours over time with frequent self-reports (ecological momentary assessment)

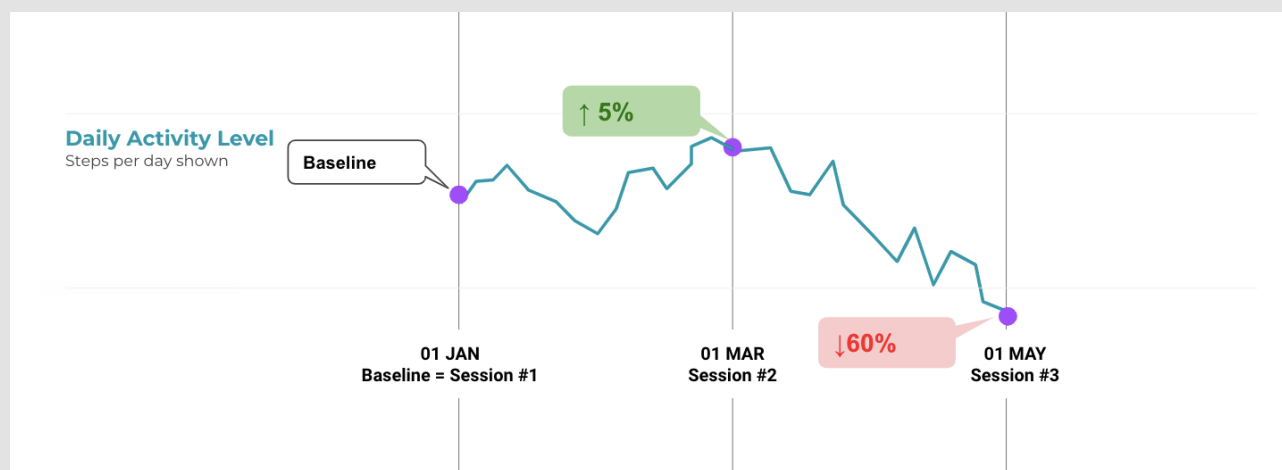
Example prompts, visuals and captions

A new, early-stage product that uses specific tasks completed at the counselling centre (some including EEG) and real time data-gathering completed between visits to give a more comprehensive and accurate picture of how depressive symptoms are changing over time, during the course of treatment.



Specific tasks (some using an EEG headset, above) completed in the counselling centre

Real time data collected between visits (Left) wearable, (Right) self-rating of symptoms



An example data plot of a student's daily activity level over a course of four months

Who we heard from

128 university and college students

We recruited undergraduate and graduate students aged between 19 and 26 who represented a range of genders, ethnicities, and socioeconomic backgrounds. All students involved in this research were enrolled full-time at their respective colleges, and the majority were from the US. Every participant had a self-reported history of low mood,¹ anxiety, or depression, but had not received treatment for a mental health condition during the six months prior to taking part in the research. Students received a small stipend for their participation.

60 mental health experts and clinicians

Over the course of the research, we conducted interviews with college mental health experts and clinicians split across the UK and US. We spoke with psychologists, psychiatrists, psychotherapists, therapists, and counsellors (see [Appendix 2](#) for definitions). The clinicians held various degrees, including medical degrees, PhDs, and master's degrees in Psychotherapy, Licenced Clinical Social Work, and Marriage and Family Therapy. Their professional experience spanned from one year to 35 years of practice. All participants were currently working within a college counselling centre, in a range of higher education institution types and sizes.²



The infographic consists of two large yellow circles on a dark background with a bokeh effect. The left circle contains the number '128' in large black font, with the word 'Students' in a smaller black font below it. The right circle contains the number '60' in large black font, with the word 'Clinicians' in a smaller black font below it.

128
Students

60
Clinicians

¹ The term 'low mood' was used during the recruitment of students to denote the presence of a low or a depressed mood. ² The variety of higher education institutions included private and public colleges and universities in the US, including community colleges, and a range of colleges and universities in the UK, including red brick and Russell Group universities, and many others.

01



Counselling in crisis: Context and challenges

In this chapter, we explore the wider context of our research, explain key challenges in the world of student mental health, and identify fertile ground for innovation.

“There was a mental health crisis across universities prior to the pandemic [...] The pandemic has only exacerbated these issues.”

Sara Khan, National Union of Students, as reported in The Guardian⁷

A context of crisis and COVID-19

We’re in the midst of a youth mental health crisis. Nearly one in three students screen positive for a mental health concern across US colleges in any given year,³ and one in three students in the UK have experienced a serious psychological issue for which they felt they needed professional help.⁴ According to WHO figures from 2019, suicide was the world’s second leading cause of death among 15-29 year olds.⁵ In 2020, global concerns — such as the COVID-19 pandemic, the climate crisis, and long-standing racial injustice — have further exacerbated this mental health crisis. Colleges across the UK and US are seeing an increased need for better mental health support under constantly changing conditions, and they are struggling to keep up.⁶

The COVID-19 pandemic alone has further increased the need for mental health support, with more than 50% of young people in the US now reporting symptoms of anxiety or depression.⁸ The pandemic has also significantly disrupted campus life, including the delivery of mental health services. With many students participating in remote learning away from campus, they are missing some of the usual support systems, including those that enable them to determine when to reach out for help.

Momentum for change

The nature and depth of these related crises means that student mental health is fertile ground for innovation, for several reasons. Firstly, there continues to be a growing unmet need, with college mental health centres overwhelmed by demand. Cost implications often mean colleges are unable to build their supply of clinical capacity to keep up.

Secondly, students have been pushing for change. They want better mental health support and are often early adopters of technology.⁹ This signals the potential for wider adoption of tech-based solutions, with the majority of students we interviewed being eager for innovation in this space.

