A critical posthuman geography of digital youth mental health

by

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Abstract

This thesis explores young people's experiences of using digital technologies designed to support mental health and wellbeing, such as smartphone apps, chatbots and digital platforms. It critically examines the digital youth mental healthcare assemblage in the context of urgent unmet needs, long waiting lists and the turn towards digital mental healthcare in England. It draws on qualitative data from 40 interviews and two focus groups with three groups of participants: young people (aged 16 to 25) who use digital technologies for their mental health and wellbeing, practitioners who work within youth mental health and emotional wellbeing services, researchers and developers of digital mental health. Firstly, this thesis enquires into the logics and practices of digital mental health using a broadly posthuman geographical conceptual framework and assemblage theory. Secondly, the thesis addresses how digital mental health technologies, services and interventions are changing the ways young people know, engage and intervene in their own mental health and wellbeing. Literatures on digitally mediated experience and psychoanalytic geographies support this endeavour.

Across three empirical chapters, the thesis examines how digital technologies change mental health support, therapy and relationships. I explore young people's experiences of digital mental health and examine how certain components of therapeutic relationships are primed for automation. I show how mental health and wellbeing apps mediate young people's experiences of using them, temporally, through cues to 'check in'. This shapes reflective capacities and can have unintentional effects, such as repetitive introspection. Reflection is generated as part of an associated milieu of data, practices and logics with recursive functions. I use assemblage as a method to identify material and discursive components, relations and forces that assemble digital youth mental healthcare. Secondly, I use assemblage to analyse relations of dependency between components and how capitalism and psychopower organises the arrangement. Overall, this thesis contributes to contemporary understandings of digital therapeutic relations and gives insight into the status of digital youth mental healthcare in England and beyond. In doing so, it advances a critical posthumanist geography that takes seriously the material capacities of digital technologies, without losing sight of the humanness of the concept of the psyche and therapeutic relations, or the production of these by technoscientific capitalism.

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Glossary and Acronyms

- AI: acronym for artificial intelligence.
- AMHS: acronym for Adult Mental Health Services, NHS services that assess and treat adults (or young adults from age of 16 in some areas) who are experiencing emotional, behavioural or mental health problems.
- CAMHS: acronym for Child and Adolescent Mental Health Services, NHS services that assess and treat children and young people who are experiencing emotional, behavioural or mental health problems.
- CBT: acronym for cognitive behavioural therapy, a talking therapy that focuses on thoughts and behaviours.
- COVID-19: acronym for Coronavirus disease 2019 (COVID-19), infectious disease that caused global pandemic.
- CYP: acronym for Children and Young People, aged 0 to 25.
- EMA: acronym for Ecological Momentary Assessment (EMA), common method of data collection in psychological studies which involves repeated sampling of people's behaviours and experiences in their own environment.
- GP: acronym for general practitioner.
- IAPT: acronym for Improving Access to Psychological Therapies (IAPT), psychological therapy service that follows stepped care principles, CBT recommended for depression and all anxiety disorders, other therapies (such as counselling) also part of programme.
- NICE: acronym for National Institute for Health and Care Excellence.
- NIHR: acronym for National Institute for Health and Care Research.
- NHS: acronym for National Health Service, publicly funded healthcare system in the UK, health services are devolved.
- STS: acronym for Science and Technology Studies.

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Chapter one: Introduction

There is said to be a youth mental health crisis in England. High rates of mental distress among young people combined with public mental healthcare services limited capacities to respond means that many young people cannot access support, therapy or treatment for their mental health. The digital is increasingly framed as a saviour to this crisis. This is fuelled by three central promises: optimisation of mental health services by implementing digital services such as platforms to connect practitioners to more young people and thus increase access; the provision of interventions at scale through the promotion of self-care based digital technologies such as mental health and wellbeing apps; and the promise of data-driven approaches to produce granular knowledges of mental health and to better understand treatment outcomes. The digital brings an increased role of private companies and tech-based service providers into the mental healthcare landscape and creates new markets. The use of digital technologies and services accelerates behavioural approaches to mental health through the introduction of new algorithmic logics. I argue in this thesis that this changes perceptions of *human* therapeutic relationships and how young people come to understand, know and intervene in their own mental health. This thesis presents a critical interdisciplinary enquiry into digital youth mental health in England.

Smartphone applications (apps) are a key technology in digital mental health. Daily smartphone use continues to grow in the UK. Reports suggest that people spend around 4.8 hours a day on their mobile phones, or a third of their waking time, and since the onset of the Coronavirus Disease 2019 pandemic (COVID-19), downloads of mental health and wellbeing apps increased (Wakefield, 2022). To give a sense of the scale of use of commercial mental health and wellbeing apps, the meditation app Headspace is reportedly used in 200 countries and has over 70 million downloads (Headspace, 2024), whereas My Possible Self, an app co-developed by the Priory Group for ‘mental wellness’, has hundreds of thousands of downloads. Recently, issues of privacy, regulation, apps not making an impact or being harmful are circulating in public discourse for example in news articles (see Cox, 2024).

This chapter first presents an overview of youth mental health in England and the 'expectations' and 'promises' of digital. It then provides descriptions of some of the main digital mental health services, interventions and technologies used by young people: digital platforms and smartphone apps which have been broadly categorised as: meditation, self-care, mental health, mood tracking and chatbots (see Table 2; categorisation is explained in chapter three). When I use the term 'mental health and wellbeing apps' in the thesis I am referring to these apps as a group. The second part of the chapter provides a critical synopsis of recent debates in the field of digital mental health research and introduces existing conceptual approaches, such as posthumanism for theorising the relationships between young people and digital mental health technologies. I introduce the way I use posthumanism and assemblage theory, outline gaps in existing research, the research aim and questions and the main arguments and contributions of the thesis.

1.1 Youth mental health in England

In April 2021, the Royal College of Psychiatrists warned that England is in the midst of a mental health crisis, with children and young people under the age of 18 suffering the worst. The President of the College stated:

> 'The extent of the mental health crisis is terrifying, but it will likely get a lot worse before it gets better. Services are at a very real risk of being overrun by the sheer volume of people needing help.' (Campbell, 2021, n.p.)

The 'sheer volume' is reflected in recent NHS statistics in England. In 2023, around one in five children and young people (aged 8 to 25) had a 'probable mental disorder' (Newlove-Delgado et al., 2023). The NHS (2019, p.50) cites that half of all mental health problems occur by the age of 14 and three quarters are established by the age of 24. Mental health is more than the absence of 'mental disorders', it exists on a complex continuum which people experience differently (World Health Organization, n.d.). The charity Young Minds (n.d.a) describes 'mental health' as 'emotional, psychological and

social wellbeing', and the potential of minds to overcome difficulties, grow and develop, make the most of abilities and opportunities and feel resilient.

England's Mental Health of Children and Young People survey data highlights how the COVID-19 pandemic exacerbated children and young people's mental health: overall increases in probable mental health problems, more than one quarter reported disrupted sleep and one in ten often or always felt lonely (Newlove-Delgado et al., 2021). The survey data evidence how social and economic conditions shape mental health: children with potential mental health disorders were more than twice as likely to live in households which were struggling to pay for housing, and one in ten children and young people reported that during the pandemic their family did not have enough to eat or had increased reliance on foodbanks compared with before the pandemic (ibid.). Experiencing poor mental health as a child or young person can curtail life chances for example through reduced educational opportunities and lower earnings later in life (Wykes et al., 2023).

Mental health research and treatment are underfunded worldwide (World Economic Forum, 2020). In the UK, it is estimated that 75% of children and young people with mental health problems do not receive any treatment (Hollis et al., 2017). Underfunded services combined with poorly targeted interventions and a lack of 'evidence-based' treatments results in young people's mental health needs being unmet by services (Kretzschmar et al., 2019). Common treatments for anxiety and depression in England are medication (such as antidepressants) and 'talking therapies'. For individuals experiencing mild to moderate symptoms of so-called 'common mental health problems' such as depression and anxiety, David M. Clark (2011) (a central figure in the development of Improving Access to Psychological Therapies; IAPT), states that evidence suggests individuals respond well to 'low intensity' treatments, for example computerised Cognitive Behavioural Therapy (CBT) and guided self-help. In NHS England, IAPT has recently rebranded as 'NHS talking therapies', individuals can self-refer to local services for a set number of sessions of CBT, counselling or peer support, for example (NHS, 2022). Statistics show that between 2021 and 2022, there were 1.81 million referrals to talking therapies, individuals had 7.9 sessions of treatment on average, and 664,087 referrals completed course of treatment (NHS Digital, 2022).

1.2 The digital solution?

The use of digital technologies is described in public health research as a solution to the 'global youth mental health crisis' by increasing access to, and lowering the cost of, interventions (Abd-Alrazaq et al., 2020). Overall, the use of digital technologies in NHS mental health services are considered to increase access, provide scalable early intervention and prevention, introduce new ways of targeting people at risk, and will help to meet the 'demand versus supply gap' which 'traditional service models cannot' (NHS Confederation Mental Health Network, 2023, pp.2-5). Opportunities, benefits and challenges identified by the NHS Confederation are summarised in Table 1. Digital technologies are designed as standalone or 'adjuncts' to other services or treatments provided by mental health practitioners and professionals (Koulouri et al., 2022).

Table 1. Opportunities, challenges and benefits of digital mental health (NHS Confederation Mental Health Network, 2023, pp.11-13)

Opportunities	• Cost-effectiveness • Data-driven insights • Early intervention and prevention • Increased accessibility • Personalisation (more effective and tailored)
Benefits	• Diverse modes of delivery • Improved treatment outcomes • Reduced stigma • Scalability • Value for money
Challenges	• Digital inequality • Efficacy and managing risk • Privacy and security • Quality • Regulatory compliance • Therapeutic relationship

Opportunities and benefits intersect. Digital technologies with capacities for personalisation (such as mental health apps) could make therapies and treatments scalable because they rely on the individual to take responsibility for their mental health and enact practices of self-care. This is often framed as having the potential to simultaneously relieve the 'burden' from mental health services and the global socio-economic 'burden' of mental ill health (Bucci et al., 2019). Nevertheless, the challenges listed in Table 1 are reflected in research with young people who have expressed concerns over security, privacy and lack of human contact in mental health apps (Kenny et al., 2016), the transparency of payment models and apps making unsubstantiated claims (Neary et al., 2022), and worries over who might be able to access data (Čuš et al., 2021).

Researchers in the field of digital psychiatry argue that because of the COVID-19 pandemic, global mental health services and therapies should be rapidly digitalised. Torous et al. (2020b, n.p.) stated that 'now is the time to "accelerate and bend the curve" on digital health'. This acceleration appears to be taking place in mental healthcare provision in England. Between 2021 and 2022, 648,617 Internet Enabled Therapy sessions via IAPT were recorded (NHS Digital, 2022), highlighting the significant number of sessions now conducted online. In a survey commissioned by ORCHA (a reviewer of digital health products), they found that over half of respondents were recommended a health app by a health or care professional and those aged 18 to 44 said they would use 'digital health' to support a mental health condition over prescription medication, such as antidepressants (ORCHA, 2022). However, the potential risks of mental health apps in particular, are now being publicly acknowledged by significant researchers of digital mental health. In a recent interview, Dr John Torous said that the main risk is that apps may waste people's time and cause delays to receiving effective care (Cox, 224). Torous also flags the poor quality of pilot studies with low thresholds for efficacy and suggests that apps need to be more transparent about how business models work in the underlying technology (ibid.).

Discursive imaginations of a mental health system driven by data, latest technological innovation and a shift towards personalised and precision mental healthcare are increasingly common in research and policy: for example, in NHS reports that set digital

transformation agendas (see Foley and Woollard, 2019 for one example, and for a critique see De Vos, 2021). Academic research is developing a suite of data collection and analytic methods such as 'digital phenotyping' in psychiatry and mental health to monitor, diagnose and predict mental health problems (Insel, 2017; Birk and Samuel, 2020; Mohr et al., 2020; Birk et al., 2021; Vaidyam et al., 2022). Still, there is a lag between developments in academic research and advancements in the tech sector being implemented into public mental health services. In this thesis I am interested in how digital mental health technologies, interventions and services are created by a range of actors including individual developers, academic researchers, public health services, and public and private companies.

As young people are high consumers of social media (Goodyear and Armour, 2019), digital gaming (Mills et al., 2024) and the internet more broadly, they are considered a prime target group for digital mental health interventions (Kretzschmar et al., 2019). Adolescents and young people are frequently termed 'digital natives' in digital mental health literature because many own smartphones (Grist et al., 2018), and have grown up in a world where the internet and digital technologies already exist and are widely used (boyd, 2014). Research indicates that 97% of young people use at least one form of social media (NIHR School for Public Health Research, 2023). In a survey of young people (aged 11-18) in the South West of England, Rich et al. (2020) establish that nearly all (97%) respondents owned a mobile phone; smartphones are the main technology used by participants to learn about health (particularly on YouTube); fitness is the most popular health-related category of videos; and just over half of young people in the research already used digital devices for a range of health issues (such as diet, fitness, mental health and menstruation) and to track aspects of their health.

1.3 Descriptions of technologies, interventions and services

There are now myriad digital mental health and wellbeing technologies, interventions and services. In this section, I introduce the main digital mental health technologies used by the young people interviewed in this study, discussed by practitioners, and the

technologies that individuals in research and development work on, these are: mental health and wellbeing apps and digital platforms for online support or therapy. I have constructed categories for these apps because I am interested in practices and logics across apps (see chapter three, section 3.2 for full methodological details). I mainly give general descriptions of types of digital platforms to protect the anonymity of interviewees working in research and development of digital mental health (see chapter three, sections 3.4 and 3.5).

I use the terminology of digital mental health *services*, *interventions* and *technologies* in this thesis. By 'services' I broadly mean the implementation of digital technologies into service provision (e.g., use of digital platforms or video call for sessions), 'interventions' refer to technologies developed primarily in academia and used clinically, and 'technologies' refers to self-guided digital technologies that users access primarily on their smartphones, such as, mental health and wellbeing apps, for example.

Digital platforms for mental health and wellbeing

There are various types of digital platforms for mental health and wellbeing. Over the last two decades there has been a 'proliferation' of internet-based interventions in research and the marketplace (Kretzschmar et al., 2019). I use the term 'digital platform' to encapsulate video and message-based platforms. Digital mental health platforms provide 'early intervention' strategies for young people: for example, to support practitioners to deliver quality and personalised care and as a platform for video chats or calls (Balcombe and De Leo, 2022). During COVID-19, there was an explosion in the use and interest of digital technologies, including platforms, and many of these are now part of the mental healthcare service offer (NHS Confederation Mental Health Network, 2023). Some platforms are only web-based, and others have web-based and/or mobile app options.

One purpose of digital platforms is to provide message-based support with a practitioner (synchronous and asynchronous) and include self-guided features, such as journaling, message boards, and psychoeducational material. Select digital platforms are accessible for free in specific geographical areas across England through the NHS. Another type are

platforms that provide online video support, counselling or therapy. Many third sector youth mental health services, private counsellors and therapists provided online support before the pandemic, through chat or videocall, for example (Worsley et al., 2023). Nonetheless, COVID-19 lockdown and social distancing measures in the UK accelerated NHS services, third sector emotional wellbeing and mental health services and private therapists to provide online therapy via video-conferencing software (Rizq, 2020). In private therapy or counselling, for example, the in-person format is generally replicated, the therapist offers a 50-minute session in a private 'room' via video conferencing software such as Zoom or Microsoft Teams.

Digital platforms are also used to provide CBT: 'internet-delivered' CBT (iCBT) or 'computerised' CBT (cCBT) is said to be the most used digital mental health intervention, described as 'widely accessible, efficient, (cost-)effective and adaptable' (Balcombe and De Leo, 2022, p.2). In the UK, SilverCloud and Togetherall are two 'significant players' in online therapy and have many contracts with NHS trusts and UK universities (Kotouza et al., 2022). Different levels of human support are provided in digital CBT platforms usually depending on severity of symptoms and service model. If symptoms are mild to moderate, for example, a user might be directed to self-guided activities and a programme, so-called 'Step 2' intervention within the NHS Talking Therapies stepped-care model, SilverCloud state this type of 'digital tool' is the main 'evidence-based use case' for their products (SilverCloud, 2023, p.5).

More broadly, the use of computer technologies in mental health support and therapy brings novel challenges, such as, how to generate a relationship with patients, clients or 'service users' (Henson et al., 2019). How the 'therapeutic alliance'– which can be defined broadly as 'the collaborative bond between therapist and patient' (Krupnick et al., 2006, p.269) – is replicated online is a crucial topic of research because it affects whether digital technologies can scale human-to-human interventions and still be effective (Henson et al., 2019).

Mental health and wellbeing apps

The most well-known form of digital mental health technologies are arguably mental health and wellbeing apps. Apps are software applications designed for mobile devices that are intended to be easy to use (Lupton, 2020b). Since their introduction by Apple in 2008 apps have become extremely popular forms of software, millions of apps exist with billions of downloads worldwide (ibid.). In 2019, Torous and colleagues reported that over 10,000 mental health and wellbeing apps exist (Torous et al., 2019). More recent estimates suggest up to 20,000 are available, with download figures in the millions (Gross and Mothersill, 2023). Apps target a range of diagnosed mental illnesses, such as bipolar disorder and obsessive-compulsive disorder (OCD) for example, but many are directed at general mental health or wellbeing, and 'common mental disorders' such as anxiety and depression. The term 'mental health and wellbeing (or wellness) app' tends to cover meditation, mood tracking, therapy and self-care apps.

Smartphone apps are distinguishable from other forms of technology such as 'telepsychiatry' (or online therapy and digital platforms providing therapy with a practitioner), in that, responsibility lies with the patient or user to engage with the app, whereas telepsychiatry requires the clinician to learn and introduce new skills and practices of care (Pickersgill, 2019b). However, several commercial mental health apps are 'therapy apps' and provide access to counsellors or therapies for a fee, some chatbot apps now include premium options for users to pay to be connected to a therapist or counsellor, and apps can also include the ability to share data with clinicians or practitioners. These developments increasingly blur the demarcation between apps and practices in telepsychiatry. In terms of public mental health services, apps are now pivotal technologies within 'stepped-care frameworks' (Linardon et al., 2024).

Chatbots, also known as 'conversational agents' or 'conversational bots' are defined as 'computer programs able to converse and interact with human users' (Abd-Alrazaq et al., 2020, n.p.). A range of mental health and wellbeing apps incorporate chatbots and these are often powered by artificial intelligence (AI) systems including machine-learning algorithms (Khawaja and Bélisle-Pipon, 2023). There are two main types of algorithms: rule-based and machine-learning algorithms. Rule-based algorithms refers to a series of instructions designed by a programmer or developer, whereas machine-learning

algorithms develop a set of rules based on a training process (Fry, 2018; Celis Bueno, 2020). Machine-learning algorithms are more complex and have higher levels of automation.

Many mental health and wellbeing apps are developed for commercial purposes. Some are developed in partnership with academic research groups or public or private healthcare providers. Apps are also developed by individuals and third sector organisations. Most apps are available to the population through app stores. A popular payment structure is the subscription-based model, where a limited version of an app is free to download ('freemium') but have a premium paid for version which unlocks access to all features. This is usually offered as a monthly or yearly subscription and some apps offer reduced fees for students. A less common, but still prevalent model, is to purchase apps for a one-off payment. A select number of apps are available by prescription or access via GPs, accessible for free in certain NHS Trusts, or private healthcare.

Mental health and wellbeing apps rely on users providing data, voluntarily, as Abdelrahman (2023, p.522) states: 'Mental health apps rely on users who willingly self-monitor, self-report and generously share personal data with their machines.' Apps have a diverse range of features and draw from various psychological theories, models and therapies. Popular commercial mental health and wellbeing apps include meditation and mindfulness activities, sleep content, psychoeducational content, mood tracking features, CBT or positive psychology content and activities, journaling and therapy sessions. Levels of personalisation and customisability differ across apps. Some apps are algorithmically advanced, using data to personalise feedback to the individual user, whereas others are less so and act as digital versions of psychoeducational material, for example. Table 2. details key features of mental health and wellbeing apps. I introduce these here because in this thesis I am interested in how specific features of apps are part of broader logics of engagement in digital mental health and to explore how young people experience these in their everyday lives.

Table 2. Mental health and wellbeing apps

Type of app	Typical features
Chatbot	• AI powered • Animations/animated chatbot character • Breathing exercises • CBT content and activities • Link to therapy platforms • Messaging • Mood ratings • Notifications • Psychoeducational and self-care content • 'SOS' plan
Meditation and mindfulness	• Animations/animated characters • Breathing and relaxation exercises • Data visualisation: statistics, graphs, calendars of meditation data • Gamified features • Mindfulness content • Notifications and emails • Tracking • Visual and audio guided meditations
Mental health	• CBT content, workbooks, activities and coping strategies • Journaling • Link to therapy platforms • Mood tracking • Notifications • Questionnaires and screening • Safety/'SOS' plan • Some advertised as adjuncts to professional mental health support

	• Symptom monitoring • Some are regulated medical devices
Mood tracking	• Customisation (e.g., selecting emojis) • Data download and sharing • Data visualisation: statistics, graphs, calendars • Gamification: streaks • Journaling • Mood, habits and activity tracking • Notifications
Self-care	• Animations/animated characters • Breathing and 'gratitude' exercises • Exercise routines • Gamified features • Inspirational quotes and affirmations • Journaling • Mood, habit, goal and activity tracking • Notifications • Psychoeducation • Quizzes • Sleep stories and sounds • Social features

1.4 State of research, critiques and gaps

Technoscience of digital mental health

Now that I have given a descriptive introduction to significant digital mental health services and technologies, I turn to provide a 'thicker' description of the academic field of digital mental health. In doing so, I am inspired by a feminist technoscience approach from STS (Åsberg and Lykke, 2010), posthumanism (e.g., Haraway, 1997) and human geography (Schurr et al., 2023), these consider the 'situatedness' of technoscience and

entanglement with global capitalism and aid in questioning the claims and promises of digital mental health. Digital mental health is a form of technoscience, treating it this way means that I do not separate developments in academic research on digital mental health from commercial practices but see these as co-constituting each other. Reports suggest that from 2022, the UK technology industry is worth $1 trillion US dollars in value, part of this sharp increase is due to greater adoption of digital technologies such as health apps since the onset of the pandemic (Cook, 2022). Globally, the digital mental health market was valued at $19.5 billion US dollars in 2022 (Market Research Future, 2023; Gross and Mothersill, 2023). The UK digital health market more broadly is forecast to be worth nearly £24 billion pounds by 2025 (ORCHA, 2022). As introduced previously, apps are proliferating technologies and have been a significant focus of digital mental health research, I discuss these in the next section.

Firstly, the efficacy of mental health and wellbeing apps in reducing symptoms of depression and anxiety in children and young people is dubious (Grist et al., 2017), there is a lack of evidence demonstrating the effectiveness and safety of chatbots (Abd-Alrazaq et al., 2020), and calls for more research into effectiveness but still the 'promise' of apps is emphasised (Torous et al., 2021). This begs the question, from the outset, that if they are not effective in reducing distress, *why* are they promoted or recommended? Secondly, not all commercial or clinically developed apps are rigorously tested. Apps developed by clinical researchers tend to be subject to more extensive safety and efficacy assessments, than private sector developers, a so-called 'commercialization gap' exists (Martinez-Martin and Kreitmair, 2018, n.p.; Williams and Pykett, 2022). Nevertheless, there appears to have been a move away from efficacy studies in the academic digital mental health field. Reviews establish that the current research focus is on the acceptability, usability and feasibility of mental health and wellbeing apps to determine their 'real world' application of mental health and wellbeing apps, rather than determining effectiveness or safety (Williams and Pykett, 2022). In these studies, emphasis is placed on finding out what shapes user engagement with mental health apps, partly because of high drop rates in trials and low engagement with app interventions targeting depression, for example (Torous et al., 2020a). Although download rates of mental health apps can be high, one study found that only 4% of users were still using the apps just over two weeks after

downloading (Baumel et al., 2019; Kushlev, 2022). Thus highlighting the importance of understanding how 'real world' spaces of implementation shape engagement which is central in current research (Torous et al., 2021). Many academic and clinically developed interventions now incorporate 'engagement' features which arguably brings them closer to commercial apps. In apps based on CBT the following features are suggested to improve engagement and functionality: screening, self-monitoring, data visualisation (including graphs, charts and reports), chatbot, gamification, tailoring (e.g., customisation and notifications) and social features (Balaskas et al., 2021b). These features are evident in the mental health and wellbeing apps listed in Table 2. In this thesis, I use these engagement features as a framework to understand, by what means, apps capture young people's attention and make young people want to use them. Although marketed as a benefit of digital mental health services, technologies and interventions, we are yet to understand how young people experience 'engagement' techniques (such as personalisation and gamification) in digital mental health technologies in their everyday lives and what effects they have.

Apps with mental health content are often discursively framed as 'wellbeing tools' seemingly to negate the need for in-depth clinical scrutiny or to evade regulation (Williams and Pykett, 2022). The regulatory focus of digital mental health technologies to date has largely been issues of data security and privacy, rather than risk management and safeguarding (NHS Confederation Mental Health Network, 2023). Many publicly available apps (e.g., on app stores) are not evidence-based and could actually be harmful for people experiencing mental distress or living with a diagnosis of mental illness (Garrido et al., 2019b). New research shows significant variations in the reporting of 'adverse events' in digital mental health trials (Gómez Bergin et al., 2023). This points to the need to explore unintended or harmful effects of digital mental health technologies and interventions, and likewise to question why young people are being encouraged to use such technologies at all. As such, there is a gap in digital mental health research, bridging concerns of data protection with exploring unintended or negative effects of digital mental health technologies, and understanding the rationales behind the promotion of mental health and wellbeing apps.

Literature has critiqued the marketing of mental health apps during the COVID-19 pandemic and warned of the potential harms of widespread collection and selling of behavioural data to third parties and critiqued the reduction of users to data points (Cosgrove et al., 2020). Gross and Mothersill (2023, p.12) argue that 'surveillance capitalism' (after Zuboff, 2019) has taken over the market of digital mental health. In an analysis of popular mental health apps, they argue that apps extract data but often the 'process and practice of data sharing are deeply buried' in the terms and conditions of platforms, and while data (such as personal information, usage, log data, for example) may not be explicitly 'sold', it is *shared* and made an asset for big tech companies (Gross and Mothersill, 2023, p.12). The trajectory in digital mental health has ramped up to big data, artificial intelligence (AI) and machine learning analytics (Rubeis, 2022), the latter two processes require lots of data. Big data includes 'data about data' (or metadata) and is produced from numerous digital technologies ever-present in everyday life, described as 'one element of the increasing hybridization of the technological and the social' (Pickren, 2018, p.227). AI has many definitions. One technical definition is that AI is a field of computer science that includes machine learning, automated decision making and natural language processing (Hodgson et al., 2018 cited in Carr, 2020). In marketing and popular discourse ChatGBT or Google's search algorithm may come to mind. In critical social sciences, AI is conceptualised as systems constructed by political, economic, cultural and historical forces; in this sense, AI is seen as a 'registry of power' (Crawford, 2021, p.8).

AI in mental health is claimed to support predictive, personalised and precision approaches through collecting various mobile data using methods such as 'Ecological Momentary Assessment' (EMA) which could 'determine predictive (risk) factors, temporal dynamics of mental health trajectories and translating them back into suggestions for behavioral options' (Götzl et al., 2022, p.2). The use of AI in mental health has prompted discussion of its ethical implications such as reproducing and creating new inequalities, and risks including the potential emergence of 'new forms of coercion or compulsory treatment' (Carr, 2020, p.128). In respect of the use of personalised prediction models in clinical practice, ethical implications include ensuring transparency of models in decision-making (e.g., thinking about the 'weight' of the model in shared decision-

making) and negative impacts on agency, for example patients' actions or outcomes feeling predetermined (e.g., if a model predicts relapse) (Lane and Broome, 2022). In terms of this thesis, AI is typically used in some mental health apps, chatbots and digital therapy platforms.

The use of AI in digital mental health needs to be situated as part of a longer behavioural turn in mental health, in particular the ascendency of CBT. IAPT services arguably deliver prescriptive forms of CBT which can be termed 'manualized therapies' (Pickersgill, 2019a, p.635). These types of CBT have become the dominant treatment route for a range of mental health difficulties in the UK because of its ostensible cost-effectiveness (ibid.). Ethnographic studies in medical anthropology detail how the emphasis of *monitoring* of psychotherapeutic care in IAPT has culminated in the seeming success of the programme, and at the same time introduced new knowledges of mental healthcare with 'self-monitoring' as its basis (Bruun, 2023, p.325). Different forms of patient self-monitoring in IAPT include observing, recording, evaluating and inspecting which produces subjectivities and 'make up the therapeutic modality of CBT' (ibid.). These practices reshape psychotherapy as quantifiable, manualised, standardised, and practitioners feel as if they work in a 'factory of therapy' (ibid.). Critical research explores how CBT is implicated in 'algorithmic governmentality' and suggests research needs to reflect on the ways that 'seemingly unrelated theories and practices' open spaces for 'automated interventions' (Russell, 2020, p.31). Relatedly, there are questions about whether increasing access and improving the efficiency of public mental health services through providing digital and online options affects the quality of therapy (Rizq, 2020) and therapeutic alliance (Henson et al., 2019).

These technological changes are also being considered psychoanalytically, for example through exploration of the unconscious aspects of relationships to smartphones (Hinchliffe, 2019), the tensions of 'remote analysis' (Marzi, 2023) and how technology changes the concept of the 'setting' in psychoanalysis (Previdi et al., 2023). More broadly, some intended users, practitioners and organisations are apprehensive that healthcare services may use digital interventions as an 'inferior replacement' to "fob people off" (Bucci et al., 2019, p.287), and fears digital technologies may replace in-person services

(Bossewitch et al., 2022). These concerns are not unsubstantiated. Apps have been posited as a labour-saving fix in university wellbeing agendas in the UK for example (Callard et al., 2022; Kotouza et al., 2022), and 'the digital' is frequently referenced as necessary in present and future public mental healthcare because of staffing shortages (NHS Confederation Mental Health Network, 2023). How young people experience diverse modes of self-monitoring, human 'replacement' or scaling in digital mental health interventions and technologies is yet to be examined.

Conceptualising digital mental health

In a paper published in 2002, human geographer Hester Parr explored how medical and health information on the Internet ('virtual health geographies') constitutes 'healthy' and 'ill' bodies and posits that future sociomedical research might consider how the Internet *extends* notions of the body. This can now be viewed as a kind of precursor to the growing body of literature of posthuman enquiry of digital health technologies and the types of subjectivities at stake. In this section, I briefly introduce the conceptualisation of digital mental health advanced in this thesis.

Sociologist of psychiatry and Foucauldian theorist Nikolas Rose (1988, 1992, 2008) analysed how the 'psy-disciplines' (psychology, psychiatry and psychoanalysis) produce new modes of governance, notions of subjectivity and modes of organisation in society. These are taking on new dynamics in the era of digital technologies, big data and digital capitalism (Callard et al. 2022). This thesis seeks to address these dynamics in the context of digital youth mental health. Three theoretical perspectives are regularly used to examine health apps: posthumanist or feminist new materialist, Foucauldian and political economy (Lupton, 2020b). A range of health, lifestyle and wellbeing apps, wearables and sensors have been analysed using Foucault's theories of biopolitics, governmentality, self-surveillance and care of the self (see Lupton, 2016, 2020b; Ruckenstein and Schüll, 2017; Elias and Gill, 2018; Lindner, 2020; Fletcher, 2022; Wieczorek et al., 2023, for example). These theoretical arguments are borne out in empirical research: qualitative studies of young people who use health apps highlight how technologies produce forms of 'self-governance' that are not necessarily different from late liberalism but the notions

of self-responsibility they engender in users are *amplified,* achieved through what Trnka (2016, p.262) describes as:

> 'collapsing the spatial and temporal relations of technology use, mobile devices and the apps they enable heighten not only the possibilities of activities promoting responsibilization, but also, as some youth attest, the sense that there is no escaping from them.'

Part of this responsibilisation is reflected in young people feeling pressure to track, increased levels of anxiety, and a need to optimise physical and mental capacities and compete with others (Rich et al., 2020). To understand how norms about health are 'encoded' into digital health technologies, research explores the way that technologies are designed, analysing how designers and companies envisage potential users and develop software and hardware to intervene in their behaviour (Ruckenstein and Schüll, 2017). At the same time, practices of self-monitoring and tracking need to be conceptualised in light of the transformations of health and wellbeing through the imbrication of biomedicine and information technology with a neoliberal market agenda (Dolezal, 2016; McLeod, 2018; Abdelrahman, 2023).

Sociologist Deborah Lupton has written extensively on health apps, self-tracking practices and contemporary forms of subjectivity that are shaped and produced by data, for example, the 'reflexive monitoring self' (Lupton, 2016a, 2016b, p.115), 'data selves' (Lupton, 2020a), and optimised 'quantified selves' (Lupton, 2016b; Elias and Gill, 2018). To unravel these new forms of subjectivity, posthumanist or feminist new materialist theory is often used. In posthumanism, agency is reconfigured as *extensive*, agency is not possessed by someone or something but is a 'doing' in 'intra-activity' (Barad, 2003). The separation of humans from non-human (such as technology) is problematised, as Andrews and Duff (2019, p.124) describe:

> '…in the twenty-first century the human increasingly opens out to varying more-than-human assemblages of digital cultures, algorithmic automation, media diffusion, engineering solutions and emergent bio-technologies. The thinking is

> that these advances have produced a world where it is increasingly difficult to separate cells from society, natural from artificial and medical from social, they often are being deeply enmeshed.'

Posthumanist enquiry thus conceptualises the effects of new digital health technologies at the scale of the more-than-human assemblage. Apps can be understood as a 'co-constitutive interface between data circulations and embodied users' (Rose et al., 2021, p.59). As a theoretical framework, posthumanism pays attention to the material and discursive (Barad, 2003), offering a way to theorise the various material objects, technologies and humans at work *and* discursive imaginations of technologically mediated health and cyborgian subjects. Applied directly to digital youth mental health, Fullagar et al. (2017b) note that posthumanism opens exploration of what affective forms in assemblages 'do' and at the same time produce capacities to 'feel'. Mental health apps have been conceptualised as part of a 'digital ecology' moderated by 'therapeutic expertise': pedagogic discourses and technological affordances of self-tracking intersect to produce *intensities* (such as shame or pleasure) and change habits (Fullagar et al., 2017b, p.4). These intensities are often theorised as affect, which denotes, after Deleuze and Spinoza (see Deleuze, 1988), the capacities of bodies to affect and be affected, the capacity to act. Posthumanist enquiry recentres the body (inclusive of non-human bodies) in social and cultural enquiry, particularly the *materiality* of the body:

> 'how might we understand not only how human bodily contours are constituted through psychic processes but how even the very atoms that make up the biological body come to matter, and more generally, how matter makes itself felt?' (Barad, 2003, p.810)

I question in this thesis whether we are now at risk of losing track of the *psychic changes* in this age of digitally mediated intra-activity in mental health. Although mood and emotion tracking are often included in existing social and cultural studies of self-tracking and monitoring, the preoccupation is largely on the body, how datafication transforms our understandings of the body, as opposed to what self-tracking and monitoring might also mean for the psyche in a mental health context.

Another rationale for engaging with posthumanism is that it does not disavow examination of power relations or political economies but provides tools to refigure these for the digital era (Braidotti, 2019), what I take to be different scales and organisations of power relations from the 'molar' to the 'molecular' (Deleuze and Guattari, 1987). Advanced and cognitive capitalism is posited as a system that profits from the 'scientific and economic understanding of all that lives' (Braidotti, 2019, p.41). We therefore need a kind of *critical posthumanities* that approaches questions of politics in not exclusively humanistic terms but attentive to the non-human. The imbrication of human and technology, what can be described as 'digital mediation', needs to be situated as *material* (Turnbull et al., 2023). I take this as a point of departure to think about digital mental health as a collection of materials, that matter in young people's lives, and are material productions enfolded in political economies. Thus, I use posthumanism to understand forms of assemblages, relations, subjectivities and power at stake in digital youth mental health, in dialogue with a critical understanding of contemporary capitalism.

1.5 Research aim and questions

Drawing on, and contributing to, the digital mental health literature, conceptual and critical approaches outlined, the main aim of this thesis is to explore young people's experiences with digital technologies designed to support mental health and wellbeing and to analyse the digital youth mental healthcare *assemblage* in England. In doing so, I aim to advance a critical posthumanist geography that is attentive to the psyche, power and capitalism. I seek to answer the following research questions, these cut across the conceptual framework and empirical research to examine the posthuman dynamics of contemporary youth mental healthcare in England:

1. *What are the practices and logics of digital mental health?*
2. *How do these practices and logics change how young people engage with their own mental health and wellbeing?*

1.6 Key arguments and contributions

I have started to introduce the argument that I develop in this thesis, that it is necessary to pursue a posthumanist understanding of digital mental health that is attentive to the *psyche*. It is also worthwhile to say, after Seitz and Farhadi (2019), that it is surprising that new materialisms (and posthumanism more broadly) have not engaged substantially with psychoanalysis since Deleuze and Guattari (1983, 1987) in their joint works critically engage with Marxism and psychoanalysis. Moreover, Deleuze and Guattari's (1987) concept of assemblage is part of a project of 'schizoanalysis' which, although unfinished, aimed to provide a new psychoanalytic method, one of their primary goals was to understand how the psyche works; to provide 'a new topography of the psyche' (Buchanan 2021b, p.25).

This thesis is an interdisciplinary enquiry into this topography of the psyche that takes inspiration from approaches in the social sciences and human geography that extend enquiry of the social and the environmental to the neuroscientific, for example (Callard and Fitzgerald, 2015; Pykett, 2018). A centring of human geography in respect of digital mental health brings a spatial and temporal analytic focus and so far, there has been little theoretical engagement with the types of spaces produced and co-constituted by *digital* therapeutic relations in youth mental health, nor the temporalities of young people's experiences of digitally mediated mental health. Empirically, the digital mental health literature emphasises the positive effects of digital mental health technologies, interventions and services, and the negative or unintentional effects have not been substantially researched. I turn to psychoanalytic, psychopolitical and assemblage theories to consider how mental health and wellbeing apps produce repetitive reflexive practices and for what rationales. As introduced earlier, one 'promise' of digital mental health is that interventions can be scaled. This suggests more emphasis on the individual and self-responsibility but also opens the question as to what parts of the human or therapeutic relationships can be cut, transformed and automated. This sets the ground for a posthumanist, but also psychoanalytic enquiry which I pursue in chapter four.

I make the argument for a *critical* and adapted posthuman geography because while posthumanism opens enquiry into social, biological, technological and material aspects of mental health, and the connections between these, there is a tendency to suggest the *entanglement* of subjects, objects and assemblages rather than enquiring as to *how* and *why* they relate and for what rationales they are sustained or amplified. I thus use assemblage theory of Deleuze and Guattari (1987) and Ian Buchanan's (2021a) developments because of its capacities as theory, method and an analytic to examine the material, discursive and relational aspects of digital youth mental health together – to understand *how* it is being assembled and *why*. After Buchanan (2021a), I argue for the need to specify relations of dependency between components in an assemblage, in the context of digital mental health, as this gives insights into the distribution of responsibilities (chapter four) and offers an analytic to explore power relations and political economies in the digital youth mental healthcare assemblage in England (chapter six). To unpack digital therapeutic relations further, I engage with psychoanalytic perspectives, specifically 'object relations theory' as it offers a vocabulary of the qualities of human relationships and an alternative analysis of objects (to new materialisms and post-phenomenologies for example) because of an account of internal as well as external object relations. I use this to theorise what is produced in posthuman therapeutic encounters and relations. To attend to the scale of the interface and spatialise how digital technologies temporally *mediate* young people's experiences, I engage with psychological literature on habit formation, digital geographies and philosophies of technology, in particular the concept of the 'associated milieu' (after Simondon, 2017).

I recognise that the conceptual framework is diverse and crosses many disciplines and schools of thought (some which are incommensurable with each other) but this interdisciplinary enquiry is necessary to examine what logics and practices assemble digital youth mental healthcare and for what rationales. And to explore how digital mental health services, interventions and technologies are changing how young people engage with their mental health and wellbeing, in particular, through their therapeutic relations with themselves and others. Together, the conceptual framework amounts to a form of critical posthuman geography that is attentive to the spaces, materialities and temporalities of digital youth mental health.

1.7 Chapter outlines

Building on this chapter and the framing of digital mental health as a *technoscience* that needs to be situated within political economy, **chapter two** presents the conceptual framework. I firstly review literature on a posthuman account of mental health and wellbeing primarily in human geography. Secondly, I present the concept of assemblage used, developed by Buchanan (2021a). I introduce personalisation and gamification as two psychopolitical instruments (Han, 2017) in digital mental health. The next section reviews literature on digitally mediated experience. I draw on digital geographies and post-phenomenology to theorise how digital mental health technologies mediate young people's experiences temporally in an 'associated milieu' (Simondon, 2017) and introduce Derrida's (2011) concept of 'auto-affection' to theorise relations between users and technologies. The final substantive section introduces psychoanalytic geographies to explore *spaces* of therapeutic practice, 'object relations theory', and incorporates literature on attachment and the 'digital therapeutic alliance'.

Chapter three presents the methodology. I provide an overview of how the fieldwork developed and describe the research context, sites, technologies and participants. I detail the practice-based and experiential methodological approach to qualitative methods of interviews and focus groups which were conducted with three groups of participants:

- young people (aged 16 to 25) who use/have used digital technologies designed to support mental health and/or wellbeing
- practitioners and volunteers who work at emotional wellbeing and mental health services for young people
- individuals working in research and development of digital mental health.

In connection to the conceptual framework presented in chapter two, I describe how assemblage is used methodologically and analytically and show how approaches to exploring digitally mediated experience, such as post-phenomenological frameworks and the 'walkthrough method' for analysing digital interfaces, shaped the interviews and focus

groups. I also reflect on how the conceptual framework evolved during the analytic process.

The next three chapters (**chapters four, five and six**) present the findings of this thesis in relation to the conceptual framework advanced in chapter two. Each framework set out - assemblage, digitally mediated experience and psychoanalytic geographies - figures more prominently in different chapters, but together they advance a critical posthuman geography of digital youth mental health. In **chapter four**, digital mental health services, interventions and technologies are theorised using psychoanalytic theory as internal and external objects that shape therapeutic spaces and relations. The scale is primarily the user-technology assemblage. Young people's encounters with mental health content, support and therapy are theorised as *mediated* by digital technologies. I describe how relations are *cut* from telephone to algorithm. At the same time, non-human therapeutic relations are emerging. Whereas the primary thematic focus in chapter four is on space and materiality, **chapter five** turns to temporalities of digital youth mental health and reflective practices produced spatially through the concept of the associated milieu. This works to build a more complex picture of the types of posthuman subjectivity produced through digital mental health. **Chapter six** presents an analysis of the assemblage of digital youth mental healthcare in England. I examine the social and structural forces (Duff, 2014) alongside the discursive side of the assemblage to develop, through the empirical findings, how assemblage is a useful analytic for understanding relations of dependency and political economies of digital youth mental health.

Finally**, chapter seven** draws out what this critical posthuman geography means for understanding digital youth mental health, and simultaneously what digital youth mental health as a case means for critical posthuman geographies, particularly assemblage theory. I return to the research questions and provide answers that have built across the thesis and summarise the empirical and conceptual contributions. The chapter reflects on the limitations of the research and suggests ethical and regulatory considerations. I close the thesis by offering avenues for future research and contemplate the potential autonomous futures of digital mental health.

Chapter two: A critical posthuman geography of digital mental health

2.1 Introduction

Building on the previous chapter and the gaps identified in digital youth mental health research, this chapter presents a conceptual framework to theorise digital mental health services, interventions and technologies. Posthumanism is a useful theory to examine digital mental health because it allows for a greater consideration of the contemporary imbrication of digital technologies, humans and environments: how material relations with digital technologies extend, shape and produce bodies and subjectivities. As argued in chapter one, posthuman theorising also needs to attend to the psyche, political economies and the different types of relations in digital mental health. To build this framework, I draw on literature from human geography, particularly digital, cultural, health and psychoanalytic geographies and disciplines such as sociology and STS. Psychoanalytic geographies and 'object relations theory' are used to conceptualise digital therapeutic spaces, relations and emerging post- and nonhuman dynamics. I draw on digital geographies, STS and post-phenomenology to theorise digital mediation, temporalities and the associated milieu of digital mental health. I use assemblage and literatures on psychopolitics to consider the political economies and power relations of digital youth mental healthcare. The overarching theoretical framework is Ian Buchanan's (2021a) development of assemblage theory for reasons outlined in the previous chapter which I unpack further in section 2.3. In short, I use this particular approach to assemblage theory and method because it prompts researchers to attend to what, how and why of assemblages which gives insight into logics and practices, rather than listing a growing 'heap of fragments' in an assemblage (Buchanan, 2021a, p.119). I start this chapter by introducing posthumanist geographies of mental health.

2.2 Posthumanist geographies: subjectivity and materiality

Posthumanist theory rethinks the category of the human and provokes researchers to question the separation of biological, social and material life. As introduced in chapter

one, this makes it a useful theory to understand how digital mental health shapes subjectivities and agencies in relation to material environments, beyond arguments of efficacy and usability or technoscientific promises often denoted in digital mental health research. I use 'posthumanism' as a broad term in this thesis to refer to a diverse set of theories including feminist and vital new materialisms whilst acknowledging that there are many different positions in these approaches (Coole and Frost, 2010). Philosophers frequently drawn on in posthumanist approaches are Michel Foucault, Gilles Deleuze and Félix Guattari. One of their contributions to posthumanist thought are conceptualisations of subjectivity which I use to explore the imbrication of digital technologies with humans and how together they produce new ways of knowing and intervening in mental health. Deleuze and Guattari (1987) do not prioritise the 'human' subject but foreground how bodies (inclusive of technologies and non-human bodies) change and become. In solo-authored work Guattari (2000, p.28) takes an ecological approach and suggests three inseparable registers of life: 'the environment, social relations and human subjectivity'. Understanding mental health as social, biological and environmental and not separating the mind from the body (Parr, 1997) shares this concern with the relationality of registers of life. This ecological approach is also reflected in new 'neuroecosocial' approaches to mental health that argue for better understanding of the 'neurological, ecological and social pathways and mechanisms' that shape human mental life (Rose et al., 2022, p.121).

For Guattari (1995, p.1), subjectivity is not contained to the individual; it is 'plural and polyphonic' and involves many components (including non-human). There is an '*ensemble of conditions* which render possible the emergence of individual and/or collective instances' (Guattari, 1995, p.9, emphasis added). Subjectivity is 'molar' and 'molecular' (I explain these terms in section 2.3) and assemblages produce subjectivities (Deleuze and Guattari, 1987). Crucially, subjects are always being made, always becoming. Thus, in posthumanism, the subject is part of a 'trans-specifies effort' that 'takes place transversally' (Braidotti, 2019, p.33). This theorisation is important to this thesis because of the recognition of the active role the non-human (such as digital technologies) takes in processes of subjectivity. Human geographer, Gillian Rose (2017, p.789), after Bernard Stiegler, argues that 'posthuman being is only possible through the devices and practices of technics'. Posthumanist and new materialist theories thus bring

greater appreciation of materiality (Bennett, 2010) to social and cultural enquiry. Materialities of digital technologies (Kinsley, 2014) and media systems channel 'energies and materials' that produce 'aesthetic, sensory and affective intensities' that invoke and mediate action (Gallagher, 2020, p.373). Digital mental health technologies conceived of in this way are *distributed* computational networks that have capacities to affect and be affected, flows of data are recursive and produce new data, actions, knowledges, technologies and subjects.

(Post)humanist approaches to mental health and wellbeing

Laying the groundwork for a posthumanist geography of health was a turn towards vitalism in the late 2000s (Philo, 2007). Influenced by Deleuzian vitalist philosophy, a posthuman geographical approach situates health and wellbeing as 'dynamic and relational constitution' (Asker and Andrews, 2020, p.6), 'whole onflow' (Andrews and Duff, 2020), and becoming well as process (Duff, 2014). Relational approaches to mental health are also gaining traction in critical psychology. The rationale for this is to avoid reductionism, emphasise the social, and to expand 'the traditional "internal" locations of mind and brain to wider ecological contexts in which individual and social life emerge and unfold' (Tucker, 2018, p.128). Across psychology, geography and the social sciences, broadly posthumanist theories are utilised to explore the 'vital spaces' of mental healthcare (Brown and Reavey, 2019), atmospheres of psychiatric units (Sumartojo et al., 2020) and the affective atmospheres of recovery (Duff, 2016). Using these types of approaches to mental health gives a rich texture to the ways in which spaces, objects, materialities and relationships combine to produce a variety of affects and 'expressions' of wellbeing and recovery (Duff, 2014; 2016; Duff and Hill, 2022).

Nevertheless, there are calls to '(re)humanize' inquiries in mental health geographies by taking seriously the 'lifeworlds' of people living with severe and persistent mental illness and placing emphasis on 'repeopling' mental health geographies (McGeachan and Philo, 2023, p.1224). By leveraging a certain strand of affect theory (which I go on to explain in the next section) posthumanist approaches to health can prioritise the biological or molecular, similarly to non-representational theory in geography (Papoulias and Callard,

2010, p.31). Posthumanist geographies can also extend a form of social and cultural geography that operates a 'politically idealistic psyche' (Callard, 2003, p.307). In the context of mental health, this can move attention from being *affected.* In doing so this can obscure the social, economic and political structures that shape mental distress and quieten experiences of mental *ill*-health or loss of agency. There is a rich lineage of mental health geographies that utilise ethnography and qualitative interviews to foreground experiences of living with mental illness (Parr, 1998b) and spatial inclusion and exclusion (Parr, 2000; Parr et al., 2004), for example. Recent research examines how people living with mental health problems experience home and mobilities, combining an emphasis on meaning and lived experience with conceptualisations of materiality, rhythm and mobilities in the context of power structures such as the housing market and austerity policies (Lowe and DeVerteuil, 2020; 2022). Kiely (2021) advances the concept of the 'holding pattern' to illustrate multiple cycles of waiting for mental health services or treatment that 'service users/survivors' endure in the context of austerity in the UK. Kiely (2021, p.718) argues that this exploits the 'potentiality of waiting' a kind of 'hopeful affect' of 'cruel optimism' (Berlant, 2011). These are just a few recent papers that suggest revisions that can be made to a posthumanist notion of mental health to also attend to the 'less-than-human' (Philo, 2017, p.5), or indeed 'all-too-human' (Wilkinson and Ortega-Alcázar, 2019; Kiely, 2021) geographies of mental health.

Affect, emotion and power in digital health assemblages

As introduced in chapter one, in feminist new materialist research on humans, technologies and health, affect is used to conceptualise the ways bodies, objects, spaces and discourses interact (Lupton, 2018b, Lupton, 2019b; Lupton, 2019c). The turn to affect in the humanities and social sciences brings the human and natural sciences into dialogue, folding cultural and biological understandings of life together (Clough and Halley, 2007; McCormack, 2007; Gregg and Seigworth, 2010). Patricia T. Clough (2018, p.71) notes that for Elizabeth Grosz, a thinker often drawn on by feminist new materialists, affect refers to:

> ‘bodily capacities to affect and be affected: the capacity to act, to engage, to connect. While emotions are commensurate with a subject, affect, being bodily, traverses, even is beyond, a subject. Affect is nonconscious, asubjective potentiality open to entanglement with technologies that modulate affective intensities below cognition and consciousness.’

In this theorisation, affect is ‘pre-personal’ (Massumi, 2002), an ‘*anonymous force*’ (Deleuze, 1988, p.127, original emphasis) that differs from emotion. Emotion is the ‘most intense (most contracted) expression’ of the capture of affect (Massumi, 2002, p.35). Affect is not contained to individual bodies and is knowable in physical rather than psychological terms as ‘movement or modification’ (Dawney, 2011, p.600). This is potentially why feminist new materialist research on health technologies that mobilise this notion of affect emphasise physiological changes to the *body*, rather than the psyche. To articulate what holds an assemblage together, affect is often denoted as force (e.g., ‘affective force’; see Lupton, 2019b for example). Affect is useful for relational approaches to digital mental health because it moves consideration from the individual human body and experience towards how technologies and humans (for example) co-constitute one another.