Thirdly, student mental health is a moral and financial challenge that colleges can't afford to ignore. In one study, depression was associated with a 200% increase in dropout rates, and depression and anxiety are often associated with poor academic performance.¹⁰ Colleges also have an incentive to avoid the financial and reputational damage they could experience as a result of insufficient support for student mental health.¹¹

Finally, despite the negative impact of the COVID-19 pandemic on student mental health, it can also be viewed as a catalyst for change. With mental health

systems pushed into flux, the pandemic has the potential to accelerate the systemic changes that many stakeholders — including students, parents, faculty, clinical staff, and college administrators — have been seeking. College mental health services are starting to redesign services to better cater to student and clinician needs, for instance, by switching to digital and remote support almost overnight. Various colleges are developing tools to better measure mental health and deliver care, both in person and remotely. Rapid innovation has become a necessity.

Key challenges

To explore how we could facilitate this momentum for change, our researchers set out to understand the key issues affecting college mental health systems. Here, we detail the three most significant and widespread challenges we heard from students and clinicians.

**Detecting
stress vs.
distress**

**Rising
demand
and limited
resources**

**Poor
therapeutic
interactions**

³ Eisenberg, D and Ketchen Lipson, S (2019) 'The Healthy Minds Study: 2018-2019 Data Report' ⁴ Pereira, S. et al (2019) 'University Student Mental Health Survey 2018' ⁵ World Health Organisation (2019) 'Suicide in the world Global Health Estimates' ⁶ Anderson, G (2020) 'Inside Higher Ed: Mental Health Needs Rise With Pandemic' ⁷ Packham, A (2020) 'The Guardian: I just sat in my room all day: lonely students seek mental health support' ⁸ Czeisler, M.E. et al (2020) 'Centers for Disease Control and Prevention: Mental Health, Substance Use, and Suicidal Ideation During the COVID-19 Pandemic' ⁹ Lee, SY (2014) 'Examining the factors that influence early adopters' smartphone adoption: The case of college students' ¹⁰ See footnote 3 ¹¹ American Council on Education (2019) 'Investing in Student Mental Health: Opportunities & Benefits for College Leadership'

Detecting stress vs. distress

“It’s all our opinions and hunches. We’re making judgements on what we’re hearing — whether we like it or not.”

Counsellor

Mental health problems are difficult to detect in students, and current methods of measurement are insufficient.

The transition to college is a significant life change that can lead to anxiety, low mood, and fatigue.¹² While these are common responses to change, they can also be hallmark symptoms of mental health conditions such as major depressive disorder and generalised anxiety disorder. Studies suggest that nearly three-quarters of all mental health disorders begin by the mid-twenties,¹³ which makes distinguishing between stress and distress both difficult and crucial during this important life stage.

As a result, colleges emphasise risk mitigation — especially the prevention of suicides.¹⁴ However, they have not yet found a reliable way to identify students with mental health needs early on, relying on self-reporting by students as well as behavioural flags spotted by faculty and staff. When students do make it to their college counselling centre — where support and services are usually offered — their needs are assessed with self-report screening tools such as CCAPS,¹⁵ GAD-7, and PHQ-9.¹⁶ These are often used in conjunction with a full 50-minute intake session with the student, conducted by a trained psychologist or mental health counsellor. For colleges, this is a time-intensive and costly approach. Since many students have only one session, this also means their main interaction with their counselling centre is triage — rather than treatment, therapy, or support.¹⁷

For students who do go on to have further sessions, progress is sometimes measured by repeating the self-report screeners at regular intervals but, more often than not, clinicians rely on their subjective perspectives of conversations to assess changes in a students’ mental health status and needs.

On a system level, we learnt that triaging, treating, and tracking progress in student mental health is a largely manual job — one that requires significant time and energy from clinicians who are already overstretched.

¹⁴ Healy, M (2019) ‘LA Times: Suicide rates for U.S. teens and young adults are the highest on record’ ¹⁵ CCAPS (Counseling Center Assessment of Psychological Symptoms) is a validated evaluation tool created by the US Center for Collegiate Mental Health at Pennsylvania State University for the evaluation of student distress. ¹⁶ GAD-7 (Generalised Anxiety Disorder Assessment) and PHQ-9 (Patient Health Questionnaire-9) are each validated scales used to assess generalised anxiety disorder and depression respectively. ¹⁷ Center for Collegiate Mental Health (2020) ‘2019 Annual Report’

Rising demand and limited resources

“Student mental health services are under-resourced. There is no amount of resources that will ever fulfil the needs efficiently.”

Student Mental Health Researcher

“We need to keep pace with the demand, but hiring more counsellors won’t be possible financially or space-wise.”

Counselling Centre Director

Colleges struggle to cope with rising demand as clinical time is limited.

College mental health systems are under significant strain. More students are seeking help than ever before, encouraged in part by campaigns that have raised awareness and reduced the stigma of mental health issues. At the same time, colleges recognise that there are still high levels of hidden and unmet needs among their students. As a result, demand can be difficult to predict and triage.

Many colleges simply do not have the option to increase the number of clinicians to meet the demand of higher caseloads.

With few ways to safely, quickly, and affordably determine who does and does not need support, ineffective triage compounds the challenge of rising demand. Some colleges triage students and allocate different levels of care based on a step-care model,¹⁸ but many offer mental health support to any student who expresses a need. As a result, colleges find they must limit the number of clinician sessions available to each student (like ‘doses’ of medication) or increase the length of time between sessions. This means some students receive too much support whilst others do not receive enough.

Poor therapeutic interactions

“I didn’t want them to see past traumas and if I haven’t, like, showered or done work — especially if I don’t know them that well.”

Student

“Creating rapport is really important in a session — working with a student on buy-in to try it and knowing that student is committed to coming back.”

Counsellor

Therapeutic interactions are at the core of student mental health services, but are often not working well.

Therapeutic interactions are the foundation of college mental health services, where students and clinicians come together for communication, diagnostic processes, support, and treatment. Because therapeutic interactions are used for assessing students and monitoring progress, this is where the challenges of triaging and meeting demand are often felt most acutely.

The success of therapeutic interactions relies on the strength of the connection and relationship between a clinician and a student (often called the alliance).¹⁹ But with limited bandwidth and time, this can be extremely hard to build — especially in initial sessions or when students see different clinicians over time.