Psychological and psychoanalytic notions of affect share a few similarities with the approach to affect just outlined (often denoted as a Spinozist reading or non-human definitions of affect; Seigworth and Gregg, 2010). Psychoanalyst Sigmund Freud theorised affect as ‘undifferentiated energy or feeling’ (Cvetkovich, 2012, p.4), which is similar to ‘affective force’. But the difference lies in the tendency of psychoanalytic and psychological approaches to specify affect as ‘categorical’ concepts, and overall, these approaches are largely conceived of as more attuned to humanist concerns (Seigworth and Gregg, 2010, p.7). In analyses of digital health technologies, social scientists emphasise the ‘thing-power’ (after Bennett, 2010) of technologies and agential capacities in ‘human-app’ assemblages (Lupton, 2019a, p.136). In a study of a psychotropic medication that is ingested with a wearable tracker (Abilify MyCite), Flore (2021) proposes the theoretical framework of ‘bio-affective-digitalism’ to denote the assemblage of technology, medication and body by which various processes interact to produce an

effect. In new materialist approaches to affect, emotions tend to be conceived of as 'recurring sequences of "affective intra-action" that have come to be culturally coded' (Slaby et al., 2019, p.5). The differences between affect (as pre personal or anonymous force) and emotion as felt and meaningful have been debated by human geographers over the last few decades (see, Bondi, 2005; Thien, 2005; Anderson, 2006; Anderson and Harrison, 2006; Pile, 2010, 2011; Curti et al., 2011; Dawney; 2011). Emotion speaks to our connections and attachments to things, places and people, emotion expresses 'cultural constructs and conscious processes that emerge from them, such as anger, fear, or joy' (Cvetkovich, 2012, p.4). Apps and the practices they engender, such as tracking or monitoring health and symptoms, produce feelings of 'pleasure or delight' through the management of conditions or from reaching targets, Lupton (2019a, p.136) conceptualises these as 'agential capacities' that are generated when humans and apps meet. These practices also result in frustration, annoyance, guilt and boredom – when people feel pressured to use the apps but are also exhausted, the 'enchantment' of the app wanes (Lupton, 2019a, p.137).

Emotion and affect, as social and material, 'pulse' through assemblages and become with the assemblage, maintaining and dissolving their power (*puissance*) (Müller, 2015, p.36). There are two words for power in French, *puissance* and *pouvoir.* In Deleuze and Guattari's work: *puissance* refers to potential and capacity to affect and be affected, whereas *pouvoir* refers to actualised power (Massumi, 1987). Deleuze and Guattari use *pouvoir* in a similar way to Foucault's notion of power – as 'an instituted and reproducible relation of force, a selective concretization of potential' (Massumi, 1987, p.xvii). Adkins (2015, p.138) offers an additional translation: *puissance* can be translated from French into 'power to' and *pouvoir* is 'power over'. As previously documented, in feminist new materialist conceptualisations of digital health technologies there is emphasis on *puissance*, that is, the capacity of digital technologies to affect.

Recent research in digital geographies explores how algorithms have affective capacities for care and harm (Maalsen, 2023). Moving from the scale of software and 'immaterial automated processes' (e.g., chatbots) to material technologies such as robots, Sumartojo et al. (2023) examine the robotic production of spatialities. Lynch et al. (2022) theorise

the automation of care and the robotic care industry through an analysis of a robot used to provide emotional therapy for children with autism spectrum disorder. Theoretically, they unpack how this *displacement* of human labour also displaces affective relations. One of the ways it does so, is through the limited capacity of the robot to be affected, the robot lacks empathy and its behaviour and responses are predictable. At the same time, the robot has the capacity to displace 'negative affects' of children by being an outlet for their emotions and relieves care givers by providing care and thus displacing anxieties, frustration and fatigue caregivers may experience. Negative affects are not completely mitigated however, they can re-emerge as 'new anxieties', for example for the child, or caregiver concerns about being replaced (Lynch et al., 2022, p.688). What this points to is how robots, or digital technologies more broadly, intervene in, and have capacities to displace, affective relations of care (Lynch et al., 2022). These arguments unpicking transformation of care relations are yet to be applied to digital *mental health* technologies such as apps, chatbots and digital platforms.

2.3 Assemblage

To describe and analyse the different components, relations, discourses and practices in digital youth mental health I use assemblage theory of Ian Buchanan (2021a) because it attends to how and *why* components of an assemblage come together. Before I introduce this approach, I summarise some existing uses of assemblage primarily in human geography. Assemblage as a concept and theory affords a 'thick' description of the *materialities* of entities. For example, applied to big data, assemblage grounds analyses in the 'architectural forms, power lines, or load-bearing floors that are part of everyday encounters in much of the world' (Pickren, 2018, p.236). In digital mental health, assemblage highlights the *entanglements* of human and non-human actors (Flore, 2021), and can be used *discursively* to analyse digital health policy (Lievevrouw et al., 2022). In human geography, assemblage is applied to numerous empirical contexts across subdisciplines including digital geographies, for example 'data assemblages' (Kitchin, 2014) and 'global assemblage of digital flow' (Graham, 2014, p.78; Pickren, 2018). In health geographies, 'therapeutic assemblages' (see Bell et al., 2018 for a review) and 'multi-sited therapeutic assemblages' of youth mental health support (Trnka, 2021) have

been examined. The 'psychiatric unit' has been theorised as an 'impermanent assemblage' in critical psychology (Tucker et al., 2019). Geographers have developed the concept of assemblage (see Anderson and McFarlane, 2011; Dewsbury, 2011; Legg, 2011; Saldanha, 2012; Anderson et al., 2012) and unpacked assemblage in comparison to actor-network theory (ANT) (see Müller, 2015; Müller and Schurr, 2016). Recently there has been a critical re-engagement with 'assemblage thinking' drawing on Buchanan's (2021a) interpretation of assemblage. This is applied to cycling, policy and development of the concept of a 'tensor' (see Lea et al., 2022), mobility justice (Waitt et al., 2021), territorialization and e-bikes (Waitt et al., 2023a), and molar and molecular movement in cycling (Waitt et al., 2023b). I draw on Buchanan's (2021a) theory and method because it is explicit about the tenets of Deleuze and Guattari's (1987) concept of assemblage and why these are useful to study social and cultural phenomena. As I show in this section, it allows for analysis of the material, discursive, relations, structure and power in assemblages. After Lea et al. (2022, p.349), I adopt the following definition of assemblage:

> 'Assemblages are contingent organisational forms, logics, or better still, structural arrangements, not entities; and their analysis needs to focus on what holds them together and gives them their consistency to understand what might position everything into a new variation. Enumerating the elements perceived to be part of an assemblage is only the first step.'

Buchanan (2021a, p.33 original emphasis) explains that there are two autonomous but intersecting sides to assemblage: 'the *machinic assemblage of bodies*' (content) and 'the *collective assemblage of enunciation*' (expression). The assemblage is the 'productive intersection' of a 'form of content' such as bodies, things and actions, and a 'form of expression' which includes ideas, words and affects (Buchanan, 2015, p.390). For Buchanan (2021a), new materialists over emphasise the material components of assemblages and this obscures the other side of assemblage, the discursive or expressive side ('collective enunciation'). What the latter refers to is Deleuze and Guattari's (1987) perspective on speech and language, for them all statements are the product of a machinic assemblage (Aurora, 2017), situated within a particular time and place and in 'relation to

a machinic assemblage of desire or practice' (Holland, 2013, p.78). Buchanan (2021a, p.77) suggests it is more appropriate to call Deleuze and Guattari 'expressive materialists' as opposed to 'new materialists' because it is 'the form of expression that gives shape to the form of content'. There are forces of 'deterritorialization' and 'reterritorialization' at work in assemblages (Deleuze and Guattari, 1984, 1987) and a 'principle of unity' (abstract machine) (Buchanan, 2021a). I use these in chapter six where I explain them in greater depth. The import of this approach is to focus on what assemblages produce, and to move from a descriptor of a collection of things to an analytic. As Doel and Clarke (2019, p.29, original emphasis) write, assemblage is 'not simply a performative gathering of heterogeneous materials (*it* operates, *it* performs, *it* produces, *it* transforms, etc.)'. Assemblages produce something other than themselves; they produce objects and forms that inhabit contemporary society (Buchanan, 2021a). Another rationale for using assemblage is because of its ethico-political (Guattari, 2000; Saldanha, 2012; Buchanan, 2021a,), or normative dimension (Duff, 2023). Through using assemblage to unpick social and cultural phenomena, ethico-political interventions can be made, to amplify relations or block and transform (Duff, 2023).

Relations, power and desire

To understand how assemblages produce and transform, the relations between components need to be unpacked. Buchanan (2021a, p.118) argues there is an 'order of dependency' and 'power of selection' at work in assemblages. To take an example that highlights dependency between components, research in health geographies shows how material and biological elements of assemblages of mental health and recovery - such as the sleeping human body moving from the sofa to a bed - are part of an assemblage of a more 'liveable life' (Duff and Hill, 2022, p.4). At the same time, these elements are enabled by 'common resources' and care relations, such as accessing furniture from charity shops (ibid.). This highlights how these components of the assemblage do not just come together to produce wellbeing and recovery but are somewhat dependent on human relations of support, socio-economic conditions and infrastructures. For Duff (2023), power relations hold an assemblage together. Roberts (2021, p.697) notes that power is not a constitutive force for Deleuze and Guattari, instead, 'power is desire under determinate conditions'. I interpret this as when desire is organised or stratified in an

assemblage, relations can be read as power, an actualised power (*pouvoir*). For Buchanan (2021a), assemblages are organised by desire. Buchanan (2021b, p.24) suggests that desire produces 'objects' in the 'form of intuitions', not physical things. I take this as suggesting the importance of immaterial forces, the psyche and un/conscious processes in what holds together assemblages. Next, I briefly summarise how these understandings of desire and assemblages can be used in relation to capitalism in digital mental health.

Firstly, for Deleuze and Guattari (1983, 1987) in contrast to psychoanalysts such as Jacques Lacan, desire is not lack. Desire is always positive and excessive; desire produces and is an 'affirmative vital force' (Gao, 2013, p.406). To formulate my understanding of desire, I draw on Smith's (2007, p.74) explanation of Deleuze's distinction between desire and interest:

> 'Deleuze reconfigures the concept of desire: what we desire, what we invest out desire in, is a social formation, and in this sense desire is always positive. Lack appears only at the level of interest, because the social formation – the infrastructure – in which we have already invested our desire has in turn produced that lack.'

Desire can therefore be conceptualised at the scale of infrastructure and 'social formations' such as capitalism. The function of desire is to 'assemble' and to 'render machinic' (Buchanan, 2010, p.125). I use desire primarily to understand how and why certain arrangements in the digital youth mental healthcare assemblage in England are sustained and for what rationales (chapter six). This builds on studies of youth digital mental health that emphasise how desire is *captured* by digital self-improvement technologies to organise subjects and ascribe them particular identities (Fullagar et al., 2017b). I extend such arguments to the scale of the social formation because it is necessary to go beyond the individual. This is because for Deleuze and Guattari our 'desires are not our own', we are 'caught-up in assemblages of desire that precede our individuality' (Roberts, 2021, p.695). Capitalism, as a social formation, invents and invests in machines to produce capital, this is not because new machines (such as digital mental health technologies) are 'better' or 'more productive' than previous incarnations

but because new products are required to escape the 'trap of economic stagnation' (Buchanan and Savat, 2020, p.59). Desire is therefore important to this thesis because it assembles the components in the digital youth mental healthcare assemblage.

Molar, molecular and machinisms

To examine how digital mental health technologies persuade or encourage people to use them on different registers of consciousness and produce subjectivities, Deleuze and Guattari's (1987) differentiation between 'molar' and 'molecular' can be used. Molar denotes a conscious or preconscious form or force that can be broken down into component parts and organised (Deleuze and Guattari, 1987, p.33). Molecular, on the other hand, pertains to the unconscious and is not divisible without being transformed (ibid.). I turn to these concepts because they make *perceptible* different (a)subjectifying forces of digital mental health technologies. As geographer Peter Merriman (2019) shows in theorisations of mobility: movements need to be considered at the intersect of molar and molecular, perceptible and imperceptible, bodies are constantly becoming molar and molecular. Molar are perceptible entities that are often take for granted, whereas molecular are imperceptible affects, desires and incessant forces – just because they are molecular does not mean they are small (Merriman, 2019). Molar and molecular have been used in psychological research exploring space-times of UK mental health services: molecular experiences of distress are incongruent with the molar narratives by which service users' distress is 'made visible' (McGrath and Reavey, 2016, p.68). Applied to self-tracking devices, these technologies engage people not as '"molar" individuals, but as "molecular" collections of component parts' to produce flow states in imperceptible ways, their 'purpose is to encourage people to act (or react) automatically without engaging consciousness directly' (Till, 2019, p.428).

Drawing on Deleuze and Guattari (1987), Lazzarato (2014) argues that to explore how capitalism *functions* in the production of subjectivity, attention needs to be paid to a-signifying semiotics. Examples include computer languages, currencies and scientific functions (Lazzarato, 2014). Hayles (2017) illustrates these in their work on financial markets and non-conscious cognition. For Lazzarato (2014), signifying and a-signifying semiotics produce subjectivity through various 'machinisms'. Machinisms now fill our

day-to-day lives continually producing social capital (Lazzarato, 2014). Machinisms are 'technical and social machines' in which humans and non-humans come together as constituent parts in 'corporate, welfare-state, and media assemblages' (Lazzarato, 2014, p.13). Digital mental health is a machinism. The corporate side is the technology companies that develop and own the devices and data. The welfare-state in a UK context is the NHS, that purchases or leases these technologies for use in public health services. The media part is the assemblage of technologies themselves (including data, infrastructures, and so on). IAPT can also be considered as a machinism. The development of outcome monitoring and the vast amounts of data produced in IAPT (Clark, 2011; Bruun, 2023) has arguably paved the way for the widespread use of digital technologies, services and automated processes in psychological therapies for mental health.

Psychopower: attention, personalisation and gamification

In this section, I introduce a type of power theorised for the digital era: psychopower. This power acts on the molar and molecular, its one way in which to understand why we, as Braidotti (2000, p.169) claimed, are made to 'desire the interface human/machine'. Relatedly, attention has come to popular and academic debate over the last decade. Concerns have been raised that digital media is changing the way humans pay attention, producing a 'multitasking brain' and altering our ways of learning, reflecting, thinking and interacting (Stiegler, 2010b; Ash, 2015b; Citton, 2017). As explained in chapter one, one of the main issues that clinical research on mental health apps cites is that people stop using apps after relatively short periods of time (Garrido et al., 2019a), thus, current research priorities are to develop apps that are engaging, or in other words, apps that might capture and *hold attention* for long enough to engender the intended positive therapeutic outcomes. But engagement may also produce other unintended outcomes, which this thesis seeks to explore. I turn to psychopower to theorise engagement logics and practices.

Philosopher of technology Bernard Stiegler (2010a; 2010b) and philosopher and cultural theorist Byung-Chul Han (2017) have argued that *psycho*power has come to take precedence over *bio*power, a shift in emphasis from the governance of bodies and life

(Foucault, 2003, 2009) to the governance of the psyche. Attention and information are objects of capture, investment and control in contemporary capitalism (Wark, 2019). Han (2017, p.79) describes 'neoliberal psychopolitics' as a 'technology of domination that stabilizes and perpetuates the prevailing system by means of psychological programming and steering'. Digital technologies and the production of data signals an era of *digital* psychopolitics, whereby big data, mobilised as a psychopolitical instrument, 'facilitates intervention in the psyche and enables influence to take place on a pre-reflexive level', power flowing through 'smart' technologies act on both conscious and unconscious domains (Han, 2017, p.12). Self-tracking devices have been theorised as 'psychotechnologies' that act on pre-conscious registers and manipulate users (Till, 2019).

Two increasingly used practices in digital mental health which can be conceptualised as *psychopolitical* instruments are personalisation and gamification. Han (2017) argues that gamification subjugates people psychopolitically: emotional capitalism gamifies life through introducing success and reward in domains such as work. The introduction of gamification is not distinct to work but is now key to the design of many apps across dating, health and productivity for example, they offer elements of 'fun' and 'play' to attract, encourage and keep people's interest (Lupton, 2020b). Reviews establish that gamification elements are used across digital mental health and wellbeing technologies, features such as 'levels or progress feedback' and 'points or scoring' are most common (Cheng et al., 2019, n.p.). In psychiatric digital mental health research, gamification is posited as a promising way to scale interventions by improving 'appeal' so that people are more willing to try digital mental health technologies in the first place (Fleming et al., 2023, p.46). Gamification also enhances the 'stickiness' of the intervention itself, rather than reliance on the users' 'personal effort or external support', this is achieved through: increasing motivation (intrinsic and extrinsic), supporting a sense of autonomy through greater user control and facilitation of a 'sense of flow or immersion' which increases attention and enjoyment (ibid.). Still, there is a lack of evidence in psychiatry to suggest gamification improves adherence (ibid.). Notwithstanding the arguments about whether gamification does indeed work in increasing motivation and therefore engagement, the application of 'gameful' elements such as points, rewards and competition to mental

health is critiqued as potentially inappropriate because users could be in distress, and future research should investigate the harmful or unintentional effects and in what contexts these occur (Cheng et al., 2019, n.p.). In social and cultural theory, Russell (2018, p.408) examines gamification in mental health by engaging with psychoanalyst Donald Winnicott's notion of play (play as therapeutic in itself, rather than something to be analysed) and states that it is possible that the 'immersion offered by flow and gamification' could provide benefits to people living with mental illness, but there needs to be consideration of how play is co-opted in the production of neoliberal subjectivities.

Personalisation and recommendation algorithms have come to popular consciousness through their use in media platforms such as Spotify, Netflix, social media, web searching and browsing, online shopping, and location analytics, for example. Users' digital experiences - shaped by recommendation algorithms and targeted adverts - make interactions (supposedly) more personalised and responsive to the individual user. In mental health apps, recommender systems are typically 'information filtering system that uses algorithms to predict content or information that the system deems relevant to the individual' (L. Valentine et al., 2023, p.1628). Websites are becoming increasingly personalised to 'anticipate our needs' and to encourage attention and engagement which can 'facilitate the occurrence of particular sorts of events' (Buchanan and Savat, 2020, p.54). Logics of personalisation are visible in various domains of society, such as education, medicine, health and clinical pathways, digital culture, and data science (Day et al., 2017, 2023; Williamson, 2017; Williamson et al., 2018; Viney et al., 2022). Recent conceptual interventions propose that personalisation amounts to a new 'political arithmetic' that introduces new ways of classifying, ordering and counting across society (Day et al., 2023). Personalisation and recommendation systems are used in digital mental health and wellbeing technologies. Recommender systems *suggest* content to the user based on previous use or personal information provided to make the intervention more personalised, attentive to the users' needs and therefore more engaging (L. Valentine et al., 2023). Personalisation algorithms in mental health apps are starting to be assessed empirically in human-computer interaction and media studies (see Pieritz et al., 2021; Lewis et al., 2022) and in the social sciences, therapy discussions on 'TikTok' and algorithmic 'mood reading' (Avella, 2023, p.11). Research indicates that personalisation

is a desired component of mental health apps, but young people want to determine the degree of personalisation themselves (Götzl et al., 2022). Reported advantages include reducing choice overload, increasing the digital therapeutic alliance and supporting users in their personal health management (L. Valentine et al., 2023). Ethical concerns include limited explainability of sensitive and personal information, in addition to lack of user control over personal data history and privacy (ibid.). The psychopolitical dynamics of personalisation practices in digital mental health and how they shape subject formation therefore need to be assessed.

I consider gamification and personalisation as two psychopolitical techniques at work in digital mental health that are mobilised to capture and hold attention. In wider debates, digital technologies are conceived of, on the one hand, affording 'new modes of self-expression' and extending communicable range, and on the other hand, 'their intensified temporalities and relentless demands for sensory and cognitive engagement pull us into coercive loops of escape and self-forgetting and exhaust our capacity to resist' which reduces human agency (Dow Schüll, 2022, p.361). In STS, Jablonsky (2022) theorises meditation apps through the concept of 'attention by design'. They argue that meditation apps discursively situate themselves as an antidote to technology addiction and this is promissory (Jablonsky, 2022). Users are compelled to repeat practices invoked by the meditation apps but the ideals of improving attention (for example) cannot be fulfilled because users are distracted by the very same smartphone; highlighting the power of behavioural design to change how people feel and think about their own behaviour but also the paradoxical status of meditation apps and digital technologies more broadly (ibid.).

Digital governmentality and subjectivities

Deleuze's (1992) paper on 'societies of control' has influenced contemporary research on the role of digital technologies, data and algorithms in society and their effect on governance and subjectivity. Drawing on societies of control, geographers have critically engaged with the notion of 'modulation' as smooth power and shown instead that 'frictions' are not always ameliorated in digital interface design (Ash et al., 2018a).

Research shows how software is an actant that enables power to be 'exerted subtly through distributed control' without people being aware (Kitchin and Dodge, 2011, p.84); or for example, how the smart city is an 'urban embodiment' of a control society (Krivý, 2018). The relevance of this is to differentiate the power digital technologies have over users (*pouvoir*) and to explore how digital interfaces are designed to programme, enable or constrict specific uses and the resulting 'control' this may have on behaviours. Ash et al. (2018b) specifies the difference between modulation and manipulation. Manipulation assumes that a technology designer can 'exert direct control' over a user's actions, whereas 'modulation recognises that a designer can only set the limits of interaction in order to give the user some degree of choice'. These are often 'prescribed limits' to increase the chance that the user will do what the interface or designer intends (Ash et al., 2018b, p.167).

In the context of digital health and 'societies of control', individuals are theorised as dividable ensembles of data points (or 'dividuals'; Deleuze, 1992, p.4) that, with serpentine movement, navigate through internet networks where they are continuously monitored, assessed and modulated (Schüll, 2016). In an analysis of mood-monitoring interfaces, William Davies (2017, p.41) argues that the 'rapid, instinctive mode of dexterity' that mood tracking apps enamour (scrolling, swiping and touching) is a fundamental characteristic of the way that valuation happens in 'societies of control'. Interacting with devices through touch allows for continual feedback to be produced with 'as little reflection or concentration as possible, while the individual is in motion' (Davies, 2017, p.41). The individual is less reflective, more automated and dividable into data points. The analogy of the movement of the serpent in control societies is illustrated in the way that personal data *flows* through 'insurance databases, clinical care encounters, and day-to-day self-care practices' (Ruckenstein and Schüll, 2017, p.265). Because of this movement, some writers employ the term 'dataveillance' instead of surveillance as it captures how, in increasingly digitally networked societies, surveillance does not stem from a single 'above' point but is dispersed across many actors (Ruckenstein and Schüll, 2017, p.264). In the case of health, these actors could be individuals, caregivers, pharmacies, general practitioners, and 'data aggregator and analytics companies' (ibid.).

Some still turn to Foucauldian disciplinary power to theorise logics of surveillance in digital technologies. Han (2017, p.39) argues that social media acts as a 'digital panoptica' by which people perform 'voluntary self-exposure', thus surveillance is no longer internalised (as in Foucault's docile bodies; 1995) but actualised voluntarily. Shoshana Zuboff (2019) presents a materialist analysis of contemporary capitalism which they term 'surveillance capitalism'. Zuboff (2019) suggests that behaviour has become perceptible to capitalism through our everyday interactions with the internet and digital technologies. The 'economic logic' of 'surveillance capitalism' is manifested through 'Big Other' which is a metaphor for the digital apparatus that surveillance capitalism operates through (Zuboff, 2019, p.376). In a critical intervention on the ethical concerns of the promotion of mental health apps during the COVID-19 pandemic, Cosgrove et al. (2020) argues that Zuboff's analysis shows that the most significant data collected by digital technologies is not the content but the 'behavioural data' about *how* people navigate the online environment. This data, to return to the notion of the 'dividual', suggest a form of subjectivity in digital governmentality akin to a 'behavioural profile governable through affective stimuli' rather than older notions of a 'sovereign, reflective and autonomous' subject (Dammann et al., 2022, p.3), that have been critically unpacked in self-tracking analyses (see Lupton, 2016a).

Other theorisations of contemporary forms of subjectivity, suggest not the dividual or reflexive self, but that digital culture produces 'fractal persons' (Day et al., 2023). Fractal persons are both subjects and objects of government, market and state (Day et al., 2023, p.3). Relationships are 'integrally implied' and 'recursively scaled in quantitative and qualitative measures of similarity across a variety of on- and off-line platforms' (ibid.). These relationships are implicated in digital and real environments, monetized and 'made available for research, monitoring and surveillance' (ibid.). Theorist N.K. Hayles (2017) argues that because of the complexity of technological assemblages (using the example of finance capital) basic notions of control no longer apply. This is because 'cognition is too distributed, agency is exercised through too many actors, and the interactions are too recursive and complex' (Hayles, 2017, p.203). Hayles (2017, p.203) conceptualises a web of non-human and human technical actors and systems that 'communicate and interact on many levels and at multiple sites'.

As reviewed, there are thus competing claims and conceptualisations as to what type of subjects and forms digital governmentalities rely on and produce in increasingly digitally *mediated* and algorithmic societies. This argument is considered in light of digital mental health in this thesis.

2.4 Digitally mediated experience

In the previous section I started to introduce literature from human geography that engages with how digital interfaces modulate users (Ash et al., 2018b). Here, I discuss the concept of 'mediation' with respect to interfaces, space (associated milieu) and temporalities. I draw together literature from various disciplines that conceptualise how digital interfaces mediate young people's experiences, focusing on what digital technologies *do.*

Mediation, relations and interfaces

Post-phenomenology can be described as a philosophy of technology (Idhe, 2009; Aagaard, 2017). It is used to understand how technologies shape relations between bodies and worlds, the active role of technologies is termed 'mediation' (Rose, 2019; Rapp, 2023). Post-phenomenologist Don Idhe (2009, p.23, original emphasis) notes 'technologies can be the means by which "consciousness itself" is *mediated*'. Mediation describes the implication of cultural and technological objects (such as digital media) in how humans experience everyday life and how these experiences are 'influenced, punctuated, affected, marked, and/or structured by our living-with-technology' (Leszczynski, 2015, p.741). Mediation questions what digital technologies do in space and society, rather than what they represent (Parikka, 2011). Mediation can be conceptualised in at least two ways: for example, mediation as the way that objects immerse users and therefore an 'in-between' relation connecting entities, or entities *as constituted in* 'their mediated relation' (Verbeek, 2012, p.392). In this second definition, the '"subjectivity" of human beings and the "objectivity" of their world are the result of mediations' (ibid.). Developments over the last decade or so in smart technologies embedded in environments arguably demonstrate how technologies are not *between*

humans anymore but 'technologies merge with the context of our relation with the world' (Verbeek, 2012, p.393). As Markham (2023, p.5) argues, the experience of a media environment is not subsidiary but co-constitutes the environment. Self-tracking as an everyday practice shapes environments while being shaped by environments and human experience of 'being in a mediated world' (Pink and Fors, 2017a; 2017b, p.375).