Our researchers found the lack of strong relationships causing a high level of mistrust between students and clinicians. As a result, both groups reported struggling to build shared understanding through therapeutic interactions — something that is vital for effective triage, treatment, and tracking of progress.

For all these reasons, it is clear that enhancing therapeutic interactions could significantly benefit college mental health systems and outcomes for students in various ways: by reducing the time and cost burden involved in assessing need; matching the right students with the right support; increasing shared understanding between students and clinicians; and improving progress tracking. In the following chapter, we dive deeper into understanding therapeutic interactions by exploring the perspectives and needs of both students and clinicians.

¹⁹ Flückiger, C. et al (2018) ‘The alliance in adult psychotherapy: A meta-analytic synthesis’

“We can hire more and more counsellors, but it’s like putting a funnel into the end of a firehose.”

Student Mental Health Researcher

02



Therapeutic interactions: What users need

In this chapter, we dive deeper into therapeutic interactions in college mental health systems and share what our research uncovered about both students' and clinicians' needs.

"She didn't diagnose me with anything, which is fine as that wasn't the goal."

Student

Therapeutic interactions between students and clinicians matter. As discussed in the previous chapter, they are critical for supporting student mental health: understanding need, triaging, providing therapy and treatment, and assessing progress over time. Therefore, determining how to improve therapeutic interactions is essential to improving the efficiency of college mental health systems as well as overall outcomes for students.

Our researchers explored therapeutic interactions in depth with both students and clinicians to surface each user's needs, which are described below.

What students need from therapeutic interactions

Students want and expect more from their experiences accessing college mental health support.

Our research uncovered much complexity in students' experiences of college mental health systems and therapeutic interactions with clinicians. Many told us they want to feel 'deserving' of college support, to make sense of their intense feelings, and to be reassured they aren't imagining their distress. While they're accessing support, students want to make their conversations with clinicians more productive and meaningful — moving, as one student put it, from 'just a lot of talking' to clarity and action. We found students' four key needs to be:



Validation

Clarity

Connection

Growth

Validation

"She just said, 'Remember you are mentally ill and that's ok and you're not crazy', and it was really nice to get that validation. It was a really positive relationship."

Student

Validation of their experiences

Students on the whole are less interested in using therapeutic interactions as a diagnostic tool, and instead seek support from clinicians in the hope of legitimising their experiences and reassuring themselves that their symptoms are 'not just in their head'. For students, validation means feeling acknowledged and getting confirmation that what they're experiencing is 'real'.

However, many of the students we interviewed have not felt validated by their experiences with college mental health services. Many expressed feeling ill-prepared and unsure of themselves when they attempt to relay their emotional experiences to clinicians, struggling to clearly identify information that's important to share or to recall events between sessions — only exacerbated by long gaps between sessions.

Students worry about being unable to bring accurate information to the session or what they share being interpreted in ways other than how they intend. We heard how difficult it can be for students to find the right language to explain their feelings. As a result, many students said that therapeutic interactions, and clinicians' questions in particular, tend to focus on topics outside of their main concerns.

For students, what should be a space for fruitful conversation and validation is often characterised by two people struggling to connect and align.

Clarity

"[Having shared data] would help quantify everything, help me understand what's going on in my brain, and help the counsellor better see what's going on instead of just working off his notes."

Student

Clarity or understanding about what they are going through

Students told us they are often uncertain about their symptoms and want to better understand what is happening in their brains. They seek support from their college counselling centre with hopes of making their own experiences with mental health and emotions more tangible. Many students expect 'more than just talking' and seek obvious evidence of progress.

Most students do not feel like their therapeutic interactions generate a shared understanding of their symptoms. Instead, they perceive that the information they share ends up 'trapped' in clinicians' private notes. This makes some students feel that knowledge of what is going on with their mental health isn't shared openly with them — even prompting some to question the validity of the clinicians' subjective interpretations.

Students are quick to dismiss college mental health support as not working for them — especially if they do not see fast improvements — and often drop out of the process as a result.

Connection

"I didn't always feel like [my therapist] was able to understand where I was coming from. I couldn't communicate with him, and he couldn't communicate with me."

Student

Building a supportive connection with the clinician

We heard that whilst students feel vulnerable and nervous sharing their mental health experiences, most hope to build a trusting and supportive connection with their clinician. Students expect and want clinicians to be able to connect with them in a meaningful and authentic way.

However, we heard that students feel less able to connect meaningfully with clinicians who do not in some way reflect themselves — be that with regards to race, gender or age. Whilst these differences are often subjective perceptions, they can be enough to disrupt the delicate foundations of a relationship and potential for meaningful connection.

Often, students see different clinicians over time, forcing them to rebuild context and connection and making it hard to establish trust and continuity.

Finally, many students suspect that counsellors' loyalties remain with their college and worry that personal information could be communicated to other staff and administrators. These fears are in part founded on the requirement that colleges take action if they believe a student is at risk of harming themselves or others, which students feel could leave them open to negative repercussions for what they disclose.

Growth

"Giving me the power to understand myself would make a huge difference."

Student

Personal growth and self-reliance

We heard that students seek mental health support as a means of personal education and see the role of their clinician as a guide in this process. They hope getting support will help them better understand themselves and enable them to identify both symptoms and triggers as well as treatments and helpful behaviours. Many students see support from college mental health services as a short-term intervention to learn how to self-manage their own symptoms over time. Few students achieved this goal as a result of engaging with their college counselling centre.

Students feel that broad labels like 'anxiety' or 'depression' lack relevance and resonance with their individual experience. Instead of labels, they want a nuanced understanding of how their symptoms are triggered and manifested — to know how their specific experience and feelings can improve.

In their therapeutic interactions, however, students feel unclear about the actual treatment they receive. And, because they only have their clinician's assessment and their own subjective experience to go on, they also feel unclear about what works.