Literature in human geography examines how *interfaces* mediate experiences (Rose, 2015; Ash, 2015b; Leszczynski, 2019; Kraftl, 2020). Exploring the materialities of childhood, Kraftl (2020) points out (after Plowman, 2019), that through technologies becoming more discreet their visibility is reduced and thus their existence in everyday lives is potentially more deeply interwoven, which makes material and embodied experiences less perceptible. Thus it is not only the technical mechanisms that might disappear, but the objects that they form, and embodied responses fade into the background. Similarly, Davies (2017) argues that a fundamental point about mood-monitoring interfaces is how they *become invisible* through design, dissolving the boundary between human and technology and reducing the necessity for conscious and aware interaction with devices. James Ash (2015b, p.8) uses post-phenomenology to attend to 'inter-object' relations at the level of the interface and demonstrates how these 'shape human capacities outside of the phenomenal realms of the subject'. The temporal power of 'non-human' entities has also been theorised (Ash et al., 2023, p.4). Whereas in other post-phenomenological research, human experience is central. An ethnographic study by Shaw et al. (2020, p.3) for example, provides analysis of care organising technologies and informal carer's technologically mediated experiences and practices. In this thesis, the analysis of young people's experiences of digital mental health is similarly centred on human experience, but post-phenomenological approaches to objects (e.g., Ash et al., 2018a; 2018b) are still of relevance because of the frameworks they provide for breaking down interfaces (see chapter three) and they highlight the anticipatory nature of digital technology design. Behaviours, affects and senses of feeling can be primed for example through the 'allure' of the object. Allure can be read post-phenomenologically not as the attraction of the object for the human but as what objects 'express' (Ash and Simpson, 2019). Objects can express myriad things, such as mimicking qualities of other objects like the playfulness of a dog, this makes objects 'alluring' because they act as a

‘“lure for feeling”’ (Ash and Simpson, 2019, p.149). Interfaces, their design and the units they are made up of thus shape and mediate users’ experience and guide their use of them. These ideas reinforce the usefulness of situating digital technologies as assemblages because it allows for exploration of mediation, materialities, subjectivities, questions of power and the relations at work.

Time, memory and reflection

The past, present and future are modulated by digital technologies. Philosopher of technology, Bernard Stiegler (2010a, 2010b) argued that technology is a form of memory. Drawing on phenomenologist Edmund Husserl, Stiegler articulates three types of retention: primary as human perception, secondary as human memory and Stiegler adds a third form, a technical memory – ‘tertiary retention’ (Ash, 2020a, p.211). This technical memory is ‘where knowledge, experience, and skill are inscribed on different technical objects (e.g., hammers, books, computer hard drives)’ (ibid.). Thinking about digital mental health technologies in this way means that they are forms of memory, an archive or recording that is materially retained in a specific locale through ‘grammatization’ (Stiegler, 2017) where ‘thoughts, sounds, and other objects are converted and spatialized into discrete marks such as letters, pictures or binary code’ (Ash, 2019a, p.162). Developing Siegler’s arguments, philosopher Yuk Hui (2016) theorises digital objects as objects of ‘tertiary protention’. Hui (2016, p.221) adopts the term ‘protention’ from Husserl who used it to refer to ‘the anticipation of the next moment’. Tertiary protention is facilitated by algorithms (Hui, 2016, p.38). Algorithms, software and digital technologies actively shape the experience of temporality at the micro scale, this is said to complicate notions of a ‘rational, self-reflexive subject’ because these techniques operate beyond our capacities of conscious awareness (Dieter and Gauthier, 2019, p.61).

There is growing literature and empirical studies on temporality and digital interfaces in digital geographies (see for example, Ash et al., 2023; Kitchin, 2023) and across other disciplines such as sociology. Sociologist Judy Wajcman (2019) has researched how ‘Silicon Valley’ sets time by interviewing designers of digital calendars. Calendars are viewed by designers as rendering time more efficient. Because digital calendars

accompany people in everyday life, they potentially extend dominant 'temporal logics' of efficiency, management and optimisation of time 'into the very interstices of life' and are therefore entangled in 'ongoing material remaking of time mastery as an individual responsibility, a quest ripe for technical fixes' (Wajcman, 2019, p.1286). In studies of social media platforms, Jacobsen and Beer (2021, p.8) make perceptible the ways that digital technologies mediate the past, they propose the concept of 'quantified nostalgia' to examine the logic by which 'memory is metricized' to enhance engagement on platforms.

As introduced in chapter one, self-tracking features are common in mental health and wellbeing apps. Practices of self-tracking developed from 'lifelogging' (Lupton, 2016a), but archiving day-to-day activities take on different dynamics through digital technologies such as smartphones. The temporal emphasis in mood tracking or monitoring apps is on present in-the-moment recording of momentary mood and affective states (Davies, 2017). These recordings are 'micro-events' (Lomborg et al., 2018, p.4603). Political economist William Davies (2017, p.35) argues that mood tracking interfaces exist on a continuum between traditional self-report mood monitoring (an activity which requires attention) and 'new behaviourist forms of affective capture' where there is not a need for conscious interaction. Efforts to capture 'real-time' mood (via methods such as Ecological Momentary Assessment) aim to produce 'subjective valuation which seek to cut out the detached, critical evaluation self from the feedback loop' and capture how the 'subject feels *right now*' (Davies, 2017, p.37, original emphasis). Using philosopher Henri Bergson's concept of duration, Davies (2017) argues there is a philosophical misstep in attempts to produce flow with mood monitoring technologies that capture 'real-time' mood. Davies (2017, p.37) posits the question: 'To what does a "moment" of "experience" refer to when one is no longer engaging with the reflective, evaluative self?'. In chapter five, I further consider temporality and digitally mediated experience in relation to young people's experiences using mental health and wellbeing apps.

Associated milieu

One spatial unit to examine how experiences, moods, behaviours, actions and thoughts are mediated by digital technologies is the milieu. Mental health is understood in vitalist theorisations as productive of the 'dynamic engagement of organism and milieu' (Rose et al., 2022, p.123). The milieu is more than a broader system of affordance, it is an enduring partner to living beings (Tucker, 2018). Milieus have self-regulatory capacities and produce spatial and temporal constellations (Lemke, 2021). The concept of milieu has been used to understand the role of digital media in contemporary society in terms of work, leisure and governance for example (Nony, 2017; Wark, 2022). I adopt philosopher of technology Gilbert Simondon's (2017, p.59) concept of the 'associated milieu' because of its emphasis on how people and technical objects individuate:

> 'This individualization is made possible by the recurrence of causality within a milieu that the technical object creates around itself and that conditions it, just as it is conditioned by it. This simultaneously technical and natural milieu can be called an associated milieu. …. The associated milieu mediates the relation between technical, fabricated elements and natural elements, at the heart of which the technical being functions.'

The 'associated milieu' is the mediating relation of technical (app) and natural (human user) elements which makes the 'technical being'. Some of the effects of the associated milieu of digital mental health as experienced by the technical being could be flow, allure or reflective capacities (Davies, 2017), for example. The associated milieu can be described as 'inside' the 'technical individual and the technical ensemble' and has a recurrent causality (Hui, 2016, p.249). The associated milieu is therefore one way to understand how digital technologies filter and modify individuation (D'Amato, 2019). In human geography, Ash (2015a, p.85) suggests that Simondon's 'associated milieu' exemplifies how affects cannot be considered outside of an environmental context, affects 'travel' through an 'associated milieu' which is 'composed of some form of matter or another'. In the context of digital technologies, data is one form of matter that composes the associated milieu. Moreover, smartphones apps are 'new industrial objects' (after Hui, 2016) that consist of statements and structures, they have a *milieu* of algorithms, network

protocols and databases (Dieter et al., 2019, p.2). Similar arguments have been advanced in understandings of digitally mediated emotion and suggest that Simondon's work 'allows us to consider the role of digitisation in processes of enacting psychological individuals' (Tucker, 2022, p.16). As far as I am aware, these theoretical arguments have not been unpacked empirically, I therefore examine the *psychic* role of digitisation in digital mental health (chapters four and five).

Positioning digital technologies as constituent parts of associated milieus means going beyond the affordances of digital technologies *for* the human, however. This is because the capacities of technologies do not always involve a human nor 'appear to human perception' (e.g., communication between sensors) (see Kinsley, 2014; Ash, 2015a; Gabrys, 2016; Ash, 2019b). Research in digital geographies suggest that 'digital skills' develop through relations to material environments (Richardson and Bissell, 2019, p.284). Specific tendencies are 'cued' in environments below the threshold of consciousness, digital skills are not necessarily known abilities, they shift with material environments 'over time in slow-creep ways' and form a kind of 'contingent milieu' (ibid.). This contingency is because the 'associated milieu also allows us to consider how the same affective force has differential impacts dependent on the body or entity it encounters' (Ash, 2015a, p.85). I use the notion of 'associated milieu' advanced in this section in chapter five to *spatialise* the interactions young people have with mental health and wellbeing apps particularly self-tracking features. I theorise that the 'associated milieu' (Simondon, 2017) produce 'pre' and 'self' reflective acts that through repetition constitute practices. I unpack how acts become practices in reference to habit in the next section.

Psychic associations, practices and repeated sequences

To analyse young people's associated milieus of digital mental health, habit is useful to turn to conceptually because it can offer: 'an interpretative grid through which we might understand certain aspects of the relation between body and world (as mediated by culture) and also the relation between body and self (in terms of reflexive practices)' (Lea et al., 2015, pp.49-50). Moreover, habit is central to analyses of how smartphone apps

become mundane: through integration into habits, apps become unnoticed (Clark and Lupton, 2023). Self-tracking technologies are said to *outsource* habit formation and reflection (Wieczorek et al., 2023, p.262).

Over the last few decades, renewed attention has been given to habit in philosophy and cultural studies, particularly concerning creativity and automatism (Malabou, 2008; Grosz, 2013), and the connections between habit, data and digital technologies (Pedwell, 2017, 2021; Delacroix, 2022). For philosopher Henri Bergson, habits are made through repetition, they demand, as Grosz (2013, p.228) explains 'a decomposition and recomposition of various actions or practices'. Habits are not solely produced through conscious awareness. Discussing Felix Ravaisson's philosophy of habit, Schwanen et al. (2012, p.525) state that, 'not all habits involve or derive from reflective thought. Many "passive" habits, for instance, come into existence below the thresholds of consciousness'. And many 'active' habits are 'post reflective' because they are 'effortless and embodied' which may create space for other activities (Schwanen et al., 2012, p.525). Models of habit formation in psychology (Verplanken, 2018) focus on the proximate environment through identifying 'stable context cues' and how when repeated these reinforce 'behavior-context association' (Harvey et al., 2022, p.573). Through reinforcement the context becomes the cue (ibid.). Once habits become 'post reflective' (Schwanen et al., 2012), they are less reliant on goals. I read this as that they are less reliant on individual desire or motivation. This is important to this thesis because of the push towards making digital mental health technologies engaging on unconscious or *pre*-reflexive levels (i.e., when the user does not need to think).

Actions are shaped by the *associations* we make in the environments we inhabit. The relationship between association, habit and automatism was theorised by American philosopher and psychologist William James (1914, p.24, original emphasis) who stated that the 'psychical principles of association' reflect that:

> 'any sequence of mental action which has been frequently repeated tends to perpetuate itself; so that we find ourselves automatically prompted to *think*, *feel*

> or *do*, under like circumstances, without any consciously formed purpose, or anticipation of results'.

Association is thus one way to conceptualise how thoughts, feelings and actions become automated. But association is also part of the way we creatively make connections between things. For Buchanan (2021b, p.18) association is key to 'schizoanalysis' which is Deleuze and Guattari's 'unfinished project' that critically reconceptualises psychoanalysis. I adopt Buchanan's (2021b, p.18) definition of association as: 'the connections or links we make in our minds between ideas, thoughts, images, memories, feelings, sensations and all other forms of stimuli both internal and external'. For psychoanalysis, association was important, for example, Freud's method of 'free association' (Forrester, 2023) and Carl Jung's (1910) 'association method'. Rather than exploring the nuances of Deleuze and Guattari's re-working of association in their concepts, as Buchanan (2021b) does, I use association to consider how young people (as users of technologies) make associations with digital mental health technologies as part of an 'associated milieu'. Sociomaterialist analyses of young people's experiences of using mental health apps has found that young people assemble and disassemble data, practices and experiences to assess their emotions and to create 'patterns' that they can learn from (Flore, 2022, p.6). Pattern making is potentially amplified by big data and fed-back algorithmically to users of digital technologies as part of an 'associated milieu'. Pickren (2018, p.228, original emphasis) points out that the size of the data (e.g., how much data) does not matter as much as 'the way in which the *relationality* of data allows for patterns and connections between people, groups, and information itself to be discerned'. Pickren (2018) is referring to relationality discerned by others (e.g., companies that collect, analyse and sell data) but people who use digital technologies also make connections between their data and their selves (e.g., 'data selves'; Lupton, 2020a), as shown in Flore's (2022) study. In chapter five, I build on these arguments to consider how associations of mood, time (e.g., what time mood is rated), spaces (e.g., where mood was rated) are generated through young people's practices with mental health and wellbeing apps.

As well as psychological associations, bodies respond to environments habitually through repeated sequences. The relevance for digital mental health is that smartphones require repetitive movements involving touch and sight. Embodied actions, practices and routines can be read through Deleuze and Guattari's (1987) concept of the 'refrain' which Buchanan (2013, p.179) describes as a 'mechanism of association'. Deleuze and Guattari (1987, p.323, original emphasis) define the refrain (or *ritornello*) as, '*any aggregate of matters of expression that draws a territory and develops into territorial motifs and landscapes*'. These territorialising functions are unpacked by geographers. Applied to empirical research on cycling, Waitt et al. (2021, p.919) state: 'Through our bodily movements we make ourselves and our worlds in a choreography of repeated sequences with others, in which dominant mobility regimes and social norms are simultaneously operating'. Milieus and rhythms are born from chaos (Deleuze and Guattari, 1987). Understood in this way, milieus are created through refrains of bodily movements and 'repeated sequences' in correspondence with particular norms (Waitt et al., 2021, p.919).

Repeated sequences and reproduction of norms of productivity and optimisation are visible in experiences of self-tracking. Lomborg et al. (2018, p.4603) conducted a qualitative study to examine the experiences of *flow* during self-tracking. To develop a notion of flow, they draw on Dow Schüll's (2016) work on self-tracking in which they argue these technologies deliver 'micro-nudges', and applying media theorist Raymond Williams' study on television, they argue that *sequencing* keeps the user "hooked" through the pleasure that the flow of repeated ratings (in response to micro-nudges) generates. In addition, the relationship between habit and self-tracking is explored by Clark et al. (2022) who question whether self-tracking continues *without* the presence of a device. Results from their focus groups highlight: '[T]he various ways self-tracking transforms physical gestures and behaviours and daily routines, and how digital data "linger" and continue to be felt unexpectedly in inarticulable ways.' (Clark et al., 2022, p.15). Thus, behaviour change is not contingent on the technology being present but rather occurs through the ongoing changes produced through the relations between device and user (Clark et al., 2022). The fact practices linger shows how digital technologies as part of an associated milieu mediate people's lives in un/sub conscious ways.

Auto-affection and posthuman subjectivity

One potential effect of digital mental health technologies that has not been substantially theorised is psychological processes involved with digitally mediation reflection. I started to unpack this theoretically in the previous section in reference to association, here, I move from *post*-phenomenology to phenomenology. The nature of self-awareness is an area of study in phenomenology (see Zahavi, 1998, for example). In the self-tracking literature, Lupton (2016a) describes the 'qualified self' and processes of self-watching when using self-tracking technologies. Going further than this, including the technology and its meditative capacities, what practices occur through self-watching via a smartphone, for example? Is it a form of *self*-reflection, awareness, or something else?

To consider how the self takes itself as its own object through interactions with a smartphone (for example), Derrida's (2011) concept of 'auto-affection', or the phenomenon of hearing oneself speak (Vallee, 2018), could be useful. The experience of auto-affection is temporal (Lawlor, 2009). Touch and sight are key senses with smartphones which make them archetypal auto-affective objects. In *Voice and Phenomenon,* Derrida (2011) deconstructs Edmund Husserl's phenomenology. Derrida (2011, p.71, original emphasis) writes that: 'Auto-affection is not a modality of experience that characterizes a being that would already be itself (*autos*). Auto-affection produces the same as the self-relation in the difference with itself, the same as the non-identical.' If we reflect on interior monologue, a difference between the speaker and hearer seems necessary, but the dialogue comes first and 'through that dialogue (the iteration of back and forth) the same, a self, is produced' (Lawlor, 2011, p.xxiii). In dialogue the 'differentiation-repetition, never completes itself in identity', the movement continues, a deferral (ibid.). This deferral is also known as the trace, it holds onto an 'outline' of its own presence; 'as if the retention were a *tracing* of it' (ibid., original emphasis). The trace thus resembles a memory (Lawlor, 2011, p.xxiv).

The relations between auto-affection, 'teletechnology' and the unconscious have been conceptualised by Patricia T. Clough (2000). Clough (2000, p.3) uses 'teletechnology' to encapsulate '"knowledge objects," - technoscientific productions, from computer devices to intelligent machines to genomes' as a form of environment, set of objects and agencies

'other' than 'human agency'. This speaks to Hayles's (2017) work on nonconscious cognition. Clough (2000, p.17) asserts, after Derrida, that auto-affection 'gives the natural grounds' to the subject privileged in Western notions of man which is 'presumed to speak its own voice, to speak its intention and to express its inner being'. Auto-affection is conceived of as the 'resistance to recognize the technical substrates of unconscious memory' which Clough (2000, p.17) argues makes it central to arguments that reject the intimacy of body and machine. In respect of digital technologies, Vallee (2018) has used voice recognition technology as a case to examine theoretical perspectives on the phenomenological voice and its role in subjectivity. Building off this notion of 'auto-affection', in chapter five, I stay, initially, with a more human notion of auto-affection as 'self-relation' but extend this as co-constituted by human, technology and associated milieu. I unpack relationships between digital technologies, space and the unconscious further in the next section.

2.5 Psycho-geographies of digital mental health

I now turn to psychoanalytic, psychotherapeutic and psychological theories and research on digital therapeutic objects, spaces and relationships. I use these to sketch out the *human* and potential *posthuman* relational dynamics of digital therapeutic encounters with objects (digital mental health technologies, interventions and services). And secondly, to enquire into what types of spaces are created (and simultaneously create) digital therapeutic encounters and relationships. This is necessary to understand if, and how, digital technologies transform therapeutic encounters and relations when 'added' to the therapeutic assemblage. Moreover, psychoanalytic theory draws attention to the psyche which could inform theorisations of how digital mental health technologies affect users on unconscious or pre-reflexive registers, as introduced previously.

Psychoanalytic geographies: relations, objects and spaces

Psychoanalytic and psychotherapeutic thought has shaped human geographical research in diverse ways: psycho-social-spatial relationships in mental health (Wolch and Philo 2000) and the city (Pile, 1996), therapeutic landscapes and wellbeing (Rose, 2012), theorisations of emotions in human geography (Pile, 2010) and psychoanalytic

understandings of space (Blum and Secor, 2011), to name just a few. Kingsbury (2004) notes that psychoanalysis 'lures' cultural geographers because its categories are spatial. Some recent psychoanalytic geographies have a posthuman edge, such as explorations of the 'cyborgic uterine regime' (Nast, 2018) and the study of the unconscious is bleeding into social and cultural geographies to theorise the transindividual and technology (Lapworth, 2023).

A sustained engagement with psychoanalytic theory in human geography began in the 1990s (Philo and Parr, 2003). This was not without controversary, concern and critique of the individualism of psychoanalytic theory (ibid.), and the universalising, decorporealized and decontextualised explanations of 'psychosexual development' (Blum and Nast, 1996, p.571; Kingsbury, 2004). Critiques notwithstanding, psychoanalytic theory offers theorisations of the unconscious and the worlds of internal and external objects. Human geographers engaged with psychoanalytic theory mobilise capacious non-dogmatic definitions of 'psychic life' to explore the psyche - as related to mind, spirt, emotion and un(consciousness) - in relation to space (Davidson and Parr, 2014). This emphasis on psychic life is important for my arguments about association and reflection. The centring of the unconscious is important to this thesis because of what I take to be the psychopolitical logics of digital mental health which act on the unconscious.

Psychotherapy as a practice can contribute to understanding the 'affective qualities' of human relationships (Bondi, 2005). Indeed, human therapeutic qualities (such as empathy) that unfold between people in mental health support spaces have recently been re-emphasised in human geography (see Harrod et al., 2023). In relationships between therapist and client there is movement of affect and emotion *between* people not belonging to either but 'intrinsically transpersonal' (Bondi, 2005, p.441). These movements are known in the 'psy' sciences as 'transference' and 'countertransference' (Bondi, 2005; Wilson, 2015). Transference does not necessarily only occur between two people. Feminist STS scholar, Elizabeth A. Wilson (2015) uses transference to understand the complex material, social, biological and psychological processes at play in the ingestion, and resulting effects of, antidepressant medications. Transference therefore can be extended to the nonhuman. In the context of digital mental health, transference could

be used to theorise communication between sensors, programming, data, human bodies and minds.

In human geography, the materialities of therapeutic spaces and objects are theorised as co-producing therapeutic relationships and vice versa (Gesler, 1992; Callard, 2014; Vanolo, 2014). Take Sigmund Freud's couch, a material object that not only shapes the therapeutic experience of a patient or client through not being able to 'see' the analyst, but the couch also shaped the practice and development of psychoanalysis itself, the 'detached analyst' (Bondi, 2014; Callard, 2014). As Callard (2014, p.82) describes: 'There is, then, a complex choreography of the consulting room, which enfolds the patient, the analyst and props that either or both make use of'. Callard (2014, p.82) asks what could be learnt if more attention is given to: 'the spatial as well as the temporal distribution of sounds and silence – deliberate and spontaneous, those connected and unconnected to one another – across animate and inanimate entities in the consulting room?'.

Moreover, in psychoanalytic thought, things are paradoxical, doubled, mirrored, split, and contradictory (Kingsbury and Pile, 2014). This gives a different vocabulary to that of the 'connectivity' of posthumanism in which to explore the relations between users and digital mental health technologies. In recent years, human geographers have called for greater engagement with psychoanalytic theory in new materialism (Seitz and Farhadi, 2019). Seitz (2023) engages with Austrian-British psychoanalyst of the 20th century Melanie Klein's writings as a *vocabulary* of the affective dimensions of political life. Secor (2023) argues that psychoanalytic style of montage, cutting, splicing, twisting and inventing has influenced geographical thought and method for some time. Psychoanalytic geographies do not only *apply* concepts but also critically engage with psychoanalytic vocabularies and technique to explore relational, emotional, social and spatial phenomena. Next, I provide an overview of 'object relations theory', which I use to explore digital youth mental health in chapter four.

Object relations theory

Psychoanalytic theories can be used to understand the role of objects in psychic life and therapeutic practice. This is advanced by the psychoanalytic school of 'object relations theory', defined as 'an analysis of the complex relations of defence and desire that the subject takes up in their internal relations, as well as their relation of the world of "objects"' (Forrester, 2023, p.140). Melanie Klein and Donald Winnicott are central psychoanalysts in object relations theory. In contrast to Freud, object relations analyse infants' experiences in greater depth and take a 'fuller relational aspect' between micro-worlds of individuals (e.g., infant and mother) and larger society (Schneiderman, 2000, p.295). Seitz (2023, p.353, original emphasis) describes Klein's 'map of psychical life' as 'anchored and populated by people's relationships to *objects* – objects that are at once internal phantasies and externally real, both good and bad, and simultaneously psychical, spatial, and social'. In Winnicott's work, a conceptualisation of the self as an 'internal world "peopled" by internal objects' is put forward (Bondi, 2014, p.63). Children's geographers have used these theorists, predominantly Winnicott, to analyse the relationship between space and objects in children's lives. Aitken and Herman (1997) for example, examine play and spaces of childhood using Winnicott's notion of 'transitional spaces' and the transformation into 'potential places'. Harker (2005) too draws on 'transitional space' to theorise playing as in-between being and becoming, an activity that takes place in particular time-spaces. Winnicott's (1971) 'transitional objects' can be broadly defined as an object (e.g., a blanket) which is found and used by the infant and goes on to be important to them. Ogden (2021, p.839), drawing on Winnicott states, 'It is essential that it feel to the infant like a "not-me possession" (1) -mine, but not me'. Transitional objects and phenomena are described by Ogden (2019) as a contribution to 'ontological psychoanalysis', an 'intermediate state of *experiencing,* to which inner reality and external life both contribute' (Winnicott, 1971, p.2, original emphasis cited in Ogden, 2019, p.668). This suggests the import of transitional objects for understandings of experience and subjectivity, rather than solely child development.

As explored by feminist social and cultural theorists (Sedgwick, 2007; Lewis, 2014) and human geographers (Seitz, 2023) alike, for Melanie Klein, splitting and projecting are fundamental mechanisms in subject formation and psychoanalytic practice and technique. Projection is '*perceiving* someone else as having one's own characteristics' (Segal, 1993,

p.36, original emphasis). Klein (1975, p.208) considered the mechanism of 'personification' important for understanding children's play but also for the analytic work of adults because of its influence on transference:

> 'We see then that a weakening of the conflict or its displacement into the external world by means of the mechanisms of splitting up and projection, is one of the principle incentives to transference and a driving force in analytic work. A greater activity of phantasy and more abundant and positive capacity for personification are, moreover, the prerequisite for a greater capacity for transference. … From the conclusion that the transference is based on the mechanism of character-representation I have taken a hint as regards technique.'