We heard that students often feel a lack of agency during therapeutic interactions. They perceive clinicians as experts with the power to diagnose and administer treatment, leaving themselves as passive recipients. Any treatment and evidence of its efficacy seems to be trapped in a black box. This results in a perceived lack of personal growth and fosters unhelpful power dynamics at the heart of therapeutic interactions.

“[There’s] validation in
being able to show
someone the reactional
info in their own body.
They might trust that more
than they trust the person.”

Psychotherapist

What clinicians need from therapeutic interactions

Clinicians want better and more reliable data for a fuller and more accurate picture of students’ needs.

College mental health clinicians serve a high-need population with minimal resources, large caseloads, limited sessions, little prep time, and a lack of continuity of care. Under such strain, clinicians feel unable to form and sustain the depth of relationships needed to gauge students’ risk levels and ultimately to meet their needs. Clinicians find themselves in therapeutic interactions relying heavily on their clinical knowledge instead, backed up by observation and intuition. This reality proves especially challenging for clinicians at earlier stages in their career. We found clinicians’ three key needs to be:

**Reliable
data**

**A richer
picture**

Education

Reliable data

**"We rely on what
we are told."**

Counsellor

More reliable data, insights, and information

Clinicians must determine how best to support students with intermittent sessions and within limited timeframes. They want reliable and easy-to-access data that can help them pinpoint a student's needs and useful topics to explore. Clinicians told us that access to such information would make their sessions with students more effective as well as help them to build constructive relationships more quickly.

Currently, clinicians have to rely on what students are willing to share and often feel a pressure to ask the right questions in order to tease out meaningful or relevant information. Typically, they have less than one hour during intake and triage, and six to eight sessions in total to treat students. Without the time necessary to paint a diagnostic picture and administer treatment, clinicians often rely on limited observable markers — such as fidgeting, poor grades, or tired eyes — to pinpoint areas of focus.

This lack of adequate and reliable data leaves their clinical judgement prone to error, which only increases clinicians' sense of risk.

A richer picture

"We see someone once a week. What we get is their subjective experience and feelings on a particular day. I can't remember how I felt last week, so [for students] to bring it into a counselling session is difficult."

Counsellor

A richer picture of what's happening between sessions

Clinicians desire a more complete picture of what's happening with students outside of the counselling centre and between sessions, so they can gather more information about students' symptoms, tailor sessions, and offer treatments according to their unique needs.

We heard that students mainly present clinicians with experiences and emotions that are top of mind. Given the sporadic nature of sessions offered by college counselling centres, many clinicians worry that students forget or do not feel inclined to discuss useful information, creating a misleading depiction of their needs. Additionally, clinicians understand students' concern about colleges taking action based on what they share, so they worry that students may hide their experiences and behaviours.

This limited access to information about what's happening in student's lives means it's more difficult to spot patterns, build trust, and fully understand their mental health support needs.

Education

“[It’s] naïve of us to think people can monitor moods off the bat. We need to teach people.”

Psychologist

Empowerment and mental health education for students

Most clinicians we spoke to want students to feel more empowered in therapeutic interactions, and they consider mental health services most effective when students are fully invested in the process and contribute equally. They desire the tools to promote self-support, self-regulation, and psychoeducation among students.

Without these tools, students who are experiencing anxiety or depression rely exclusively on the clinician for validation, explanation, and support. Because students often lack the language and confidence to express their experiences and emotions, clinicians are perceived and positioned as the sole experts. As a result, the clinician’s subjective interpretation is often given more weight than the student’s.

This is especially challenging for clinicians who know students are only entitled to a limited number of free sessions. They’re working against the clock to help students gain the education and skills they need to continue to progress.

Looking across the needs of both students and clinicians, it’s clear they often want the same thing. Despite the many deficits they see in therapeutic interactions, they also recognise the importance of making them work. In the following chapter, we explore possible ways to improve therapeutic interactions and better meet students’ and clinicians’ needs, focusing on the potential role of data-driven approaches.

03



Data-driven approaches: What users think

In this chapter, we explore what students and clinicians think about data-driven approaches to improving therapeutic interactions, which we know to be crucial for efficient and effective college mental health services.

**“Nothing is concrete
in therapy.”**

Counsellor

A reminder of key terms

Subjective data

Information collected through observation, self-reporting, or clinical judgement. When described as ‘tech-enabled’, we mean it may be collected, processed, or presented digitally.

Objective data

Measurable information such as physiological data (e.g., brain waves, heart rate) and behavioural data (e.g., sleep and activity patterns), which may be collected, processed, or presented digitally.

The potential power of mental health data

As described in our [methodology](#), this research began with an exploration into how a tech-led, objective measurement for depression might work in the real world. Now, having explored students’ and clinicians’ needs in greater detail ([Chapter 02](#)), we’re able to revisit our initial research insights in relation to the opportunity to improve student mental health by optimising therapeutic interactions (as identified in [Chapter 01](#)). Here, we explore three ways in which students and clinicians imagine using mental health data to enhance therapeutic interactions.



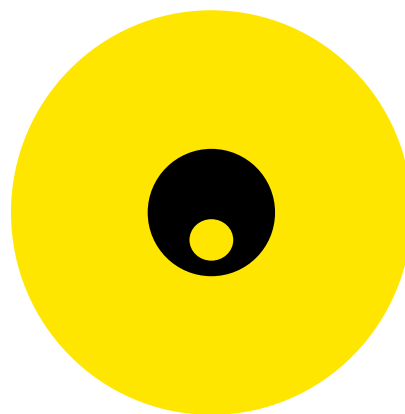
The missing anchor



Deeper understanding



Rebalancing relationships



The missing anchor

For many students and clinicians, objective data is the missing anchor they need to effectively explore and discuss mental health.

Overall, students and clinicians had nuanced but positive reactions to the idea of introducing objective data about mental health — for instance, through wearable technology, sleep tracking, college grades, or brain wave analysis. Both groups imagine this kind of data could bring a comforting clarity to their therapeutic interactions and to the overall experience of their mental health support journey. However, both feel strongly that objective data should be used only to enhance and never to replace conversation.

For many students, college mental health support is not as effective as it can be because they either do not trust themselves to accurately convey their symptoms or do not trust their clinician for accurate interpretation. Objective data is seen as a helpful piece of concrete evidence that can validate, explain, and track symptoms and progress, ensuring both clinician and student are on the same page.

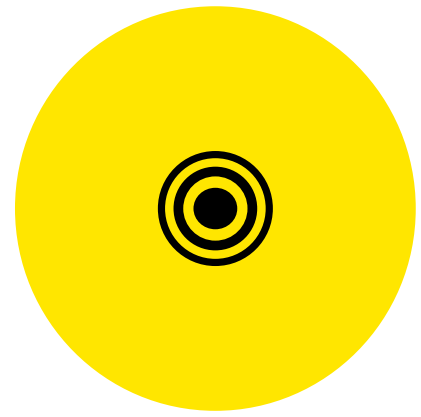
Students also hope that objective data can help them distinguish between symptoms (such as stress, fatigue, low mood, or anxiety) arising from the challenges of student life or those signalling a mental health disorder. Both students and clinicians feel that objective data could support their efforts to have more productive therapeutic interactions in the following ways:

- Providing a useful jumping-off point for conversations
- Reminding students of what to bring up in sessions
- Aiding students' recall
- Reducing pressure on students' ability to articulate themselves
- Prompting deeper, more honest reflection
- Bridging cultural and language barriers
- Deepening rapport and relationships

In general, students and clinicians believe that objective data would provide an additional concrete clue to help them understand a student's mental health. They want objective data to guide and enrich conversations and discovery, enabling them to unearth relevant insights.

**“I can lie to you
and me about
what I am feeling,
but I can’t change
what is happening
in my brain.”**

Student



Deeper understanding

Students and clinicians are interested in bringing together objective and subjective data as a way to improve shared understanding.

When we tested the concept of objective mental health data, clinicians had a nuanced but positive response. When we tested the idea of enhancing therapeutic interactions with shared and tracked subjective data, clinicians responded positively. When we tested blending objective and subjective data in therapeutic interactions, however, most clinicians agreed that it could be transformative. They feel that this combination would lead to deeper understanding, more effective treatment, and improvements to students' outcomes in ways that could be more accurately measured.

"The patient can't minimise their symptoms to the therapist — that's a whole new world."

Psychologist

Students and clinicians alike told us that being able to see objective and subjective data together would put less pressure on the use of clinicians' subjective observations, which are currently relied upon for diagnostic and treatment recommendations. Clinicians specifically feel that viewing objective and subjective data together with students would help facilitate 'buy-in' to the process — a common challenge at present.

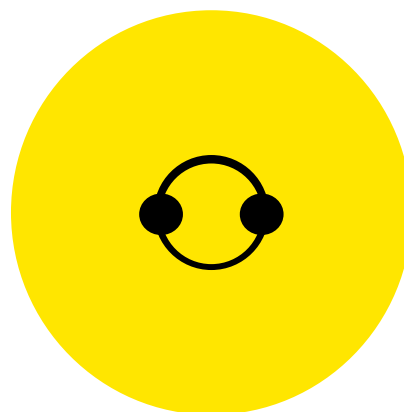
Both students and clinicians imagine that combining objective and subjective data could support them to have more productive therapeutic interactions in the following ways:

- Spotting patterns that would otherwise be hard to detect
- Validating and trusting students' experiences and clinicians' assessments
- Planning and personalising sessions based on what works
- Adjusting treatment approaches or frequency
- Monitoring or gathering evidence of progress over time
- Supporting students' psychoeducation and self-regulation

Overall, students and clinicians believe that the mix of new objective data and better subjective data would help treatment become more personal and precise. They feel that this will provide a more complete picture that both parties hoped could lead to faster assessments of need and progress, as well as mutual trust.

"Measuring the two worlds and bringing them together is, I think, very valuable."

Psychologist



Rebalancing relationships

Both students and clinicians hope the combination of objective and subjective data could rebalance the therapeutic relationship.

Students and clinicians feel that combining objective data and subjective data could make therapeutic interactions more collaborative — and help to rebalance the power dynamics that currently favour clinicians' perspectives over those of students.

Both groups imagine this would help give students a feeling of control over their mental health progress and recovery by allowing them to see how treatment and their own abilities to self-regulate or self-support impact their objective and subjective data. They feel this could be achieved by:

- Bringing key information out of clinicians' notes and into something concrete they could both see
- Fostering collaborative counselling, where they can review and make sense of information together
- Providing a more impartial view of what does and doesn't work
- Democratising decision-making during therapeutic interactions so it's not perceived as down to the clinician's opinion or judgement
- Identifying specific, personal, and nuanced understandings of students' symptoms and needs

"[Treating] depression isn't surgery. Everyone reacts differently. If it was a partnership and everyone is getting the info and background, I can say if I don't think this is effective and they can say 'ok'."

Student

Overall, students and clinicians feel that a rebalance of power is vital for college counselling centres to provide support successfully. By building therapeutic interactions that are more equal and could be jointly led, students gain more agency and understanding — all of which puts them in a stronger position to support themselves when therapeutic interactions with a clinician come to an end.

"It's good for them to feel in control and [know] that their insights are as valid as mine."

Counsellor

A full-page photograph showing the silhouettes of two people running on a wide, paved path in a city. The sun is low on the horizon, creating a strong backlight effect and casting long shadows. Tall buildings are visible in the background. In the top right corner, there is a white circle containing the number 04.

04

Where next? Recommendations for change

This chapter synthesises the learnings from our research into three recommendations for innovators working to improve college mental health systems and, ultimately, outcomes for students.

This research has surfaced three clear opportunities for data-driven innovation in student mental health that focus on supporting therapeutic interactions between students and clinicians. Through this, clinicians will be able to better detect needs, treat students, and monitor changes over time — all crucial to improving the efficiency and efficacy of college mental health systems. We hope that these opportunities serve as useful jumping-off points for other researchers, designers, innovators, and funders seeking to improve student mental health.