Melanie Klein (1975, p.209) states for adults, the analyst needs to be a 'medium' for the client: 'the analyst must simply be a medium in relation to whom the different imagos can be activated and the phantasies lived through, in order to be analysed.' Some analysts and theorists suggest that in the encounter between analyst and 'analysand' something else is produced, what Ogden (1994) conceives of as an 'analytic third'. Or in respect of the analysand, the creation of an 'analytic subject' that did not exist prior (Ogden, 1992, p.619). This subject is created through an intersubjective process that Ogden (1992) considers similar to 'projective identification'. Projective identification, Sedgwick (2007, p.636, original emphasis) explains is part of what Klein discussed as the 'paranoid/schizoid position' which involves the need to split good from bad and 'the aggressive expulsion of intolerable parts of oneself onto—or, in Klein's more graphic locution, *into*–the person who is taken as an object'. It is more 'intrusive' than Freudian projection because 'for Freud when I've projected my hostility onto you, I believe that *you* dislike *me*; for Klein, additionally, when I've projected my hostility *into* you, you *will* dislike me' (Sedgwick, 2007, p.636, original emphasis).

It is worthwhile stating that Melanie Klein's theory of 'partial objects' influenced Deleuze and Guattari (Buchanan, 2021a). This theory can be briefly summarised in reference to Klein's central Mother-Infant relation. Klein argued that the infant subject cannot understand the Mother as a whole and so views the Mother's breast as a partial object.

There are good and bad partial objects, good objects are embraced by the child as key to their sense of self which is 'introjection' and bad objects are 'expelled' (projection) (Buchanan, 2021b, p.50). The good objects do not 'stay good' but split apart and create new good and bad objects (ibid.). Buchanan (2021a) writes that Deleuze and Guattari felt that Klein failed to account for the 'logic' of partial objects – Klein understood these objects as fantasies (phantasies) instead of *real* productions, whereas Deleuze and Guattari underscore that the unconscious is productive. And secondly, Klein could not get past the idea that partial objects always relate to a whole and overall, 'mapped' the child's experiences back to the parents (Buchanan, 2021a, p.72). I do not unravel these tensions in this thesis, but it highlights how more nuanced engagements with psychoanalytic theory and broadly posthumanist perspectives are needed, together, rather than outright rejection (of psychoanalysis).

Secondly, the interpretative side of psychoanalysis sits in tension with the poststructuralist and posthuman theory I engage with. Psychoanalyst, activist and philosopher Félix Guattari (1996a) criticised the psychoanalytic method across three domains: 'interpretation', 'familialism' [sic] and 'transference'. Guattari (1996a, p.50), also in co-authored work with Deleuze (Deleuze and Guattari, 1983, 1987), criticised psychoanalytic interpretation for repeatedly using the same motifs, such as the Oedipal complex and 'images of papa-mama'. Interpretation in psychoanalytic practice is questioned, however. Ogden (2016) for example reflects on Winnicott's tensions with interpretation. In one passage, Winnicott states: 'I think I interpret mainly to let the patient know the limits of my understanding. The principle is that it is the patient and only the patient who has the answers' (Winnicott, 1971, pp.86-87, cited in Ogden, 2016, p.1244). This is shared in some psychotherapeutic thought and practice (see Bondi, 2005).

Attachment to objects

Attachment theory developed over the course of the 20th century by Ainsworth and Bowlby (see 1991, for example), it can be described as 'a way of understanding the human self via developmental psychology and infant attachment' (Anderson, 2023, p.395). Claims have been made that Bowlby's attachment theory is an attempt to validate the principles of object relations theory, empirically (Gomez, 1997; Schneiderman, 2000).

Here, I introduce geographies' recent engagement with attachment and review research that deals primarily with the attachments people develop to digital technologies. I build on this to theorise attachment, as a mode of relation, between young people and digital mental health technologies.

In cultural geographies, Anderson (2023) argues that attachment is conceptually absent from human geography. Anderson (2023) proposes that attachment is a *specific* relation: we do not become attached to all objects, things, people, spaces for example, only certain ones. Through the relation of attachment, some objects (for example) become more important to us (Anderson, 2023). Drawing on feminist and queer theorists such as Laurent Berlant, in addition to actor-network theory (ANT), Anderson (2023, p.395) puts forward two concepts of attachment: 'forms' and 'scenes' of attachment as a way to 'orient inquiry to how specific promissory objects are made available and patterns of attachment repeat'. Sociological literature highlights how humans become attached to digital 'evocative' objects and the way these objects make us feel relationally as opposed to studying what they *do* (Turkle, 2007; Beer; 2012). Psychoanalytic object relations theory is used to examine the 'unconscious attachments' that develop with consumer objects (MacRury and Yates, 2016, p.41). In psychology, mobile phones have been conceptualised as 'boundary objects' that act as a 'booking or communication device for a therapist, operating just as the therapy door or waiting room has long done' (Farnsworth, 2022, p.55).

Psychological research has modelled attachment between digital objects and users with attachment split into 'indirect' and 'direct' (Koles and Nagy, 2021, p.63). In the direct, 'users many begin to feel increased attachment to digital objects that represent aspects of themselves and help them experiment with different identity definitions' (ibid.). In the indirect form, there is more of a sense of ownership, greater attachment and the potential for 'transitional properties' to occur between user and object which blurs offline and online worlds (ibid.). Richins and Chaplin (2021, p.20) introduce the concept of 'transitory object attachments' whereby children attach and un-attach to an object quickly. Drawing on existing literature in psychological fields, they propose that attachment serves many functions for children, including identity development, sense of security,

pleasure, and enhancing social lives (Richins and Chaplin, 2021). But attachments can also be harmful, this is the case with long-term and transitory attachments, attachment can become addictive (ibid.). In terms of digital mental health technologies, studies indicate that people experiencing early psychosis reported missing a mental health app when it was not available after the research study (Bucci et al., 2018; Bucci et al., 2019, p.286). I advance these arguments in chapters four and five particularly in response to gamification and personalisation logics and practices, how young people experience these, and how they mediate attachments to digital mental health technologies.

Digital therapeutic alliance

One of the aims of this thesis is to examine young people's experiences of digital therapeutic relations. In psychology and psychotherapeutic contexts, the therapeutic relationship is often termed the 'therapeutic alliance', this refers to 'the quality of the therapist-client interaction, the collaborative approach taken in working towards the tasks and goals of therapy, and the personal bond or attachment that emerges in therapy' (Bordin, 1975; Bucci et al., 2019, p.286). Contemporary psychotherapeutic research unpacks the dynamics of the 'therapeutic alliance' when therapy and mental health support moves online or is digitally mediated (e.g., via a smartphone) (see Bucci et al., 2019; Zuppardi, 2020; Rizq, 2020). Social and psychological research has explored, more broadly, how online spaces shape digital atmospheres and temporalities of support (Tucker and Goodings, 2017; Tucker and Lavis, 2019). The digital environment brings specific issues to therapeutic practice. Researchers question whether people can 'mentalize themselves' and others in online spaces that are characterised by 'compartmentalization and projections and non-reciprocal interactions' as these environments can omit embodied, social and contextual cues (Bucci et al., 2019, p.285). Downing et al. (2021) studied the effects of psychologists switching to telehealth during COVID-19 in Australia. They use the concept of the 'therapeutic holding space' as a term to bridge concerns in psychology and the humanities, it denotes: 'not only the physical, sensory space in which therapy takes place, but also the psychological space in which issues such as the therapeutic alliance, therapeutic presence, trust and empathy are played out' (Downing et al., 2021, p.2).

In research on mental health apps, arguments have been made that by personalising a user's experience this could increase the likelihood of the user feeling understood by the intervention and 'this experience more closely "mirrors" the traditional client—clinical therapeutic relationship' (L. Valentine et al., 2023, p.1631). In this context, recommender systems are *mechanisms* through which personalisation happens and 'positively' impact the digital therapeutic alliance (ibid.). Nevertheless, regarding AI and chatbots in mental healthcare, Brown and Halpern (2021) compellingly argue that AI can never replicate the social benefits and spaces provided by in-person clinics and the embodied nature of empathic communication. This form of relationality and how it is omitted or transformed in *digital* therapeutic encounters is explored in this thesis.

2.6 Towards a critical posthuman geography of digital mental health

This chapter has set out a diverse range of theories, concepts and literatures. I use these as a conceptual framework to consider the posthuman and human relations at work in digital mental health, to unpick the logics and practices of digital mental health, to understand how these sculpt and change the ways young people engage with their mental health and to analyse the digital youth mental healthcare assemblage in England. Throughout this chapter, I pointed to gaps in the literature that I seek to address with this conceptual framework. The gaps and arguments advanced in this thesis include:

- exploration of *internal* object relations that digital mental health produces using psychoanalytic theory (chapter four)
- how digital mental health technologies *mediate* young people's temporalities and experiences of mental health using the concept of associated milieu (chapter five)
- analysis of the digital youth mental healthcare assemblage attentive to questions of relations of dependency, power and political economies (chapter six).

The result of this, empirically, is to enquire into the logics and practices of digital mental health and how these are experienced by young people. Theoretically, it aims to advance

a critical posthumanism of digital mental health that takes seriously the material capacities of digital technologies, without losing sight of the humanness of the concept of the psyche and therapeutic relations, or the production of these by technoscientific capitalism. Although I put Buchanan's (2021a) assemblage theory directly to work in chapter six, the theory of assemblage outlined in this chapter informs the entire thesis. Buchanan (2021a) makes researchers attend to both the material *and* discursive elements of the assemblage and to question *why* they and *how* they come together in the first place. It is worthwhile clarifying that I use 'expression' to denote discourse and language and 'expressive' refers to rhythms and sequences (e.g., the refrain/*ritornello*), flow states and the alluring qualities digital mental health technologies express. Expressive, combined with the molecular, shows the less perceptible ways that digital mental health technologies, such as apps, guide and shape users' actions and behaviours. Changes to the ways that young people know and intervene in their mental health are understood as co-constitutive of the associated milieu rather than located in individual bodies and minds. As Ash (2015a) argues, affects cannot be understood outside of a space, or milieu; affects create spaces. Although I use milieu and assemblage in different ways, these are connected. I do not examine the philosophical nuances of the connections between these concepts in this thesis (see Deleuze and Guattari, 1987; Holland, 2013; Adkins, 2015). But I take as a point of departure what Anderson and McFarlane (2011, p.125, emphasis added) point out, after Deleuze and Guattari (1987), that an assemblage is a 'constellation' of 'elements that have been *selected* from a milieu, organised and stratified'. By observing and documenting associated milieus we can perhaps then argue what, how and *why* certain elements are selected, arranged and transformed in an assemblage.

Chapter three: Researching digital technologies and youth mental health and emotional wellbeing services

3.1 Introduction

As set out in chapter one, the overarching aim of this research is to explore young people's experiences of using digital technologies designed to support mental health and wellbeing and to analyse the digital youth mental healthcare assemblage in England. To do so, I required a methodology attuned to examining experiences, practices and assemblages. Before setting this out, I briefly detail the main data collection methods, participants and how the fieldwork unfolded. A full ethics application was prepared and submitted to the University of Birmingham's Science, Technology, Engineering and Mathematics Ethical Review Committee in January 2021 and the study was fully approved in May 2021.

Synopsis of fieldwork

From January to November 2022, I carried out qualitative data collection using the methods of interviews and focus groups with three groups of participants: 12 young people (aged 16 to 25) who have used digital technologies for their mental health and wellbeing, mostly mental health and wellbeing apps (see Table 3, p.86 for full details); 17 practitioners and volunteers of youth emotional wellbeing services (Table 4); and 15 individuals working within research and development of digital mental health (Table 5). The rationale for using interviews and focus group as the main methods and for recruiting participants from three broad groups is because I am interested in understanding the assemblage of digital youth mental healthcare in England and young people's experiences of using these technologies, as such, it was necessary to speak to a range of people involved in the assemblage. The sampling method was purposeful (Patton, 2002). Young people were eligible to take part in interviews or focus groups if they were aged 16 to 25 and if they use or have previously used digital technologies for their mental health and wellbeing (such as apps, digital platforms, wearables, digital games or chatbots, for example). Practitioners and volunteers could participate if they currently work or volunteer at a youth emotional wellbeing or mental health service. I sought out individuals

working within research or development of digital mental health, with specialism in youth interventions, services or technologies. In total, 44 participants were recruited and took part in interviews and focus groups. 40 individual interviews and two focus groups were conducted. All interviews, apart from one (which was in person) were online via video conferencing software (Zoom and Microsoft Teams). One focus group with peer-representatives was conducted hybrid (in person and Zoom) at a youth mental health charity. The other focus group with two volunteers and one member of staff took place in person at a youth emotional wellbeing service. Full recruitment and participant details are given in section 3.4.

Over the course of the PhD (2020-2024), I also conducted online research and trialled an app analysis to get to know digital mental health technologies myself (discussed in sections 3.2 and 3.4). Owing to their archetypal status in digital mental health (explained in chapter one), and as the young people interviewed primarily used this type of digital mental health technology, I take mental health and wellbeing apps as a key unit of enquiry (Schwanen, 2015). To explore the 'front' and 'back' ends of apps and platforms (Rose et al., 2021, p.60), interviewing individuals in research and development, as well as young people who use them was necessary. I extend the 'back end' beyond research and development to sites of therapeutic practice such as youth emotional wellbeing services in England. In doing so, I explore how digital technologies, interventions and service provision are perceived by practitioners and volunteers working in youth mental health in England. The use of interviews and focus groups, overall, was to gain understanding of the experiences of logics and practices at work in the assemblage from these various positions (young people, practitioners, researchers and developers).

The original research design included an ethnographic element, to work as a wellbeing volunteer once a week for six months at a youth emotional wellbeing service (S1) co-run by a national youth charity in England. The arrangement was to volunteer and conduct participant observation at one of their drop-in sites (S1) to experience how drop-in services operate and to explore if, and how, digital technologies designed to support mental health and wellbeing are understood, discussed and used in the context of these services. There was also an agreement for me to recruit young people who have accessed

the service. A series of meetings (in person and online) took place over the course of the PhD with gatekeepers (Kathryn and Ellie) at S1 and a research manager from a national youth charity that co-runs the services. In preparation for commencing volunteering once I had received ethical approval, I completed volunteer training with S1 just before the emergence of COVID-19 and lockdown restrictions in the UK in Spring 2020. At this time, in-person services were stopped. In addition, S1 underwent restructuring throughout 2020 and 2021 and there was not an opportunity for me to volunteer in person or online. The relationship with the national youth charity and several of their youth emotional wellbeing sites thus transitioned to one of recruitment of participants. I provide further details about these sites in section 3.2 whilst acknowledging here that my engagement with these services moved from ethnographic to primarily recruitment.

Once it was clear that I was unable to volunteer and conduct participant observation at S1, the research design pivoted to also focusing in more depth on practices of research and development in digital youth mental health. The recruitment of these individuals for interviews was already part of my research design and covered in my ethics approval, but I did not foresee interviewing as many individuals working in research and development initially. Owing to issues with recruitment of young people via the national youth charity which I expand on further in 3.4, I submitted an ethics amendment (approved in March 2022) and widened recruitment channels to youth mental health networks and social media, this is where I primarily recruited young people to take part.

Methodologically, I use assemblage as a way of firstly perceiving something, that is, digital youth mental health and the bodies, technologies, components, discourses and materialities involved, and secondly, as a way of analysing this arrangement. This approach advances the way assemblage has been mobilised in human geographical research as ‘descriptor’, ‘ethos’ and ‘concept’ (Anderson and McFarlane, 2011, p.125; Duff, 2023). I discuss how Buchanan’s (2021a) theory and method of assemblage informs my analytic approach in section 3.6. To examine the interfaces of digital mental health, the ‘front end’ of apps and platforms, I engage with post-phenomenological frameworks in human geography (Ash et al., 2018b) and the ‘walkthrough’ method developed in digital media studies (Light et al., 2018; Dieter et al., 2019), these are discussed in

sections 3.2 and 3.4. To research experiences of using mental health and wellbeing apps, working in youth mental health services and researching and developing digital mental health, I adopt an approach focused on both experience and practice, informed by STS, human geography and social approaches to mental health research which I set out in section 3.3. The next section begins by giving an overview of contemporary mental healthcare provision in England at the time of fieldwork.

3.2 Research context, sites and technologies

Mental health funding and service landscape in England

In this section, I first give an overview of youth mental healthcare provision in England at the time of fieldwork. I focus on England primarily because NHS services are devolved in the UK. The funding landscape for mental health provision in England during the fieldwork preparation was centred around the 'Five Year Forward View for Mental Health' published in 2016 which obtained an additional £1 billion in funding for mental health as part of the NHS Long Term Plan (NHS England, 2019). Such funding increases need to be situated within a background of chronic underfunding of mental health services in England and the impact of austerity over the last two decades (Passey, 2020; Kiely, 2021; Brenman, 2021). NHS ambitions for 2023/24 for children and young people (CYP) (aged between 0 and 25) include 24/7 mental health crisis provision that 'combines crisis assessment, brief response and intensive home treatment functions' (NHS England, 2019, p.5). NHS England (2019, p.7) ambitions for 'digitally-enabled mental health care' (not children and young people specific) by 2023/24 include:

- '100% of mental health providers meet required levels of digitisation
- Local systems offer a range of self-management apps, digital consultations and digitally-enabled models of therapy
- Systems are utilising digital clinical decision-making tools.'

A central actor in the landscape of mental health governance in England at the time of fieldwork were Clinical Commissioning Groups (CCGs). Decisions on how to fund local CAMHS and AMHS were taken by NHS CCGs (Rocks et al., 2019). CCGs are groups of general practices (GPs) that are responsible for decisions on funding in specific regions. CCGs were created as part of the Health and Social Care Act in 2012. This act ushered in the "any qualified provider" policy, which for Brenman (2021, p.25) 'made explicit its reliance on voluntary services'. Repeated cycles of applying for funding that voluntary organisations have to enter into has accelerated in the system of commissioning services in the UK (Brenman, 2021). Voluntary organisations bid for short-term contracts in partnership with an 'increasingly fragmented' NHS which funds services 'according to their efficiency and ability to demonstrate the need for these services in communities' (Brenman, 2021, p.25). Passey's (2020) study of *Future in Mind* mental health policy in the north of England, for example, highlights the background to current youth mental healthcare provision in England. *Future in Mind* was created in the context of rising concerns about increasing rates of youth mental ill-health globally and in the UK (Passey, 2020). In England, youth mental health is compounded by increasing rates of referrals and disparities in the availability and quality of specialist services (ibid.). The emergence of *Future in Mind* and similar policies needs to be contextualised within a 'background of significant cuts to a range of community-based, preventative, health, and well-being services and increased prevalence of mental health issues among young people' (Passey, 2020, p.305). Further, the *Future in Mind* policy developed in response, partially, to relieve pressure on services such as CAMHS and to try to reduce long waiting lists and times (ibid.).

Mental healthcare for children, adolescents and young people (up to the age of 18) usually comes under CAMHS, however in some areas provision is only up to 16 years of age (Young Minds, n.d.,b). Waiting times differ regionally and some areas can have shorter CAMHS waiting times and longer waiting times for AMHS, or vice versa (Mind, n.d.). The disparities in waiting times between regions are described as a 'postcode lottery' (Rocks et al., 2019). Digital technologies are conceived of as having the potential to reduce these disparities of care by increasing access (NHS Confederation Mental Health

Network, 2023). Waiting lists in mental health services in the UK are commonly reported as up to 18 weeks (Punton et al., 2022).

The involvement of 'service users' in mental health service design has grown over the last 20 years in the UK (Noorani, 2013). Policy documents from the Department of Health accentuate 'how service users are *experts-by-experience* with a privileged understanding of their mental distress, what they need for their recovery, and how current service provision is, and is not, providing it' (Noorani, 2013, p.50, emphasis added). This context shapes the development of the youth mental health services in this research. The main case (S1) developed through young people's participation in the design of the service and their needs have continued to influence the ongoing development of the service. In mental health and wellbeing app development in academic research, acceptability and usability studies are carried out to determine what young people want apps to be like and what features to include. These studies mobilise 'codesign' methodologies (see Hetrick et al., 2018), or qualitative methods such as interviews (Dewa et al., 2019), and focus groups with targeted populations (such as young people) to elicit their views on prototype designs (see Kenny et al., 2016).

Youth emotional wellbeing and mental health drop-ins and services

Research in mental health and wellbeing geographies has a long tradition of investigating the sites, spaces and places of health and wellbeing, with the concept of 'therapeutic landscapes' acting as a cornerstone (Gesler, 1992; Bell et al., 2018). I pursue geographical research that aims to go past, or to 'think *beyond evidence* to the sites and practices' where health and wellbeing are generated (Boyd and Duffy, 2018, p.312, original emphasis). Moreover, as detailed in chapter two, particularly in relation to therapeutic spaces, I seek to understand the complexity of (digital) spaces of wellbeing and mental health and how these *matter* in young people's lives (Kraftl et al., 2012). Most of the sites I recruited volunteers and practitioners from are emotional wellbeing and mental health drop-in centres for children and young people. Drop-in centres have been key sites for geographical enquiry into mental health and wellbeing (Parr, 1998a; Parr, 2000; Conradson, 2003; Parr et al., 2004), and community spaces for children and young people have been researched in the context of the effects of anticipated service withdrawal for

example (Horton, 2016). Recent research in mental health geographies examines austerity and the experience of waiting through the sites of mental health peer support groups and a day centre (Kiely, 2021). The existence of these types of 'community' spaces reflects a broader trend of the movement from institutional sites (such as asylums and psychiatric hospitals) to current community mental healthcare in the UK (Parr, 1997; Wolch and Philo, 2000; Andrews, 2021; Kiely, 2021).

Contact with the national youth charity and S1 started in 2019 when I was putting together my PhD application. Over the course of the next few years, I had several meetings with a research manager at the national youth charity and gatekeeper Kathryn at S1 to discuss the project, interview guides and recruitment. Whilst I planned to immerse myself in a specific case (i.e., S1) this could not be achieved ethnographically due to the previously mentioned reasons. The national youth charity, the emotional wellbeing and mental health services, and participants have been anonymised and given pseudonyms. Information on the specific location of each site has been removed to preserve anonymity for organisations. In total, I recruited from five emotional wellbeing and mental health third sector services for children and young people in the South West, West Midlands and North West of England (S1, S2, S3, S4, S5**)**. All the services are run by employed staff (such as service managers, practitioners and volunteer coordinators) and volunteers, for example, wellbeing volunteers and peer-representatives who are trained to carryout sessions. S1 provides emotional wellbeing support to children and young people (up to age 25). S1 now offers a blended service model, this includes in-person drop-in support and some pre-bookable sessions via telephone or video call. The content of telephone and video-call sessions tend to mirror in-person sessions. S2 provides emotional wellbeing support to children and young people (up to age 18). At the time of fieldwork, the service offered pre-bookable telephone and video sessions and was starting to offer drop-in sessions at various community spaces. S3 provides a type of crisis care support and offers adolescents and young people (up to age 18) who are referred to the service a set number of sessions. The service operates in multiple locations and offers in person, telephone and virtual sessions. S4 provides emotional and wellbeing drop-in support and group activities for young people up to the age of 25. The following services (S1, S2 and S4) do not case manage, there is emphasis on the single drop-in session and signposting to further

external support. S5 is not affiliated to the national youth charity. S5 offers mental health support to adolescents and young people (up to age 25), they run a range of projects, groups and drop-in sessions.

Apart from the purposeful selection of S1 and S5 (I discuss this below), the other services were recommended for recruitment by gatekeeper Kathryn (based at S1). Whilst these sites were only used for recruitment in the end, through my contact with these services I learnt about the complexity of the organisational structure of youth mental healthcare provision in England, particularly as the services contracted and expanded according to the fluctuating funding landscape and the implications of COVID-19 over the course of my PhD research. I contacted S5 in June 2022 to see if recruitment flyers for my research could be passed on to young people who use the service and/or peer-representatives for interviews or focus groups. Recruitment of peer-representatives at S5 neared the end of fieldwork and the focus group was carried out in October 2022.

Digital mental health technologies, interventions and services

To gain understanding of digital mental health technologies targeted at young people, I attended online workshops and webinars and read academic and grey literature: articles, reports, blogs, policy, and websites. For example, I took part in a training session on digital mental health technologies (ProReal avatar virtual-reality training) and attended research and development webinars on digital mental health run by NHS Digital Futures, Govconnect (see Woollard, 2021) and SilverCloud (the latter is a digital mental health company, its main product is an online CBT programme). I aimed to establish an overview of the field and to explore specific digital technologies, taking an in-depth perspective to elucidate the technical methods and valorised ideas (Dalton, 2015) of digital mental health and how this is expressed in logics and practices. As introduced in chapter one, mental health and wellbeing apps and digital platforms are archetypal forms of digital mental health. Apps were the most used digital mental health technologies by young people interviewed in this study (see Table 3). I also knew from discussions with Kathryn (gatekeeper) that apps were one form of digital mental health and wellbeing technology that they sometimes recommended to young people in the service. I

categorised the main types of mental health and wellbeing apps as: chatbot, meditation and mindfulness, mood tracking, mental health and self-care (chapter one; Table 2). The purpose of this categorisation is to show the main types and features of mental health and wellbeing apps that young people in this study used. These categories were developed through researching apps in the academic and grey literature, app review websites (such, as One Mind PsyberGuide, 2024), searching for apps on app stores, compiling main features and creating a broad typology based on these features. The category 'mental health apps', for example, encapsulates apps that are for specific diagnoses such as OCD (e.g., GG OCD; Table 3) and apps primarily providing CBT (e.g., SilverCloud; Table 3). These categories are not discrete, there is crossover between 'types' of apps. For example, some mental health apps incorporate mood trackers. The rationale for categorisation is because I am interested in logics and practices across digital mental health. The specific digital mental health technologies that young people who participated in this study have used are detailed later in this chapter in Table 3 (section 3.4).

Investigating mental health and wellbeing apps as digital interfaces

Taking inspiration from William Davies' (2017) research on emotion-tracking interfaces, where Davies used technologies over several months and interviewed people working within the industry, I downloaded and used several commercial mental health and wellbeing apps over the duration of the project. Having already reviewed and categorised a wide range of mental health apps with monitoring features discussed in academic literature (see Williams and Pykett, 2022), I aimed to explore one app (MindDoc) in-depth to gain insight into the intricacies of digital interfaces by experiencing using them. This fed into my understanding of what the 'associated milieu' (Simondon, 2017) of mental health apps might consist of. I broadly followed the 'walkthrough method' which 'involves establishing an app's environment of expected use by identifying and describing its vision, operating model and modes of governance' (Light et al., 2018, p.881). I explain this further in the 'app analysis' section in 3.4.

I followed Dieter et al.'s (2019) supplement to the 'walkthrough' method which includes the organisational context of apps such as app stores. App stores can be examined as

digital spaces where types and lists of apps are analysed to 'provide insights into the built-in logics and mechanisms driving categorizations' (Dieter et al., 2019, p.3). On several occasions over the course of the project, I searched the Apple App Store on my iPhone SE 2020 with different terms such as "mental health", "wellbeing" or "mood tracker", for example. I recorded the search terms in a spreadsheet, noted what searches returned the most hits, the apps listed for each search, descriptions for apps and screenshotted various screens presented. This fed into the categorisation discussed above (Table 2) and informed interview schedules for researchers and developers (Appendix B).

3.3 Practice-based and experiential approaches

In line with the assemblage approach and to understand how digital mental health technologies mediate young people's experiences (chapter two), I focus on the *practices* of digital mental health in terms of research and development, the practices that young people form with technologies, and how these technologies are perceived by those that work in therapeutic practice. Research in the social sciences that attends to processes of design often mobilise practice and object-oriented approaches (Lupton, 2018a). STS uses practices to research science, medicine and technology for example (Law, 2004; Mol, 2008). In geography, Reid and Ellsworth-Krebs (2019, p.300) explain that practice approaches are used to 'explain how and why particular forms of human activity have been adopted, made popular, persisted and disappeared'. Practice-based methodological frameworks are attuned to the temporal, cultural, spatial and contingent reasons for action (Reid and Ellsworth-Krebs, 2019). In Annemarie Mol's (2008, p.8) research on care they use the term 'logic' to describe the 'rationale' of the practices they study – this may not be obvious to those partaking in practices:

> 'It may be implicit: embedded in practices, buildings, habits and machines. And yet, if we want to talk about it, we need to translate a logic into language. This, then, is what I am after. I will make words for, and out of, practices.'

This practice-based approach influenced my choice of 'talk-based' methods (interviews and focus groups, see section 3.4) and the questions I asked about young people's day-to-

day uses of digital mental health technologies (Appendix A). After Mol (2008), words are made from practices and practices made from words.

In human geography, practice-based methodological approaches have been influenced by non-representational theory, which is situated, by some, as 'the logical development' of post-structuralist thought (Vannini, 2015, p.2). Non-representational theory methodologically focuses on *doings,* performances and practices of people, non-human, things, and spaces – enquiry ranges from documenting the quotidian and habitual practices of everyday life to the sacred (Vannini, 2015). Non-representational theorists argue that while we may not be consciously aware of it, 'we are always involved in and caught up with whole arrays of activities and practices' and our conscious thoughts, intentions and reflections 'emerge from and move with this background "hum" of on-going activity (Anderson and Harrison, 2010, p.7). The methodological concern for non-representational theories is on *thought in action,* rather than 'internal' states of mind such as attitudes, ideas and motivations (Thrift, 2008; Anderson and Harrison, 2010; Vannini, 2015). This aims to elucidate some of the unconscious, affective and pre-reflexive aspects of experiences. I thus take from non-representational approaches, a concern with researching routines, practices and habits across young people's experiences, in youth mental health and wellbeing services and background processes of research and development.

At the same time, I examine young people's descriptions of their experiences of using digital mental health technologies and their experience of navigating mental health services to understand practices. Attention to description of experiences draws more from a phenomenological approach concerned with the texture, quality and meaning of lived experiences (Willig and Billin, 2012) and social model perspectives in mental health research that foreground people as social (rather than passive) actors (Tew et al., 2006). The methodological frame is also influenced by perspectives from emotional geographies (see Bondi, 2005) because of the focus on therapeutic relations and digital mental health it is important to consider the ways that young people, practitioners, researchers and developers *feel* about digital mental health. Although I present individual experiences and narratives throughout the empirical chapters, I conceive of these as part of a collective

assemblage of mental health (Duff, 2014). There are compelling critiques of individualising experiences of mental health through research praxis and theory and calls for 'collectively produced knowledge' attentive to questions of power and politics (D. Rose, 2017 p.784). I am informed by this collective and political approach which is also reflected in frameworks that emphasise young people's lived experiences *and* the political, cultural and economic dynamics of mental health (Pykett et al., 2023).

3.4 Methods and participants

Talk-based methods: interviews and focus groups

Interviews are an established method in geographies of mental health and wellbeing research (see for example, Parr et al., 2004; Boyle, 2019; Lowe and DeVerteuil, 2020). I adopt McDowell's (2010, pp.157-158) understanding of what interviews generate as a method:

> '…the aim is to probe an issue in depth: the purpose is to explore and understand actions with specific settings, to examine human relationships and discover as much as possible about why people feel or act in the ways they do.'

Studies that use interviews illustrate the intricate socio-spatial relations in geographies of mental health, such as, the complexities of caring practices in mental health in rural Scotland (Parr and Philo, 2003) and more recently, innovative approaches to interviews (such as video-recorded walk-alongs and video-elicitation interviews) to research the practices and discourses of people living with a diagnosis of schizophrenia in the urban milieu (Söderström, 2019). One rationale for using interviews is because I wanted to learn about 'how certain practices, experiences, knowledges or institutions work – or at least, *how your participants talk about* these working' (Secor, 2010, p.199, original emphasis). For example, how youth mental health services work, young people's experiences and practices using digital mental health and the practices of research and design across academia and commercially.

Focus groups were selected as they allow for a collaborative and reflexive practice in social geographical research (Bosco and Herman, 2010). Focus groups as a conversational group method can produce 'a different type of talk around social practices and everyday life' (Browne, 2016, p.203). Using these talk-based methods meant that I could observe and record the ways that people discuss their experiences and then analyse these as discourses and practices of digital mental health and youth emotional wellbeing service provision. Interviews and focus groups are common methods to use when researching people's perspectives, experiences and practices with digital technologies. In sociology, Deborah Lupton has used interviews to research perspectives on food apps (Lupton, 2018b), to understand practices of people who self-track (Lupton, 2019a, 2019c, 2020a), and conducted focus groups on the range of digital health technologies available to women (Lupton, 2019b), for example. Flore (2022) also used interviews to explore young people's experiences of using apps for mental health. In digital geographies, research that analyses the ways that digital interfaces mediate experiences and modulate people's behaviour use interview methods with designers (see for example, Ash et al., 2018a), and with parents of children and young people who game online, in combination with video ethnography (Ash et al., 2023; Mills et al., 2024). There is discussion as to whether poststructuralism (of which assemblage and practice-based approaches can be broadly situated within) and qualitative methods work together (St. Pierre, 2021). But as Fox and Alldred (2015, p.407) point out, interviews and observations can be used to 'identify assembled relations, and the affects and the capacities produced in bodies that together make an assemblage work', thus highlighting how talk-based methods can elicit the relations, components and forces at work in the digital youth mental healthcare assemblage.

All interviews except one (the participant requested for the interview to not be recorded) and both focus groups were recorded using a password protected dictaphone. The focus group with peer-representatives lasted 68 minutes and the focus group with volunteers 90 minutes. On average, individual interviews were 47 minutes. All interviews with young people, researchers and developers were carried out via Zoom or Microsoft Teams. One interview with a service manager was conducted in person (Liz; Table 4). One focus group was in person (Anna, Fazila and Layla; Table 4). The focus group with peer-

representatives was hybrid: me and one participant (Grace; Table 4) met in person at S5 and two participants (Ava and Sebastian; Table 4) joined via Zoom. Before going on to outline the specifics of each participant group in the next sections, it is worthwhile stating I did not request or collect demographic information (such as ethnicity or gender identity) from participants aside from the age of young people. The reason for this is because I am interested in exploring experiences of digital youth mental health and the assemblage rather than examining differences along axes of gender, for example. Moreover, because of the focus of the research, mental health and digital technologies, whereby there would be discussion of data privacy and security (for example) I decided that it would be more ethical to not collect and store additional personal data.

Young people

The age range of 16 to 25 was selected as in mental health research and policy in the UK this group typically constitutes 'young people'. For example, the Mental Health of Children and Young People survey considers 17- to 25-year-olds as 'young people' (Newlove-Delgado, 2023). This age group is often discussed as critical in terms of prevention of mental ill-health because 75% of mental health problems are said to be established by the age of 24 (Kessler et al., 2005; Mental Health Foundation, 2023). Still, there are significant differences between 16- and 25-year-olds and I recognise that the boundaries between childhood, adolescence and youth are porous. The category of 'youth' is particularly ambiguous and contested (Valentine, 2019). The young people's mental health and wellbeing services that I recruited practitioners from are directed at various age ranges between 0 and 25. Although I asked directly about the age group of 16 to 25, some of the interviewee responses need to be contextualised within practitioners' personal and work-based understanding of the term 'young people'.

Focus groups were initially planned to take place with a group of young people who are part of a co-production advisory group at S1. Unfortunately, due to the restructuring of S1 and COVID-19, this group was no longer active at the time of my fieldwork. I therefore changed to an open call for young people to participate in interviews and focus groups across the various affiliated services (S2, S3, S4). Recruitment was low with the

services (S1, S2, S3, S4) due to my reliance on staff at the various services passing on recruitment documents to young people. I could not do this myself because I was not physically present at the services and a data sharing agreement (e.g., for practitioners to provide me with contact details of potential participants) could not be put in place between me and the national youth charity. In practice, I had to rely on gatekeepers – Kathryn and later Ellie (Table 4) – to provide young people and staff with the recruitment documents and for young people to get in contact with me. Because of low recruitment of young people via the services, I needed to try a different recruitment strategy. In March 2022, I submitted an amendment to the University of Birmingham ethics board for further recruitment channels: a national open call via the McPin Foundation Young People's Network and recruitment of university students. The amendment was approved on 30th March 2022. I advertised the research as participation in individual interviews and/or focus groups and made clear that the project was social research about people's experiences rather than medical or psychological research. In total, I recruited two young people from the youth emotional wellbeing services (S1, S2, S3, S4), eight via the McPin Foundation Young People's Network and two participants via specific university groups on social media pages. All of these participants took part in an individual interview.

For participation in an interview or focus group, each young person (inclusive of peer-representatives) received a £10 high street shopping voucher. The voucher was emailed at the start of the interview so there was not an expectation on participation set on receiving the voucher. Indeed, as Philo and Laurier (2021) after Head (2009) point out, payments of gift vouchers in contexts where participants are not financially secure are potentially coercive. I discussed this with the gatekeepers of the services and decided that participants would be given the voucher at the start of the focus group or interview, I continued this practice after recruiting through other channels, participants were told that they did not need to return vouchers if they withdrew from the study. Overall, 14 individual interviews with young people were carried out, including the two follow-up interviews. Details of young people interviewed are given in Table 3. All interviews with young people were carried out online, either on Microsoft Teams or Zoom.

Table 3. Participant details young people

	Name (pseudonym)	Age	Mental health and wellbeing apps used	Type of app(s)	Other digital technologies for mental health used
1	Aanya	17	Clear Fear Be Okay Daylio My Possible Self	Mood tracking and mental health	-
2	Ashley	16	Blue Fever	Self-care	Sensate wearable
3	Cara	22	Headspace	Meditation	Message-based CBT platform (unnamed)
4	Charlie*	20	Bloom GG OCD	Mental health and mood tracking	Digital CBT platform (unnamed)
5	Jack	25	Calm Finch Headspace	Self-care and meditation	-
6	Natasha	16	Daylio	Mood tracking	Private Instagram account (as journal)
7	Nisha*	17	Calm Balance SilverCloud	Meditation and mental health	-
8	Omar	20	Digital Wellbeing	Self-care	-
9	Orla	19	Calm Co-Star	Meditation and self-care	-
10	Rose	24	Calm Headspace	Meditation	-
11	Steph	21	Calm Daylio Headspace	Meditation and mood tracking	Online counselling Digital message-based platform (unnamed)
12	Yasmin	23	Finch My Fitness Pal My Possible Self	Self-care, mental health and mood tracking	Online therapies (art) Online 'hub' and zoom group meetings

* took part in two interviews

Youth advisory group consultation

This project is influenced by young people's views and experiences but to describe this involvement as participatory would be tokenistic (Aitken, 2018), as young people did not have an active participatory role in all the various stages of a project such as the initial idea, research design, mobilisation or write-up of the work (Cahill, 2007). I set out below one of the ways in which young people's views and experiences were incorporated into the design of this research through a consultation.

In September 2021, I conducted a consultation with the Youth Advisory Group (YAG) at the University of Birmingham on Zoom. The YAG is part of the Institute for Mental Health (IMH) and is a group of young people (aged 18-25) with lived experience of mental ill-health, or a strong interest in, youth mental health. The consultation was with six members of the YAG, two co-ordinators and it lasted for just over one hour. We discussed the mental health and wellbeing apps that YAG members have heard of or use and what they think about these. After, the youth advisors gave feedback on a draft focus group schedule. What emerged as priority questions and topics were those that asked participants *why* they use digital technologies for their mental health and wellbeing – hence my concern with not only what apps *do* and what young people do with them, but also on intentions, experiences and meanings. The youth advisors gave different reasons for using mental health and wellbeing apps: because of not getting support from mental health services; apps as 'fillers' in-between or when waiting for services; using apps because they were designed by therapists; to track mental health and spot triggers; to aid sleeping; for meditation; and to develop coping mechanisms. Initially, I was unsure about how to tackle asking young people recruited through the national youth charity this question about reasons for using digital technologies. The advice from the national youth charity was to steer clear of asking young people questions that could prompt them to discuss their lived experiences of mental health or distress. Asking *why* could open this type of conversation which they wanted me to avoid doing. I caveated the question with a preamble:

> "Without telling us about your own personal experience of mental health, could you say about what made you decide to start using mental health and wellbeing

apps as opposed to other technologies? If you don't use them, why did you decide not to?"

The youth advisors also emphasised a need to consider *how* young people found out about digital mental health and mentioned the advertisement of counselling platforms on YouTube and targeted adverts appearing across other sites and social media. This suggested overall the need to examine the *emergence* of digital technologies for mental health and wellbeing in young people's lives. Although no focus groups with young people who use digital mental health technologies ended up taking place, the discussions with the YAG shaped the development of interview guides (Appendix A).

Practitioners and volunteers

The rationale for interviewing service managers, practitioners and volunteers from youth mental health and emotional wellbeing services was to gain an understanding of the current youth mental health and emotional wellbeing service provision in England, what role digital technologies play and their perspectives on digital mental health. Access to staff was facilitated by the main gatekeeper, Kathryn, and when Kathryn left the organisation, Ellie. To begin with Kathryn emailed the recruitment documents to staff across the services (S1, S2, S3, S4), at the end of 2021. I followed up individual enquiries via email. Recruitment over email started slowly. However, after the first few interviews, recruitment started to pick up (snowballing). I conducted 11 individual interviews with service managers, practitioners and volunteers (Appendix C). Two focus groups were conducted, one with volunteers and a volunteer coordinator, and the second with peer-representatives (at S5). Staff and volunteers had a range of backgrounds and experience with a diversity of therapeutic, creative and social approaches. For example, some practitioners are also trained play therapists, social workers, youth workers and have experience working in NHS mental health services. I have kept job descriptions broad, for example 'practitioner' (rather than including seniority or exact job title) to ensure anonymity. This was what was agreed with the national youth charity (see Appendix G for participant information and Appendix H for consent form). Participant details for this group are given in Table 4.

Table 4. Participant details staff, practitioners and volunteers

	Name (pseudonym)	Job description	Interview or focus group
1	Amelia	Service manager	Interview
2	Anna	Volunteer	Focus group
3	Anthony	Service manager	Interview
4	Ava	Peer-representative	Focus group
5	Ellie	Manager	Interview
6	Fazila	Volunteer coordinator	Focus group
7	Femi	Practitioner	Interview
8	Grace	Peer-representative	Focus group
9	Hamza	Volunteer	Interview
10	Jasmine	Practitioner	Interview
11	Jennifer	Practitioner	Interview
12	Kathryn	Practitioner	Interview
13	Layla	Volunteer	Focus group
14	Liz	Service manager	Interview
15	Maya	Practitioner	Interview
16	Sebastian	Peer-representative	Focus group
17	Valerie	Practitioner	Interview

Researchers and developers

The rationale for interviewing individuals working within research and development of digital mental health (broadly termed 'researchers and developers') is because of the focus on logics and practices in the assemblage and the current lack of transparency about the design process of many mental health apps (Aryana et al., 2019). Lethbridge et al. (2005) write that too little is known about how software engineers (such as designers, maintainers, analysts) 'perform' their work. I was also influenced by research that considers how designers (such as video game designers; Ash, 2010) make digital technologies engaging and affective because of the impetus in digital mental health on increasing engagement. The aim of these interviews was to unpack the 'discursive and material practices which professional designers enact, and the broader sociocultural and political contexts in which design as a way of thinking and a profession is situated' (Lupton, 2018a, n.p.) As some mental health and wellbeing apps and digital platforms (such as iCBT or cCBT) are developed in academic research I also sought to interview academic researchers in the field of digital mental health to better understand practices in 'the lab' and differences between commercial and academically developed digital mental health technologies and interventions.

To identify people working within research and development of digital mental health, I compiled a list of the mental health and wellbeing apps that were mentioned in the YAG consultation, apps and technologies named and recommended in various NHS and third sector reports and websites, and researched the apps included in a scoping review I conducted with my co-author (Williams and Pykett, 2022). This list included around 200 potential interviewees, and spanned academic research, digital mental health companies, private design and development agencies, clinicians, directors of companies, software design and NHS digital, for example. These individuals were largely located in the UK, Europe, Australia and the US. Searching 'app stores' also fed into my recruitment strategy for individuals working in research and development. Through searching for apps on the Apple iOS store I usually found the name of the developer or development company. The sample is not intended to be representative of global research and development of digital mental health.

I started to contact individuals in February 2022. I sent an introductory email explaining the project and why they were being contacted, due to expertise in the field for example, and referenced specific academic publications, reports, or technologies that they have worked on. If I did not receive a response after two weeks, I sent a follow-up email. I also contacted individuals on LinkedIn and used the same approach. Aside from two interviewees in the US and Australia, the rest work in the UK. I anonymised the interviewees, technologies and employers (see 3.5). I have given broad job titles and field or particular type of technology expertise (Table 5; see Appendix I for participant information and Appendix J for consent form).

Table 5. Participant details individuals who work in research and development of digital mental health

	Name (pseudonym)	**Job title and field**
1	Amanda	Consultant, digital health
2	Adele	Researcher, mental health and wellbeing apps
3	Ella	Researcher, digital mental health
4	Fran	Academic researcher, digital youth mental health
5	Jacob	Clinician and inventor, meditation wearable
6	Lucas	Clinician and lecturer, mental health apps
7	Mia	Researcher, self-care app
8	Nadia	Clinician, digital mental health
9	Peter	Developer, digital mental health
10	Phillip	Clinician and academic researcher, mental health apps
11	Polly	Academic researcher, digital youth mental health
12	Priya	Developer, digital youth mental health
13	Richard	Academic researcher, mental health chatbot apps
14	Sara	Academic researcher, digital mental health
15	Sophia	Co-founder of self-care app

App analysis

Using the 'walkthrough' method, I attempted to 'mimic' everyday use of MindDoc over a few weeks in July 2021 (see Figure 1) and kept a diary (Light et al., 2018, p.882). MindDoc ("Your Mental Health Companion") was described in the Apple iOS Appstore on the 28th of July 2021 as 'developed by psychologists', applicable for aged 12 and above, free to download but with in-app purchases and in the category of medical apps. The main features are daily questions, mood tracking, journal, psychoeducational courses, exercises, reading and listening material, personalised feedback and assessments of mental health. The rationale for selecting this app was because it had a high number of ratings and number of downloads at the time of app analysis, and this has continued to increase. As of 27th November 2023, according to the Apple app store, MindDoc has 7.9 thousand ratings and over 3 million downloads. Notably, MindDoc is now advertised for 17 years and above (27th November 2023). The app is now a 'Class I Medical Device under EU MDR' (MindDoc Health GmbH, 2024).

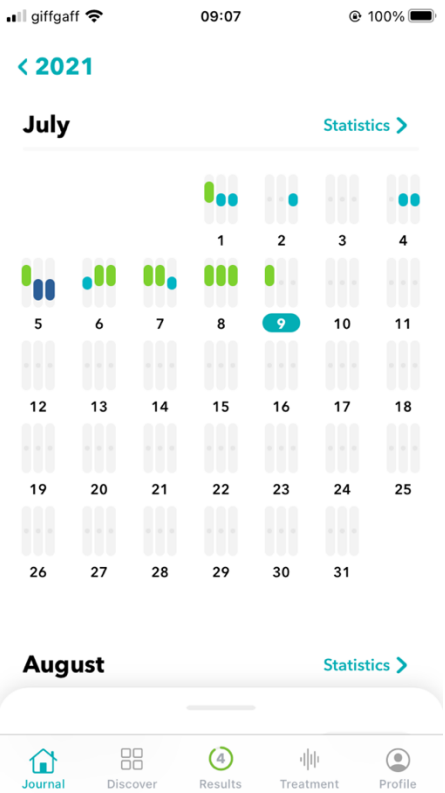

Figure 1. Screenshot of 'Calendar' MindDoc app. Author's own image.

On my iPhone SE 2020 I took photo and video screenshots of me navigating MindDoc. I started by describing various login points, support screens and terms and condition pages (Dieter et al., 2019) presented to me when I accessed the app for the first time. I noted the initial 'assessment' questions, answer options, my reflections and observations on language used. I described the language as explanatory (for example, low mood was linked to an answer I gave about having done less exercise in the last two weeks) and noted that the app 'felt clinical'. Influenced by Ash et al.'s (2018b) post-phenomenological framework, I wrote descriptions of 'units', such as, buttons, maps, graphs and images. For example, I noted answer options for assessment questions (e.g., 'yes' and 'no'), the 'progress' bar at the top of the app of the screen and the question mark ('?') button and what explanations it gave.

Once I answered the initial assessment questions, I closed the app, re-opened and wrote notes on where the app oriented me. This indicates 'how design patterns are implemented, or how navigation paths are arranged' (Dieter et al., 2019, p.5). My focus on orientation was also informed by Ash et al.'s (2018b) theorisation of the vibration of 'units' of apps, that is, how they interact with other units and users to 'modulate' user response. As I navigated through the screens of the app, I detailed various 'thresholds' – mechanisms that create relations between the user and the interface (Ash et al., 2018a). For example, I reflected on whether the 'progress bar' at the top of the screen made me continue answer assessment questions. I also paid attention to haptics (e.g., vibrations) which geographers have used in app and digital interface studies (Ash et al., 2018b; Bonner-Thompson, 2021). This is because apps 'engage with the body's pulsations, vibrations and movement' (Matviyenko, 2015, p.14). When I downloaded MindDoc, I enabled notifications from the app. Because I have my smartphone on silent, the notifications from the app were expressed as a vibration. I reflected on how this prompted me to use the app, for example to answer the assessment questions.

I took screenshots of pages that give 'Insights' into my mental health and noted reflections on the imagery used. One was a figure riding a bike (see Figure 2). This particular 'Insight' stated that I had been ruminating 'more than usual' and suggested that 'Moving helps stop your looping thoughts'. Because the main features of the app are mental health

assessment, psychoeducation and mood tracking, I made notes on how the combination of images and language made me feel. This meant I moved away from the inter-object focus of a post-phenomenological framework (Ash et al., 2018b) to a degree. Still, this framework made me attentive to what I may have otherwise overlooked as mundane features of apps which gave insight into how units manage friction, thresholds and sculpt pathways. For example, I noticed how the 'Results' icon ('assessments' of mental health were given after 14 days) was a ring that became fuller as I completed daily questions. This, along with other units of the app that indicated 'progress', were ways I was prompted to continue using the app. Overall, this app analysis gave me insight into the experience of using mental health apps and exposed me to many common features (such as mood trackers). This experience shaped interview and focus group guides, which I outline next.

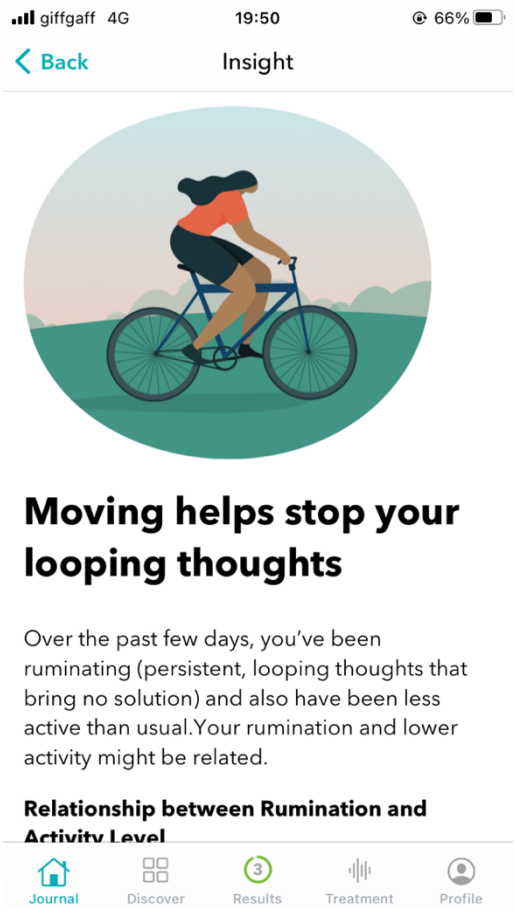

Figure 2. Screenshot of 'Insight' MindDoc app. Author's own image.

Interview and focus group guides

I designed broad interview guides for each participant group (Appendix A, B, C). However, the approach was flexible. I did not follow the guides linearly but moved between questions and themes depending on the responses of the interviewee and their area of expertise. For young people, the interviews were structured to elicit descriptions of experiences young people had using digital mental health and wellbeing technologies in their day-to-day lives to give insight into their practices (Appendix A). I also asked about the differences between forms and mediums of mental health support, for example if they had received in-person support and how this compared to telephone, video, platform or apps, for example. The app analysis, walkthrough and post-phenomenological frameworks prompted me to devise questions about how features and units shape users' experiences and practices.

I constructed a 'walkthrough' style photo and video elicitation guide (Appendix D; see Figures 3, 4 and 5 for examples of screenshots used). I used this guide in two follow-up interviews with young people (Charlie and Nisha) and in the focus group with peer-representatives who were all under the age of 25 (Ava, Grace and Sebastian). The interviews were online. I shared my screen with participants to show the videos and images. In the focus group, I shared screen with the participant who joined online and me and the other two participants watched the videos and viewed the images on a laptop at the same time. I showed screenshot images and videos of a range of mental health and wellbeing apps, such as mood trackers and chatbots (Figures 3, 4 and 5). This 'walkthrough' style interview and focus group schedule broadly followed features that are considered to increase engagement with mental health apps, such as: data visualisation, gamification, customisation, social features and gaming (Balaskas et al., 2021b). The 'walkthrough' was a late addition to the methodology I made as a result of COVID-19 lockdowns, and due to time constraints, I could not conduct 'walkthrough' interviews with all participants.