Whilst these recommendations each offer fertile ground for innovation, we believe that combining all three data-driven approaches has the most potential to transform college mental health systems and, ultimately, outcomes for students.



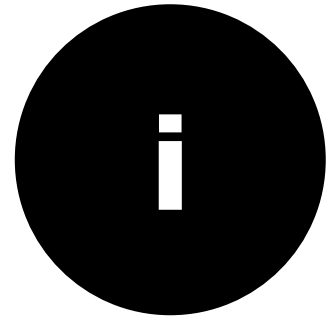
Support students to track their own subjective data



Introduce objective data into therapeutic interactions



Make data accessible and interpretable for students and clinicians



Recommendation:

Support students to track their own subjective data

"A lot of the time, I'm lost for words. I don't know how to put experiences into words. [Better data] would give me confidence we could dive deep together."

Student

Most of the clinicians we heard from worked within a model viewing mental health on a continuum.²² During an intake or initial session, clinicians ask students to reflect on their mood, emotions, and behaviours in order to assess their current state of mental health. This relies on recall, however, which is limited and subject to bias.²³

To build a richer picture of students' lives, there is a clear opportunity to generate and collect tech-enabled subjective data between sessions and over time. When shared with clinicians, this data enables students to bring their experiences into the therapeutic interaction in a more complete, useful, and reliable way.

What might this look like?



Encouraging students to track experiences and feelings between sessions using mood diaries in a mobile app.



Tracking changes in subjective data on a daily basis via ecological momentary assessments (EMAs), which aim to capture more accurate data by using standardised survey tools in real time.



Translating subjective data into trends that students can share with clinicians to explore together in a session.



Recommendation:

Introduce objective data into therapeutic interactions

“Mental health can feel kind of nebulous, so students might like this being more tangible.”

Student

Students and clinicians both saw value in bringing objective data into therapeutic interactions to act as an anchor and supplement for subjective data, conversation, and observations. In doing so, objective data can help validate the student’s experience and the clinician’s subjective assessments. Even discrepancies between objective data and subjective data or assessments — such as the difference between perceived sleep quality and actual sleep patterns tracked with a wearable — could be useful in prompting reflection and conversation.

What might this look like?



Physiological and behavioural data from smartphones and wearables, such as heart-rate variability, location (did they leave their dorm, go to lectures?), sleep (did they wake up multiple times during the night?), and activity patterns.



Data related to function such as exam grades and attendance records.



Emergent and innovative brain- or hormone-based markers of anxiety and depression.²⁴



Recommendation:

Make data accessible and interpretable for students and clinicians

"It would be really nice to have it all laid out rather than my foggy mind telling me I'm feeling sad or happy right now."

Student

Mental health measurement scales such as PHQ-9 and GAD-9 are diagnostic tools designed for clinical use, with results not intended to be shared directly with patients. By contrast, wearables, for example, have been designed primarily for consumers and the data they generate are not as easy to interpret or apply in a clinical context.

Our research suggests that giving students and clinicians equal access to interpretable data can support better understanding of the students' mental health status and needs. This can also improve feelings of agency, foster personal growth, and enhance therapeutic interactions — ultimately improving outcomes for students. For this approach to work, the data must be shared in a privacy-sensitive, visually appealing way.

What might this look like?



A student dashboard with an integrated view of their subjective and objective data collected from various sources.



A clinician dashboard, which can be shared with students during therapeutic interactions.



Ways to share a version of clinical notes with students, for example around goal-setting.

Principles for designing mental health services with students in mind

Throughout the course of our research, we learnt a lot about students' experiences of accessing mental health support. We also know that the success of any innovation in this space will rely on student uptake and compliance. As a result, and in addition to our recommendations, we recommend the following principles are taken into consideration when designing for students and their mental health.

Be sensitive to stigma

Despite how far we've come, mental health problems still cause people to feel stigmatised across the UK and the US. While mental health is less stigmatised among the current generation of students, there are still many who are worried about being marked out as having poor mental health.

Plan for detailed questions

Students ask intelligent and probing questions about mental health. Be prepared to provide detailed content and to equip clinicians to offer answers in an open and transparent way — enabling students to interrogate and build trust in what new services can do for them.