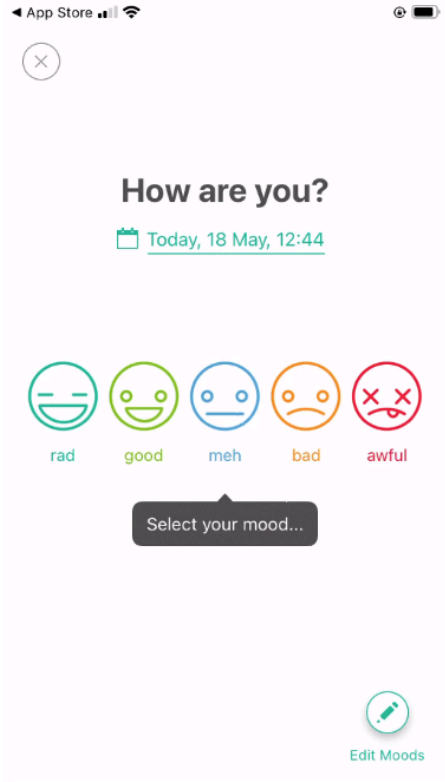

Figure 3. Screenshot of video of Daylio mood tracking app. Author's own image.

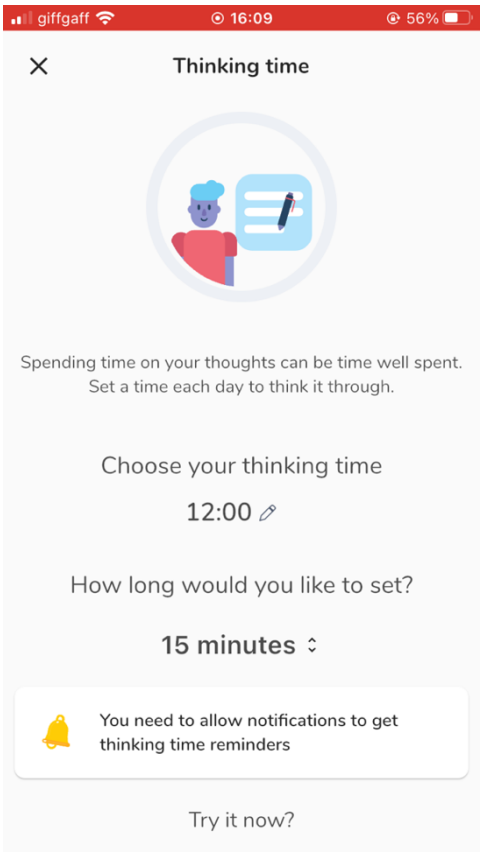

Figure 4. Screenshot of 'Thinking time' My Possible Self app. Author's own image.

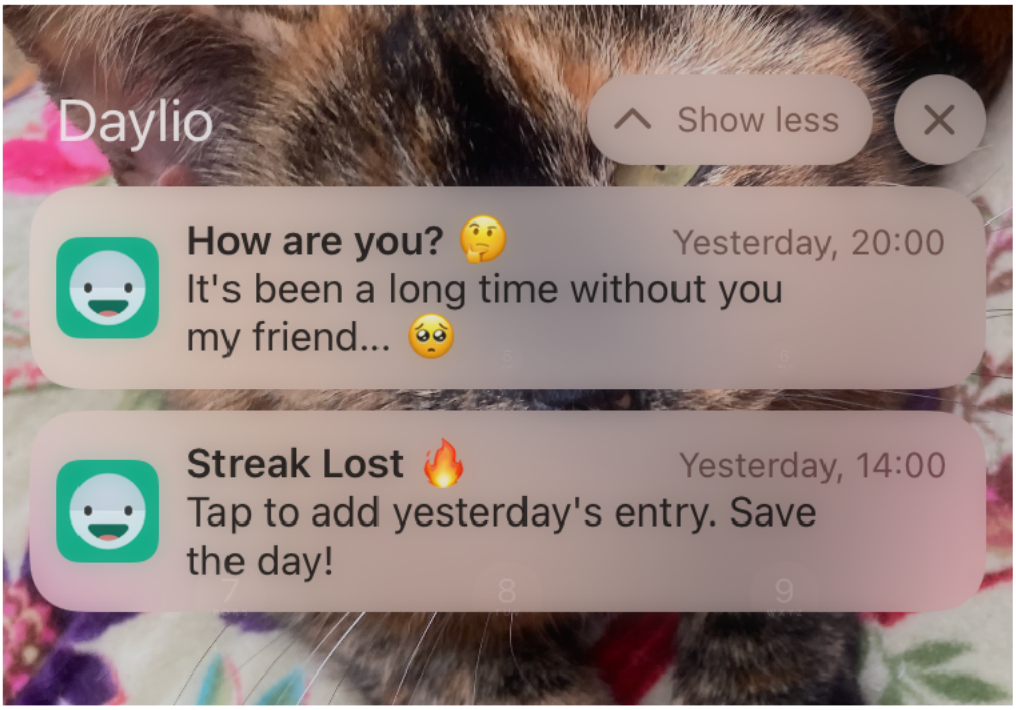

Figure 5. Screenshot of Daylio Notification. Author's own image.

For developers and researchers, I constructed questions about 'front' and 'back' end systems to discern logics and practices, for example, collection of active and passive data, how data feeds back to the user and the types of language and discourse used in apps. I also drew on literature from software studies, STS, and HCI for example asking developers how they make decisions (see Lin and Hertzum, 2020), and as an outsider to the field, to understand what type of language to use in framing these questions. I asked what might seem like 'basic' questions, for example, asking developers to explain different types of data collection practices or how chatbots are programmed. For most individuals, I created bespoke interview guides related to the technologies they develop or research in academia.

For staff, practitioners and volunteers, I used a similar 'technique' outlined above and asked interviewees to clarify what they meant by 'recommissioned' or a specific therapeutic approach. I incorporated prompts for clarification of terms and found that these prompts generated further discussion of the organisational structures, funding landscape and decision-making processes in the context of youth mental healthcare. I

broadly asked about their perceptions and experiences of working in youth mental healthcare in England, if/how digital technologies are being used in these services, their perceptions and knowledge of digital mental health and opinions on the future development of services and digital technologies (Appendix C). I also used this guide in the focus group with staff and volunteers (Anna, Fazila, Layla; Table 4).

3.5 Ethics and positionality

Ethics in research can be 'understood as the need for intellectual reflection on *good* practice in a particular research context' (Laurier and Parr, 2000, p.98, original emphasis). Ethics underwrites the entire research process, and I cannot attempt to cover all my reflections on my practice as a researcher during this project, nor all the ambiguities that crop up over a long project, so here I reflect on what 'good' practice entailed both practically and politically in this research. I start with the practical.

A full ethics application was prepared and submitted to the University of Birmingham's Science, Technology, Engineering and Mathematics Ethical Review Committee in January 2021 and the study was fully approved in May 2021. I did not require NHS Health Research Authority (HRA) approval as staff were not directly employed by the NHS. Whilst some of the services are commissioned by the NHS, they are classed as non-NHS services and therefore I did not need HRA approval to carryout research with them. I underwent an enhanced DBS check with S1 in November 2021. I obtained informed consent from all participants.

A few meetings and email communication with a research manager at the national youth charity and Kathryn (gatekeeper) took place in late 2021 to discuss participant information, consent sheets, recruitment materials (e.g., video, posters, flyers) and recruitment channels. There were several rounds of revisions. By the end of 2021 these documents were agreed, and a research agreement to recruit from the services was signed between me, and the national youth charity that co-runs the services (S1, S2, S3, S4).

Practicing ethics: consent, preventing harm and negotiating relations

I undertook online and in person safeguarding and mental health training with the national youth charity through S1. For young people recruited via the national youth charity and services, if they showed or told me that themselves or others were unsafe (e.g., at risk of harm) then I would legally have to tell an allocated person at S1, or the service that they were recruited from (e.g., S1, S2, S3 or S4). This was detailed in the participant information sheets and consent forms. I did not have to make any safeguarding referrals during the research. Participant information sheets detailed phone numbers and services for mental health and emotional wellbeing support (Appendix E; the sheets included are open call since most young people were recruited this way). These sheets stated that participants are free to withdraw at any time, before, during or within two weeks after the interview. I treated consent as an ongoing process (Philo and Laurier, 2021). For example, in interviews I explained at the start the withdrawal process and tried to assure participants that it was fine to withdraw from the interview at any time and that they do not have to give me a reason. I also 'checked-in' with participants during the interview to see if they wanted to continue taking part (Watts, 2011). I sent participant information and consent sheets well in advance of the interview or focus group date to give participants time to review the information, ask any questions and decide on participation in the study.

A minority of the young people interviewed were between 16 and 18 years of age, this group are considered in some research ethics frameworks as 'vulnerable' (Saldaña, 2011). I advised in the consent form for 16- to 18-year-olds for them to speak to a parent, carer or friend about participating in the research (Appendix F). Moreover, some participants had experience of mental distress, trauma and diagnosed mental illness which made them particularly vulnerable. Vulnerability was treated on a 'case-by-case basis' (Economic and Social Research Council, 2023, n.p.). I took an approach to vulnerability as a 'dynamic and intersectional' factor and understood that this necessitated careful consideration throughout the project (Darling, 2021, p.159).

Research should aim to benefit participants and not cause harm (Saldaña, 2011; Watts, 2011). From the outset, the gatekeepers at the national youth charity and S1 asked me to not discuss mental health and distress with young people recruited through their services

to prevent distress or harm arising from recounting personal experiences. Whilst I did not ask any questions directly about personal experiences of mental distress and included caveats to questions (explained previously), a few participants still told me about their experiences. Although these participants were not recruited through the national youth charity or the services but via the open-call I still felt a need to move the conversation away from this topic, perhaps because of the amount of discussion with the national youth charity and gatekeepers. I felt similarly to the way Holt (2010) describes where through steering the topic away from difficulties and experiences of distress a series of 'ethical ambiguities' were thrown up – notably in the relationship between me and participants. As Holt (2010, p.29) notes, this type of intervention (steering the conversation away from a topic that is 'sensitive') can mean that the relationship becomes hierarchical and enforces roles between 'young person/adult; researched/researcher' which can be 'reminiscent of a "pseudo-therapeutic" relationship' (Parr, 1998b). Acknowledging how emotions shape research encounters is now commonplace in qualitative and reflexive research with children and young people in particular (Hadfield-Hill and Horton, 2014). I felt uncomfortable with firstly swerving these topics, and secondly, when they couldn't be swerved, feeling as if I should shut down these conversations to prevent distress, feeling that this act was potentially distressing in itself or marginalising the voices of young people, their agency and experiences of mental health. Once I opened other channels of recruitment, I felt less conscious of needing to steer all conversations away from experiences of mental health whilst remaining focused on the interview topic.

In the consent sheet for researchers and developer interviews there was the option for them to consent to the use of the name of the company that they work for. This option was given as identifying the company and/or employer may compromise their anonymity. Most researchers and developers did not consent to sharing the name of employer (and thus the technology, service or intervention). I have not included the names of companies or digital technologies of the researchers and developers that I interviewed and have anonymised details in direct quotes from participants. I do however name dominant actors in digital mental healthcare in England (e.g., SilverCloud and ieso), this is so that I can examine specific discourses and policies (chapter six). By naming these I am not

comprising the anonymity of participants since none of the researchers or developers I interviewed worked at these companies.

Positionality

Ethically, I also need to situate the knowledge produced in this thesis within my own experience, views and body (Rose, 1997). Underlying this research is my own experience of mental health and illness, my personal experience, my family and friends' experiences, and my experiences of supporting and caring for them. I have also seen a counsellor for several years and over the course of my years completing this PhD, attended fortnightly outdoor Walk and Talk sessions. I have therefore experienced the benefits and privileges of being able to engage long-term and relationally with a counsellor or therapist, and I recognise that this comes at a cost that many cannot afford. I started this project with a wariness of this shifting technological landscape in mental health. I felt a cynicism towards digital technologies for mental health and wellbeing, thinking that they are just another way for the government to save money, for companies to make money, and if offered as a 'treatment' they may potentially legitimate further cuts and privatisation of public mental health services. This is undoubtedly shaped by my own experience of navigating splintered mental health services in England and the lack of choice in 'therapeutic' treatments provided by the NHS for 'common mental health disorders' such as anxiety and depression, when often only a short course of CBT and/or medication are offered. This background led me to view digital technologies as the next step in the 'automation of mental health care' (Russell, 2020, p.28). But as Lather and St. Pierre (2013, p.631) argue, an ethical charge to research is when we question our 'attachments that keep us from thinking and living differently'. In one respect, then, I aimed to keep an open mind during this research, to be open to thinking differently. Maybe I'd be proved wrong. Maybe within this technological-turn emancipatory practices could be instigated. Maybe technologies really do help young people or could help the NHS and people struggling with their mental health and wellbeing in the future. Thinking differently and future-oriented is part of a poststructuralist 'ethical impulse' (Harrison, 2006, p.129).

3.6 Data organisation, analysis and presentation

I used a physical research diary to record thoughts about the project on a day-to-day basis. I used an Excel spreadsheet to record interview dates, scheduling emails to participants, meetings and for noting reflections after research activities. After each interview and focus group, I wrote initial reflections in a word document. All documents including transcripts are password protected. I transcribed 38 interviews and one focus group myself. To construct the transcripts, I listened to the recordings for each interview twice and typed verbatim what was said. Whilst transcribing interviews, I noted emerging themes and reflections in a document. Two interviews and one focus group were transcribed by a professional transcription company. I listened to these a few times, read over transcripts and noted initial themes.

I took an abductive approach to analysis of interview and focus group data, moving between inductive and deductive modes (Alvesson and Sköldberg, 2018). Abduction is a 'third mode of reasoning' (induction, deduction and abduction) that is attentive to the interplay of data, analysis and theory (Kennedy and Thornberg, 2018, p.51). I engaged in an iterative approach moving between the conceptual framework in chapter two and the empirical data. This framework was revised and updated as I analysed the data and wrote the empirical chapters. For example, as I started to analyse the data, psychoanalytic geographies emerged as more integral to the conceptual framework than first envisaged, in particular its utility for exploring the relational aspects of young people's experiences with apps (chapter four). In addition, the bridging of method, data and theory is evidenced through the practice-based and experiential methodological approaches informing my analysis. I was particularly interested in the way that participants describe different components of digital mental health technologies, the 'logics' of digital mental health, realities of youth mental healthcare in England ('collective enunciation'; Buchanan, 2021a), descriptions of processes of development and how these technologies are used by young people in everyday life, for example how they shape routines, habits and practices. In terms of the latter, there is perhaps a tension with using talk-based methods and the data they produce with an analytical focus on the pre-reflective and unconscious because I am reliant on people describing their experiences to me. However, unconscious and pre-reflective actions can be conceptualised as enfolded in peoples' descriptions of

everyday life. The possibilities these methods afford is the generation of thick description of processes, patterns and habits with digital technologies. Analysis of the data was not linear, but consisted of multiple rounds, where I repeatedly returned to the transcripts and theoretical frameworks.

The practical steps I took for analysis included importing the interview and focus group transcripts to NVivo 12. I read each transcript a few times and started analysis by using 'open' coding (Saldaña, 2009), noting emerging themes from the data, creating more codes (termed 'nodes' in NVivo) if data did not 'fit' into the existing codes. Crang (2005, pp.223-225) describes the 'open coding' stage as making 'theoretical memos' and the distinction between 'emic' and 'etic' codes: emic are those used by participants themselves and etic are those developed by the researcher to 'describe events and attribute meanings and theories'. Focusing on practice, assemblage and experience I firstly made 'InVivo' codes of what participants said (or 'emic' codes) and using theoretical frameworks, such as Buchanan's (2015) delineation of components of an assemblage, the two sides: content (actions, bodies, things) and expression (affects, words and ideas), I made 'etic' codes. Informed by the conceptual framework set out in chapter two, I took as a starting point that digital mental health technologies *mediate* people's experiences. I also drew on methods for researching and analysing digital interfaces (Light et al., 2018; Ash et al., 2018b; Dieter et al., 2019). These informed 'etic' codes that I used to categorise specific features, functions, systems and practices of design and development. Exploration of the units of apps and the way apps utilise notifications informed my analysis of young people's descriptions of the ways they use apps as part of an 'associated milieu'. For example, I was attentive to discussions of algorithmic processes and feedback and how young people describe experiencing these explicitly and implicitly. There were multiple rounds of coding. In the second and third stages of coding I collapsed and aggregated several of the 'nodes' in NVivo. I re-read the data attached to these nodes to decide whether they still 'fit' the node. If they did not, I made new nodes. To give an example, I printed the interview data that was included under the node of 'personalisation', read and highlighted passages to unpick similarities, incongruities and sub-themes. Throughout writing the empirical chapters, I returned to the data and the nodes/codes in NVivo and adjusted my analytic themes accordingly.

Using assemblage as an analytic means that I approach the data collectively. In their research on mental health and recovery using assemblage Duff (2014, p.55) suggests that the methodological task is to explore how assemblages are composed and to specify the 'causal mechanisms' in which 'social and/or structural processes enter into it'. Social and structural actors 'leave a relational and affective trail' by which their movements in an assemblage can be observed (Duff, 2014, p.55). The assemblage needs to be considered as a whole rather than specific subjects or structures (ibid.). What this meant in terms of analysis is that I read across all transcripts rather than identifying specific themes for individual participant groups. As such, I drew out practices and considered how these relate to broader discourses (Secor, 2010). To take an example, participants across the three groups discussed the paradoxical qualities of digital technologies *designed* to support mental health and wellbeing, for example, using an app to aid sleep when using a digital device may be interfering with sleep. Participants individual descriptions of their experiences are situated within a wider machinic and discursive assemblage of digital youth mental health. This is illustrated in the next three chapters where I have intentionally combined data from interviews and focus groups across participant groups. The selection of empirical quotes and presentation of these was driven by considering how components of the assemblage relate to each other. The quotes used in the chapters are exemplars of the analytical themes (such as 'personalisation'; chapter four) generated across the dataset. Whilst I present specific quotes from individual participants, for example, descriptions of using mental health and wellbeing apps, the themes these quotes evidence are produced from analysis of the data as a whole.

The assemblage approach informed my analysis of digital mental health policy and discourse, particularly in chapter six. Treating policy as an assemblage means viewing it in light of what arrangements between components it makes possible (Buchanan, 2021a). To give an example, Buchanan (2021a, pp.130-31) draws on Lea's research on indigenous housing policy in Australia. By outlining what 'constitutes a house in a material-semiotic sense' and what 'constitutes an appropriate dwelling in an ethico-political sense' the policy sets what is a house and what is not a house, it carves the limits. In other words, it produces an ontology of a house. Buchanan (2021a, p.131) argues that by looking at a house as an assemblage we can see it as a product of 'highly specific choices and

decisions', exemplifying how material must always be produced, it doesn't just exist. Applied to digital mental health, how does the assemblage refigure what therapeutic encounters and relations are? How does the assemblage set the ethico-political parameters of what counts as mental health support or therapy? I unpack these questions across the empirical chapters.

3.7 Limitations

One limitation of primarily relying on online platforms for interviews with young people was that it could have affected participation. Kathryn (gatekeeper) suggested that "Zoom fatigue" of young people impacted uptake for participation in the project. On the other hand, when I extended recruitment to McPin Foundation, I recruited several young people quite quickly and online interviews allowed for access to a range of young people across England. Online interviews also worked well for recruiting and interviewing researchers and developers and allowed for recruitment of individuals in other countries (e.g., US and Australia).

Although I stated in the participant information sheets that it would be helpful for rapport for the participant to have their video enabled during the interview, two practitioners (Maya and Valerie), three young people (Ashley, Omar and Jack) and one researcher (Mia) had their camera off. Despite this, there was still good rapport in these interviews, but I needed to rely more on verbal cues to signal understanding.

There are challenges with using 'talk-based' methods such as interviews and focus groups to understand pre-reflective experiences, for example asking people to talk through the ways they use digital technologies and habits suggests a layer of reflection and cognitive processing. These 'talk-based' methods could have potentially been strengthened by using video ethnography methods to film young people using apps or platforms. These methods were used to record gameplay in Mills et al.'s (2024, p.200) study that explores the ways that children and young people experience 'gambling-style systems' in digital games. Using the 'walkthrough' video and photo elicitation in interviews and focus groups was a late-stage addition to the methodology. It could have worked well with

young people sharing their own videos and images of the apps they use, as Flore (2022) did. However, my ethical approval did not include for participants to share personal data from their smartphones, and it was too late in the fieldwork to apply for another amendment. Still, I showed a range of popular mental health and wellbeing apps with 'typical' engagement features, and this gave insight into young people's views of these.

Another limitation of the study is that there is a diversity of digital mental health and wellbeing technologies, interventions and services included. This combined with anonymisation of companies, products and universities associated with individuals working in research and development limits the degree to which I can specify relations between actors, or for example means that I cannot provide a network analysis (see Kotouza et al., 2022). However, the aim of this thesis is to understand experiences, logics, practices and the assemblage of digital youth mental healthcare which can be achieved without specifying where interviewees are employed or naming the products they work on.

3.8 Conclusion

In this chapter I detailed how the fieldwork unfolded, the participants and research methods, and the overall analytic focus on experience, practice, interfaces and assemblage. This first part of this thesis (chapters one, two and three) set up the background, conceptual framework and methods used for this study. The next chapters present the empirical data according to three interacting thematic areas. The first empirical chapter (chapter four) uses psychoanalytic geographies, object relations theory and digitally mediated experience to examine how digital mental health produces therapeutic encounters, relationships and spaces. I consider the spaces that are created in young people's interactions with various mediums of mental health and wellbeing support: in person, telephone, online/virtual, digital platform, app, chatbot and algorithm. Influenced by the approaches to digital interface analysis I examine suggestive practices in digital mental health that express the psychoanalytic power of mental health and wellbeing apps. Chapter five explores young people's experiences by unpacking how mental health and wellbeing apps *invite* users to 'check in'. This discursive refrain

coupled with psychopolitical logics of gamification and personalisation produce flow and allure which expressively engage users. In chapter six, I use Buchanan's (2021a) interpretation of assemblage to analyse how digital youth mental healthcare is organised, stratified and arranged in England. This shows the psychopolitical power of certain arrangements between social and structural forces and actors (Duff, 2014) and how the social formation of contemporary technoscientific capitalism channels these relations. The final chapter presents the conclusions of this thesis.

Chapter four: Posthuman digital therapeutic relationships: objects, materialities and spaces

4.1 Introduction

How do digital technologies, their objects, materialities and the spaces they engender shift therapeutic encounters, relations and practices? This chapter presents an analysis of young people's therapeutic encounters and relations with a range of technologies and services that provide forms of intervention, care, support or therapy for emotion wellbeing and mental health. Using the conceptual framework advanced in chapter two, I argue that the increasing use of digital technologies in therapy, mental health and emotional wellbeing support draws attention to what therapeutic relations *are* and what components they are made up of. In reference to the research questions, I unpack the psychopolitical logic of personalisation and how it is experienced by young people. I focus on the spaces of different forms of youth mental health support, care and therapy, as discussed by interviewees, and the materialities that co-constitute therapeutic relations. An aim of this chapter is to explore how and what 'therapeutic work' is dispersed between digital technologies (platforms, chatbots, and apps), practitioners and users in these assemblages. I do not intend to conflate the diversity of psychotherapeutic and psychoanalytic theories and perspectives in this analysis, but rather adopt what they share, the importance of the experience of the therapeutic relationship and *practice* (Bondi, 2005).

I respond to Callard's (2014) call to engage with the spaces of therapeutic practice, extending this to digital space. As explained in chapter two, psychoanalysts, psychotherapists and psychologists, as well as social scientists, are considering what happens when therapeutic practice is moved online (see Rizq, 2020; Zuppardi, 2020; Geller, 2021). I present emerging forms of *digital* therapeutic encounters and relationships that occur between users (young people) and mental health and wellbeing apps and platforms. After Turnbull et al. (2023, p.5) and McLean (2020) I conceptualise 'digital encounters' as 'more-than-real' and explore the material aspects of digital therapy platform systems. Secondly, I draw on psychoanalytic geographies and 'object relations

theory' to conceptualise the way that human connection and presence is cut, transformed and scaled. Psychoanalyst and theorist of the 20th century, Melanie Klein, raised the issue of objects for psychoanalysis, as Eve Kosofsky Sedgwick (2007, p.629) describes:

> '…it's she who put the objects in object relations. In her concept of phantasy-with-a-p-h, human mental life becomes populated, not with ideas, representations, knowledges, urges, and repressions, but with things, things with physical properties, including people and hacked-off bits of people.'

The quote points to the material aspects of Klein's psychoanalytic theory and practice which are highly relevant to geographical analysis of digital life and mental health. In the field of digital mental health, the degree to which other humans, and what parts of them, need to be involved in interventions to make them effective and safe is a prominent topic of debate (see Neary and Scheuller, 2018; Henson et al., 2019; Torous et al., 2020a; Sanderson et al., 2020). A rationale for decreasing the amount of human contact is to lower the cost, increase access and scale interventions. Taking Klein's (1975) argument that the mechanisms of splitting and projection alongside personification increases capacities for transference in psychoanalytic practice as a point of departure, I consider how personalisation, as a logic and practice, is one way that scaling occurs in digital mental health technologies and services through the relationships between technologies and users. This focus on parts of digital therapeutic relationships shows how therapeutic relationships are primed for automation.

There are three substantive empirical parts to this chapter. In the first, I examine spaces of mental health and wellbeing support for young people and emphasise the role of presence and sharing a space. I discuss young people's experiences of digital platforms and how their materialities affect the therapeutic encounter and thus impact the formation (and possibility) of therapeutic relationships. I refer to some of the 'backend' material systems of digital mental health platforms that shape these encounters. In the second part, I attend to scalability and how *feelings* of speaking to a human are mimicked and transformed in digital technologies such as mental health apps and chatbots. Thirdly, I put forward emerging non-human/algorithmic digital therapeutic practices such as

'suggestion' and 'filtering'. I conceptualise personalisation algorithms as 'transitional objects' with capacities for projection. I also discuss pre-scripted answers and use of context in chatbots. Overall, this chapter uses psychoanalytic notions to analyse the algorithmic dynamics of object relations and how this shapes subjectivity. In the discussion and conclusion, I reflect on the abstraction, digitalisation and transformation of specific components of therapeutic relations.