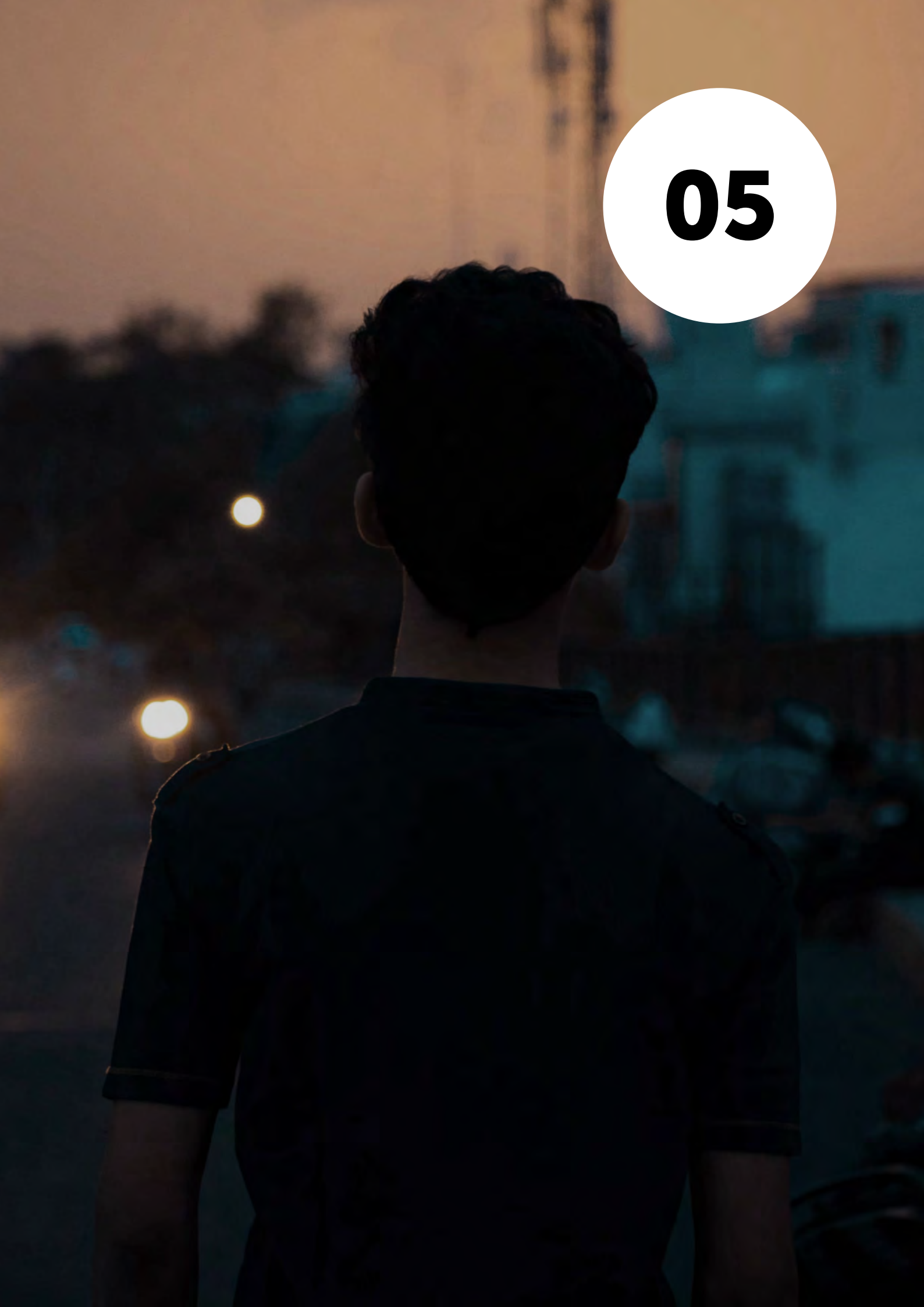
Prioritise the personal

Because students see their mental health as deeply personal, they push back against anything that feels too generic or 'one size fits all'. Where possible, embrace customisation and adaptations that make students feel like services and products are relevant to them.

Design for equal access

Students expect to have access to critical data and reports about themselves and their mental health. While they may not be able to access everything they want at all times, the information shared should be student-friendly and avoid stigmatising language. Make it clear what they see is as much theirs as it is the clinician's — if not more so.

05



In conclusion

“I feel like at some point there needs to be something that is physically observing what’s going on in our bodies.”

Student

Whilst it’s true that we find ourselves in the midst of a student mental health crisis — one that is set against a complex and challenging global context — our research has revealed there is much fertile ground for tech-enabled innovation in this space. As growing demand for support from college counselling centres outstrips their capacity and resources, the COVID-19 pandemic is ushering in rapid innovation for students already advocating for change. Colleges find themselves both morally and financially incentivised to better address student mental health.

Our research focused on understanding students' and clinicians' experiences, surfacing the challenges they faced across the college mental health system and honing in on opportunities for improvement. In **Chapter 01**, we explored three issues — detecting stress vs. distress, rising demand and limited resources, and poor therapeutic interactions.

As we explored in **Chapter 02**, therapeutic interactions are at the heart of most college mental health systems. Limited supply of clinicians, inefficient triage, and ineffective sessions bottleneck the current system and create relationships that are fraught with imperfect communications leading to distrust. Students have high hopes for their experience of college mental health support — despite the barriers they face, including long wait times. Although students and clinicians saw many opportunities for improvement, both groups were optimistic and open-minded about the future.

Our research identified clear opportunities to improve the therapeutic relationship through data, especially the potential to marry subjective data with objective data — as explored in **Chapter 03**. We heard that such data-driven approaches could:

- Act as a guide to deepen and enrich conversations to make therapeutic interactions better enable to unearth relevant insights
- Provide a richer picture that fosters trust and leads to faster and more accurate assessments of need and progress
- Encourage more balanced therapeutic interactions that foster self-growth, in which clinicians don't hold too much of the power

These enhancements could help students get onto the right pathways for treatment more quickly, better equip clinicians and students to monitor progress, and free up the amount of time spent on assessments for delivering treatment or support.

This depth of insight from students and clinicians surfaced some clear opportunities for innovation in student mental health. In **Chapter 04**, we offered three recommendations, which have significant potential to improve systems and outcomes, especially if combined:

- i** Support students to track their own subjective data
- ii** Introduce objective data into therapeutic interactions
- iii** Make data accessible and interpretable for students and clinicians

Of course, many colleges, clinicians, researchers, innovators, and funders are already experimenting with new models to address the growing and evolving needs for student mental health services. We hope our insights and recommendations for enabling data-driven approaches prove a useful and actionable addition to this important work. With ongoing exploration and experimentation in the field, we believe colleges are uniquely positioned to pilot and unlock influential and impactful innovations that can help to transform not only student mental health but also wider mental health systems in the US and the UK.

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About the authors

Shift is an award-winning UK-based nonprofit that uses research and design thinking to help ambitious organisations play their best roles in the fight against systemic social equity issues. Shift focuses its work on mental health, early infant development, childhood obesity, and financial wellbeing. Shift's partners include Wellcome, NSPCC, Guy's and St Thomas' Charity, The National Lottery Community Fund, and UnLtd.



Tayo Medupin

Innovation Director, Shift

Tayo is an experienced design thinker with a passion for putting humanity at the heart of business, health, and social equity issues. She has more than a decade of experience supporting organisations to understand the people and the systems they work within. Tayo started her career in the commercial sector, consulting organisations like Colgate, Samsung, Telefonica, Omnicom, and Philips. She has been working exclusively on social equity issues since 2016.



Freya El Baz

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Freya is an innovation strategist and social researcher with more than 10 years of experience. She has worked across the commercial sector (with brands like Diageo, Danone, and L’Oreal), the public sector (Local Authorities across the UK, NHS England, and the Department of Health), with charities (such as the Alzheimer’s Society) and organisations in the art world (museums in the UK and Middle East). She is particularly interested in gaining insight into the human experience and putting this at the heart of design to drive change. She chairs a service-user-led maternity steering group on behalf of a London Hospital Trust and has an extensive network within, and knowledge of, the UK health system.



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Brynn Rubinstein is a health innovation consultant with more than a decade of experience building and scaling women’s health and maternal health programmes and products. She works with nonprofits, health delivery systems, and companies, as well as clinicians, employers, and patients to improve women’s experiences with care and to shepherd clear and impactful change across systems. Her work and research have been quoted in the *New York Times*, the *Atlantic*, *NPR*, and other US publications.



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Social Researcher

Amelia is a social researcher and strategist with a particular interest in young people’s mental health. She has worked for 10 years on human-centered projects, usually in health, with a spectrum of organisations from the public sector (Transport for London, Public Health England) to the third sector (Terrence Higgins Trust, Brook) and small, agile startups. She was previously Head of Insight at BfB Labs, building effective digital interventions for youth mental health.

About the sponsor

This research was sponsored by X, Alphabet's moonshot factory. The inventors, scientists, engineers, and entrepreneurs at X build and launch radical new technologies to help tackle the world's most intractable problems. Amber was an early-stage project at X that developed a set of prototype technologies to address the huge and growing problem of mental health.



Kit Yee Au-Yeung PhD

Product Manager (X)

Kit is an entrepreneurial med-tech product leader with 15 years of diverse experience. Her expertise spans product development, regulatory, clinical, and quality. Kit is passionate about solving user problems: she focuses on uncovering the unmet needs and understanding the ecosystem surrounding the needs to formulate a strong product vision. Prior to X, Kit was a VP of Product at Profusa developing a novel implantable biosensor and held cross-disciplinary roles at Proteus Digital Health working on an ingestible sensor. She was part of the four-person Stanford Biodesign Innovation Fellowship team who created the non-invasive cardiac monitor that started iRhythm Technologies. Kit holds a PhD and BSE in Biomedical Engineering from Duke University.



Obi Felten

Head of Getting Moonshots Ready for Contact with the Real World (X)

At X, Obi has worked on projects such as Loon (internet from balloons), Wing (drone delivery) and Malta (sustainable energy storage using molten salt). Most recently Obi was the project lead for Amber, a team developing prototype technologies to better measure mental health. Previously, Obi led consumer marketing for Google in Europe, Middle East and Africa, and set up ecommerce businesses. Obi serves on various boards, including Springer Nature, a leading academic publisher, the Wellcome Trust mental health priority area, and Shift. She is an advocate for women and other underrepresented groups in tech. Obi grew up in Berlin, has a BA in Philosophy and Psychology from Oxford University and lives in California with her husband and children.

Appendix 1

About Project Amber

Project Amber was an early-stage mental health project at X, Alphabet's innovation lab. It was led by a small team of neuroscientists, hardware and software engineers, machine learning researchers, and med-tech product experts. Together they were prototyping new technologies to help tackle the huge and growing problem of mental health.

At the core of Project Amber was the question, 'What if we could make brain waves as easy to measure and interpret as blood glucose, and use them as an objective measurement of depression?'

They explored this question by prototyping a new electroencephalogram (EEG) system, designed to make EEG data easier to collect. Throughout the process X kept the experiences of patients and clinicians in the foreground. This helped the team explore the value, limitations, and potential use cases of this technology. It also led to a series of in-depth user research projects, undertaken in partnership with Shift.

The team at X recently wrapped up their work by open-sourcing much of their research and technology findings. This included making their EEG system publicly available and publishing their machine learning techniques for making EEG data easier to interpret (as of December 2020, the paper is under review). In addition, the team donated 50 assembled EEG prototype devices to Sapien Labs as part of their Human Brain Diversity Project for further use by mental health researchers worldwide.

By making their technology, research, and insights freely available, X hopes that the mental health community can build upon this work. You can read more about Project Amber and access links to the open-source code and the preprint of the ML paper [on the X blog](#).

Appendix 2

Clinician definitions

Psychologist

Clinical psychologists need to have a PhD and training in Psychology. They assess, diagnose, and treat individuals suffering with mental health problems. Psychologists work out of hospitals, mental health clinics, and in private practice, and are able to develop and implement treatment plans. The role of a psychologist is the same in the UK and the US.

Psychiatrist

Psychiatrists are medical doctors with psychiatric training. They are qualified to assess, diagnose, and treat mental and physical aspects of psychological disorders and are able to prescribe medication. The role of a psychiatrist is the same in the UK and the US.

Psychotherapist

This is an umbrella term for any professional who is trained to treat people for mental health disorders using talking therapies. Psychotherapy is a postgraduate qualification that can take at least five years leading to a master's degree. Psychotherapy can include: cognitive behavioural therapy (CBT), cognitive analytical therapy (CAT), psychoanalytic therapy, humanistic therapy (focusing on self awareness), and systemic therapy. This definition is constant across the UK and the US.

Therapist

A therapist is a licensed mental health professional and can offer advice to people seeking help with mental health using a range of approaches. It is a term used in a broad sense covering one or all of the above, although mainly indicates the work of a counsellor. It is the same for the UK and the US, although in the US therapists are generally Licensed Marriage and Family Therapists (LMFT).

Counsellor

Counselling is a talking therapy that involves a trained therapist enabling patients to deal with emotional issues. It takes three to five years of training (diploma or degree level) to become a counsellor. Counselling can take place face-to-face, in a group, over the phone or online. This definition is constant across the UK and the US, however in the US counsellors are usually Licensed Mental Health Counsellors (LMHC), Licensed Professional Counsellors (LPC), or Licensed Clinical Social Workers (LCSW).

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