4.2 Spaces and materialities of (digital) therapeutic encounters

This first section presents empirical data from interviews with young people, practitioners and stakeholders about the different spatialities of in person, telephone and video mental health support. It gives a sense of the types of bodies, technologies, materialities and practices 'at work' in therapeutic interactions and how these differ according to the medium of the interaction, for example, over the phone, in person, video or digital, and what spaces this creates. This section describes therapeutic encounters and what types of connection are made possible or not. Some of what interviewees describe is what is 'lost' in digital encounters. I argue in the second and third parts of this chapter that these components are not necessarily lost but mimicked and transformed.

Importance of presence

Phillip, a clinician and academic researcher, gives a sense of the changes to digital mental health service provision for young people over the last few years, particularly due to the COVID-19 pandemic:

> *"Well, I guess that's one thing we haven't mentioned so far, is the use of videoconferencing, and that is something that has emerged, especially through the pandemic: the use of videoconferencing for clinic sessions, for therapy like CBT. It was being done before, but it's being done more now.*

I think it has its advantages in terms of maybe some young people would prefer to do that, rather than to have to travel to the clinic and be in a strange environment. So, they can stay at home, just be around people they're familiar with, and they're using technology that they're familiar with as well.

But on, yeah, the flip side, it might be that some things are missed, for example, physical manifestations of ADHD, for example, or Tourette's syndrome, or there can be different technical difficulties, delays, and disconnections. It could be difficult for the whole family to squeeze into one screen and, you know, for audio to be poor, for example. And also, it's the connection there, between… if someone's in a room with you, you can create more of a connection with them, engage them better with the therapy, for example. Yeah, I think those are the main things there."

Phillip points to the emergence of widespread use of videoconferencing for clinical sessions and therapies such as CBT. Phillip outlines several spatial, material and relational facets: from the *"strange environment"* of the clinic, to the fallible infrastructures of technologies such as the *"technical difficulties, delays and disconnections",* and the evocative image of the *"whole family"* squeezing onto *"one screen"*. Practitioners, young people, researchers and developers interviewed discussed the need for there to be an in-person offering in youth mental health and wellbeing support. This was often with reference to 'presence' of some form. Therapeutic presence is important to diverse psychotherapeutic approaches including psychodynamic approaches, CBT and mindfulness, Geller (2021, p.689) denotes presence as 'trans-theoretical'. They define therapeutic presence as:

> 'a way of *being* with a client that optimizes the *doing* and technique of therapy. It involves therapists bringing their whole self to the encounter with clients and being fully in the moment on a multitude of levels: physically, emotionally, cognitively, relationally and spiritually' (Geller, 2021, p.688, original emphasis).

Therapeutic presence helps 'therapists to attune to their own moment-to-moment experience as well as the experience of their clients' (Geller, 2021, p.688). The connection

between practitioner/therapist and young person/client was discussed by service manager Liz who said face-to-face sessions are the *"essence"* of what the service is about:

> *"I'm always drawn back to this face-to-face people talking to people stuff and the kind of multi-sensory elements and all of those things so um so whatever goes on in kind of the digital world I think is fine for lots of people cause it does, it does open up lots of opportunities for people, but from my point of view, nothing beats the personal interaction from one human being speaking to another human being and the last two years have shown us how absolutely essential that is."*

Femi, a practitioner, describes the importance of the presence of bodies within a space:

> *"...physically energies transfer, obviously, because you're in the same room. However, also physically, I feel like it's a little bit easier to get through to stuff and it's a little bit easier to hold intervention because on the phone all you have is their voice and the words that they're saying to kind of build up the whole story and create the whole picture. Whereas when you are physically with someone, there's the whole-body language, it's the, it's the face, it's the tone of voice, it's everything, and you're able to see a lot more of the story that they're trying to tell."*

Femi underscores the importance of being in a space to *"hold intervention"*, whereas when speaking to a young person on the phone there is only the *"voice"*. The body, facial gestures, language and tone of voice give Femi more of a sense of the *"story"*. In contrast to phone sessions, in in-person interactions, *"everything is just like locked in you know"* (Femi, practitioner). This gives a sense of space being *held* between practitioner and young person and *"locked"* suggests a contained space which helps foster a relationship between practitioner and young person.

Kathryn, a practitioner, questioned why young people did not want to engage with the services offered digitally during lockdowns and wondered about whether the platform (e.g., Zoom) was not working for them, or whether it was something else, they found the

16 to 25 age group requested more phone sessions. Kathryn told me about the importance of listening out for any changes to tone of voice when doing a telephone support session. Amelia, a service manager, also said there was *"higher disengagement"* with sessions offered via Microsoft Teams, they think this was due to the *"fatigue"* of everything (e.g., education, work) having moved to online video platforms during this time. Amelia elaborated:

> *"…. The young person was in their home and maybe home wasn't the safest and most supportive environment for them to be speaking, umm some people thrived, loved it, it actually worked but I think you know it's so important to have choice and to have like that hybrid model where you offer both."*

The feeling of a safe and supportive space intersects with the presence of other people (i.e., not only practitioner and client) in the space. This was referred to by young people interviewed. Rose for example compared their experiences of online and in-person therapy. Rose told me that in online therapy sessions:

> *"… it's easier especially to get distracted. You don't feel quite as immersed. I quite like the idea you know, you're in your therapy, so you're in your room with the therapist, you know, that's the space. Whereas when you're online, you're both in different spaces. I've got all my, you know, you know, I was doing those sessions, the few online ones in my room surrounded by my stuff, you know housemate's downstairs, it's not. It's not quite as, that intimate … Like safe space setting."*

Rose comments on their material things, *"surrounded by my stuff"*, in their room, feeling the presence of their housemate's downstairs, and this contributed to them feeling like they were in a space that felt contained and *"safe"*. As Barratt (2021, p.4), drawing on object relations theory notes, materialities such as spaces, possessions and environments become 'layered with our own projections'. Rose tells me that they like the idea of being in *"your therapy, so you're in your room with the therapist, you know, that's the space"*. As well as a connection with the therapist, space, objects and materialities become part of the therapy which contributes to the experience of therapy.

Steph, a young person, discussed their experience of digital mental health platforms which they *"stuck*" with for a few weeks but did not find helpful because it was all *"virtual"*. Steph expanded on the difficulties with the *"virtual"* in relation to 8 weeks of counselling that they accessed via a charity, which started in person:

> *" ... the most difficult thing about the virtual especially, yeah, I just couldn't, I didn't quite get it because the in-person counselling, which I had as well was moved to virtual during COVID, and then I ended up just stopping it and delaying it until I could have it in person again because I just, I don't know why, it's just I feel like I didn't get anything out of it afterwards. And then also I was in shared accommodation with – and there was nowhere that I could go – and I didn't really feel like I could talk about everything anyway and I think, yeah, in person was a lot better. I also, I tried a few ones which was phone calls as well and I actually found that without having someone's face there in a screen it was, I mean I got no trouble talking about stuff in person, but then over a phone call seemed to kind of mimic that cause I would kind of, I would just live with my eyes shut and just talk. Um so I think something like that actually helped quite a lot as well."*

Steph, similarly to Rose, discusses how they live in shared accommodation, but for Steph this meant that it felt as if *"there was nowhere that I could go"* and so they *"stopped"* and *"delayed"* the sessions until they could have in person. The presence of housemates (other bodies) prevented Steph from taking part in virtual counselling. Whilst virtual counselling may appear to provide more of the therapist, that is, you can see each other (if cameras are on), Steph tells me that they preferred phone support as it could better *"mimic"* in-person support. The telephone support is dependent on Steph's previous in-person support and acts as a *ritornello* (refrain). Steph can close their eyes and rely on auditory referents (e.g., tone of voice, pace of conversation, affirmative feedback) rather than embodied (e.g., facial expressions or gestures) and this can help *"quite a lot"*. The mimicking of a past experience (an in-person session) suggests the importance of refrains within therapeutic encounters. Steph expanded on why the digital mental health platform did not work, therapeutically, for them:

> *"But the video ones, I could just, it just didn't, it felt very impersonal and like, like a video yeah, I just. It didn't. It felt very structured, and I could kind of see that they were kind of reading from a list or something like that and it wasn't very, or they were typing up notes and it just wasn't really very nice."*

This next section turns to *how* the spaces of digital platforms produce *"structured"* and *"impersonal"* counselling, therapy and support experiences, in part because of their backend systems.

Digital therapy systems

As well as other bodies, objects, technologies and spaces interfering with the therapeutic encounter, and components such as presence and connection, the backend systems of digital platforms *mediate* the encounter and shape whether a relationship is created or not. Recent research in psychotherapeutic fields examines emerging dynamics and objects introduced by video teletherapy, such as, email notifications, stability of internet connection, and people or pets walking into shot, for example (see Rizq, 2020; Zuppardi, 2020). In this section, I draw on young people's experiences and interviews with researchers and developers to discuss how material technology systems shape the therapeutic encounter.

Charlie, a young person interviewed, accessed CBT with a practitioner via video call, funded by the university that they study at. Charlie told me that they preferred to have therapy in person, but they were only offered it via the platform. The practitioner matched with Charlie lives on the other side of the country. In some sense, Charlie and the practitioner's therapeutic relationship is 'unbound by geography' (Gratzer et al., 2021, p.6). The communication about the platform and CBT sessions was sent via email, this included Charlie erroneously receiving invoices. Charlie told me that these various aspects affected the way in which they engage with the platform and thus the therapy itself. The platform that hosts the CBT sessions made the interactions *feel* less personal – one reason for this was receiving automated generic emails:

> *"It feels very impersonal. It's what the kind of the emails does, and it just makes it feel like I'm talking to a computer rather than a person. I'm like, well, that's exactly what I don't want to happen. I wanna be talking to a person, not to like an automated system, which is sort of just, I don't know, slowly filing everything."*

For Charlie, platforms that host therapy sessions between user and practitioner need to *feel* like you are talking to a person, after all a person is 'behind' the screen. The interaction needs to feel personalised. Charlie also referred to the frequency of emails from the platform. It's not necessarily what the emails say, but what the emails *do* that makes the experience feel more automated. Charlie said that it feels like the platform system is *"slowly filing everything"*. This shows how young people's concerns about data harvesting intersect with experiences of the therapy itself and gives a sense of Charlie's affective response to using online CBT platforms. Although Charlie was interacting with a human practitioner, these components of the platform, including the use of email notifications, produce an automated space. This suggests that feelings of automation are produced even when a human therapist is present. Thus, the combination of therapy (CBT), service model, practitioner and digital platform produce a sense of automation. Moreover, Charlie said they felt *"paranoid"* discussing their mental health via the platform, this was partly because of studying computer science and being aware of the myriad ways in which the Internet is *"not secure"*. Charlie compared the platform to what an in-person session may be like. For Charlie, a practitioner or therapist, *"making notes on a clipboard ... just feels very different to sort of talking to someone through digital platform ... on the Internet ... which is just accessible by everyone"*. This form of note taking, the materiality of the paper and pen feels more secure than the digital platform. The therapeutic space created by the platform, the internet more broadly and the lack of security in data practices shape Charlie's encounter through the production of an insecure space. The space feels open with little boundaries, this differs to conventional therapeutic spaces (for example, an office with a closed door) and the qualities they aim to engender, such as, confidentiality, safety and trust.

Speeds and slowness of interactions in digital spaces between practitioner/therapist and client/user are expressive qualities that shape the therapeutic relation. Cara who used a message-based CBT platform identified the pace of responses as an important part of their experience with the platform. I quote an excerpt from our interview:

> *Cara: Uh, I don't think it was very useful. Umm, because I did. Ah, mine was completely like online, and based on messaging.*
> *Interviewer: Right. OK.*
> *Cara: Yeah, so that. The whole process was. Umm, I guess I kind of felt like you're talking to a bot.*
> *Interviewer: Yeah.*
> *Cara: Even though it is a real person and it felt like they were managing quite a few people at once.*
> *Interviewer: Right.*
> *Cara: So, their replies weren't fast.*
> *Interviewer: Mmm.*
> *Cara: And. I mean, given the fact that they are typing as well makes it even slower. Um. Yeah, and. It just felt very. Ah, there were no relations built in the process, yeah.*

Digital platforms allow users/clients to be matched with practitioners/therapists in different locations (Charlie example). But some platforms also allow practitioners to conduct multiple sessions at the same time. The extent of this practice across digital therapy, CBT and counselling platforms is unclear, but this 'efficiency' is a selling point for one of the largest providers of computerised CBT in the UK. SilverCloud states that in its digital CBT platforms, for mild to moderate interventions, practitioners can conduct up to four CBT sessions at one time (Amwell SilverCloud webinar, 28th June 2023). This practice suggests an amplified responsibility for digital CBT practitioners. Although unclear whether the young people interviewed in this study use these platforms, from their experiences some do *feel* like practitioners are multi-tasking. In the case of Cara, *"it felt like they were managing quite a few people at once".* A sense that multiple people are present in digital space – other clients/users in sessions with the same practitioner mediate

Cara's session. Tucker (2021, p.247, original emphasis), discussing the impact of COVID-19 on connection, proposes that 'relations are not broken or torn but *stretch* in different ways'. In this example, digital platforms stretch space, and the therapeutic relation extends towards other bodies and sessions taking place at the same time. Importantly, Cara experiences this through the speeds of replies from the practitioner, that were not *"fast"*. The speed of response made it feel as if the practitioner was *"managing"* more than one person. The multi-tasking practitioner and the expressive elements of the platform (slowness, typing), along with what Cara told me were *"standard, general answers"* rather than personalised to Cara, meant that they did not *"feel heard"*. The platform-mediated contact with the practitioner resulted in *"no relations built in the process"*.

In digital mental health platforms aimed at young people, there are backend systems that affect the speeds of responses that Cara discussed. Peter, who works in development at a digital mental health company, told me about the system used for organising cases for practitioners in a message-based mental health support platform. Peter said that the *"chat queue"* practitioners have always found a *"pain"* and has started to become a *"real choking point"*:

> *"So when a, when a user joins, they say 'I wanna chat', there's literally a page in the existing platform where it just has like a huge list of all the people who have currently requested a chat, um generally and the kind of processes practitioners will say generally, will take off the top of the queue, they could pick up anyone, but generally try to work from the top and there might be some exceptions to that, like if someone's a high risk and there may be a practitioner who is trained in dealing with high risk, they may be will pick those up a bit earlier um but just generally they'll pick them up, say I'll move this into my personal queue and then they'll start chat and deliver the chat. This is an issue for a few reasons. One, to be honest, it's like quite demotivating, just seeing like a huge, and especially we are rarely able to deliver all the chats that are requested so the practitioner might be seeing this huge and knowing that quite a few of those people won't be able to get talked to, um it also just from like a like managing like you literally have*

people managing the queue and it becomes, um and yeah, so it's, that's a real like uh, barrier to be able to be more efficient."

Peter explains the current ordering system of the *"chat queue"* and long lists of users. There are also people *"managing"* the queue which reduces efficiency. Peter said that they are moving to a different system – *"a push model"* – which is essentially a *"ticketing system"*: a practitioner will say *"right I'm dealing with it and then it's done and then it moves into kind of the done column"*. Practitioners will not see the queue but will instead tell the system when they are ready to *"receive a case"*. The assignment process will become more sophisticated, allocating higher risk cases to practitioners trained in managing these cases or if a practitioner has had a few high-risk cases recently they will be pushed a different case. There are thus procedures of categorising risk produced by digital platform systems and this suggests different levels of responsibility between system, digital platform and practitioner in the assemblage.

Although the speeds of responses may be improved with new *"chat queue"* organisation systems, for young people, such as Cara they still desire to *"see"* the therapist rather than just communicate via message:

"I think that's way more helpful because you get to see who's on the other side of the screen. Umm and. I mean, obviously having it in person would still be the most ideal, but still having that face and that voice … And you can judge a lot more from, I guess, the tone as well as like body language and expressions rather than just typing everything out… Um. It just seemed very impersonal and maybe like more standard, general answers that were given rather than like tackling my issues … Umm yeah, so in a sense, I guess I didn't really feel heard. Yeah."

For Cara, tone of voice, body language and expressions are important for therapeutic encounters and affect the possibility of the formation of therapeutic relationships. In the platform, the typed answers from the therapist/practitioner seemed *"more standard"* and generic and resulted in Cara not feeling *"heard"* which led to abandoning the platform.

4.3 Scalability: pseudo-human features

So far, this chapter has outlined how presence, tone of voice, body positions, speed of response and expressions are all 'components' of therapeutic encounters that change due to the medium of support (i.e., in person, video, phone). These components combined with medium engender specific spatialities such as insecure and stretched spaces which shapes whether therapeutic relations are created or maintained. Body cues are affectual and can signify a sense of reciprocity and non-verbal empathy that can be difficult to replicate online or via digital platforms with specific backend systems (e.g., allotting cases). This next part, drawing specifically on mental health apps and chatbots, discusses differing attempts to foster connection in encounters with digital mental health technologies. I conceptualise these as components that attempt to mimic human-to-human therapeutic relationships, to produce a sense of *feeling* like someone or something is there. In some cases, this works to create attachment between users and technologies, increasing the likelihood of prolonged use. These examples bring to light different aspects of the emerging psychotherapeutic dynamics of digital relationships.

One rationale for the use of chatbots and apps is that they make mental health interventions *scalable*. Mia, who works in research at a self-care app, explains:

> *"Yeah, there are two main things. So, the first one is that because* [anonymous] *is fully digital, it's completely scalable. So, one kind of drawback that exists in many digital services is that they still require kind of human intervention. So, they kind of pair you up with a clinician or you have like a coaching session like in a video call or whatever that will entail. But of course, that's not, that's not really scalable. You can't do that at a population level without like enough manpower. So, we just wanted to provide a service that was kind of there for the person in the day-to-day struggles of life, 24/7."*

Nadia, a clinician who works at a digital mental health company, describes how their chatbot app aims to elicit the feeling of *"somebody"* being there for the user:

> *"The therapeutic alliance. It's a little, it's harder of course to do it digitally because actually sometimes* [anonymous] *gets it wrong um and you know that might be frustrating. But from the feedback we've got it feels like it does a decent enough job, maybe because it's continual conversation 24/7, that it helps to feel like some, there's somebody there for you? Um which is on par with somebody being there for one hour, um per week. Almost. I think that's. I've always, I've thought about this quite a lot, you know, actually how is this working? You know, without that alliance with a, with a therapist. But my thoughts are that actually the fact that it's available all the time and that you can chat to it and it kind of builds that alliance via, it does remember some things but it obviously not the same as a human, can't infer, etcetera but that fact that it's always there, um, seems to build an alliance."*

The continual availability of the chatbot intends to convey an affective sense of *feeling* that there is someone or something there for the user. This availability, Nadia describes, as replicating a therapeutic arrangement of seeing a therapist once a week for an hour (or 50-minute session), the temporality of this availability is further explored in chapter five. Nadia questions *"how is this working?"* without an *"alliance"* with a *"therapist"*. Interestingly, Nadia states that it is difficult for the therapeutic alliance to be replicated digitally, in part, because the chatbot can *"get it wrong"* and this could be *"frustrating"* for the user/client. This is a form of 'affective displacement' (Lynch et al., 2022), the chatbot can only interpret so far. But read psychoanalytically, this could also signal the tensions of interpretation and letting the user know the limit of the chatbot's understanding, which is arguably part of psychoanalytic technique (Winnicott, 1971; Ogden, 2016).

As well as the continual availability of chatbots and apps (more generally), language used in mental health and wellbeing apps attempts to mimic human support. Mia, who works in research at a self-care app explains:

> *"... this whole idea of making it sound like a real support, that's when the tone and the messaging came about so just being really friendly, using emojis makes it*

> *more friendly. Um and yeah, like human-like. But we never say that we are a human so it's always like acknowledging the limitations of, 'I am a digital* [anonymous].' *Um so it's not, you know, otherwise it's just a weird experience for the person going through like, obviously you're not a human like, that's really clear. … But yeah, just wanted to have this compassionate and calming space where people can feel supported and not judged."*

Mia describes how language is used to *"make it sound like a real support"*. This includes the correct tone, messaging and use of emojis (discursive and machinic elements of the assemblage). At the same time, Mia points to the uncanniness of the object: not wanting to make a *"weird experience"* for the user by being clear that this app, although friendly, is not *"human"*. Mia connects this language to space and the production of *"compassionate and calming space"* that the company tries to create.

The feeling of speaking to a human was commented on by young people. In the 'walkthrough' focus group with peer-representatives, in response to a video of a chatbot that provides message-based chats, Grace said:

> *"I think it looks really good; I mean, it offers you the kind of opportunity to speak to… kind of I felt like, I guess, you feel like you're speaking to someone. But the unhealthy effects, I guess, are that it would probably… if you're in a delicate mental state, it would be quite easy to attach to that, as someone to communicate with, and that can obviously put you at a bit of a disadvantage when working on your mental health because it's like something that you're attaching to that's not tangible."*

Grace suggests that the chatbot could make users *feel* like they are speaking to someone but was concerned that people may *"attach"* to it, something that is *"not tangible"*. This introduces the notion that if the object is not 'real', that is the app is digital, then the support or help produced in interactions with the chatbot might not be. The chatbot has pseudo-human features which give the promise of potential change (Anderson, 2023) (e.g., care and support), but the incapacities of the chatbot to effect change make it somewhat *cruel* in the attachments users may enter into with it (Berlant, 2011). In the

'walkthrough' focus group, peer-representative Sebastian also gave their view in response to a video of a chatbot:

> *"I like the visual side of it; I think it makes it very simple and engaging. Yeah, I agree with Grace about if you're in a delicate mental state, you could become attached, and for me, talking to someone, talking to a therapist with text would not work. But I think for a lot of people – especially if they have social anxiety, agoraphobia or anything like that – it could be really helpful. Yeah."*

Sebastian reiterates Grace's concerns about attachment *to* the chatbot and makes clear that for them talking to a therapist via text-message would not work but that it could work for other people, such as those experiencing social anxiety. What I introduced as the cruelness of the chatbot, as an object of attachment, is reflected in what Ava (peer-representative) describes as the difficulty of knowing that the chatbot is *"just a bot"*:

> *"Yeah, I think the chatbot is really good. It gives you an accessible way to get your feelings out. I think it could be quite difficult knowing that it is just a bot and all the answers are prewritten. So, I feel like the option to add a therapist are really good, because if you want to pay more and like get actual help, it's accessible and stuff. Yeah, I think it's good."*

The cruelness of the chatbot is perhaps not incidental. This sense of feeling and knowing that the chatbot is scripted and how this delimits responses could be an intentional design because of the 'option' to pay to 'add a therapist' through a digital therapy platform.

There are other ways in which mental health apps produce attachment and connection with users, which increases the likelihood of longer-term engagement with the app. Two young people interviewed, Yasmin and Jack, use a self-care app that centres around a digital character: a pet. Yasmin described the cuteness of the app and further expanded on why they were drawn to this app:

> *"...um growing up I was always searching for like a best friend or in place of that a robot or like, you know, I was always obsessed with, like a Tamagotchi, like Tamagotchi's or I always wanted things to rely on me, I always wanted a dog. Um and so like having a little pal, a little best friend in an app form, like obviously really appealed to me."*

Looking after a character, or as Yasmin states, referring to their toy of childhood, a *"Tamagotchi",* is reminiscent of play. This is not necessarily surprising given the app uses gamification techniques to engage the user (see chapter five). For Melanie Klein (1975), personification in play externalises conflict through the mechanisms of splitting and projection. Klein used 'play analysis' and argued that toys are the 'child's symbols', this is the 'language' in which to 'interpret' children in the consulting room (Forrester, 2023, p.143). Apps are playful but also a *"little best friend in an app form"* (Yasmin). Instead of the object being evocative of a Mother (for example), it is a friend that users look after. The app and the digital character are something separate from the user and can be read psychoanalytically as a 'transitional object' or a 'not-me possession' (Ogden, 2021, p.839). One of the main features of this self-care app is to nourish the pet and help it grow through the user enacting self-care activities. The app rests on inviting a form of attachment and interpersonal dependency between app and user. As Anderson (2023, p.396) suggests, '[i]f all relations are contingent, attachments are those relations that endure'. Read psychoanalytically, users project *into* the object (digital character). In doing so, greater capacities of transference are produced (Klein, 1975). Attachments are optimistic (Anderson, 2023). Through transference, the object (app and character) takes on a promissory quality – the quality of potential change – of feeling better. Using psychoanalytic theory is not to analyse young people's experiences as if they are children or to pursue psychoanalytic motifs. Instead, these psychoanalytic techniques show relations between app and users and how users may become attached to units such as, digital characters. These relations of attachment combined with the promissory quality of self-improvement is arguably one aspect that makes people want to continue to use these apps.

Relationships with apps can mimic a therapeutic relationship through transference and the spaces this can open. A form of 'internal' space was mentioned by Grace (peer-representative) when commenting on the purpose of digital technologies, such as apps, in youth mental health:

> *"I guess just like giving a safe space, which a lot of these apps do. They allow you to take a few minutes of every day and think about how you're feeling. Which, I guess, is quite often what young people need. They just need a couple of minutes to take a breather and, like, disconnect from everything else and think about themselves for a second."*

Apps can therefore create a form of internal and external space, potentially an 'intermediate space' (Ogden, 2021) through which young people can *"disconnect"* and *"think about themselves".* There is an uncanniness to the app, to take a few minutes using the app to disconnect from *"everything else",* similar to the paradoxical nature of meditation apps (Jablonsky, 2022). Because of attachment to the digital character, arguably the likelihood of continuing this practice of taking space and time increases. Objects are made promissory when actions of attachment are repeated (Anderson, 2023). The more that young people use these types of apps and engage with their animated character, for example, the more the app itself becomes promissory.

A few young people interviewed conveyed that they do not want mental health and wellbeing apps to act like a person. This rejection of personification in the digital therapeutic encounter could be read using Klein's (1975) theory as less capacity for transference. In the follow-up 'walkthrough' video and photo elicitation interview with Charlie, we discussed different types of apps with mood monitoring and tracking features. Charlie expressed that apps that gamify can help the user to remember to rate their mood, but overall wants mental health apps to be *less personable*:

> *"I would want a logging app to be something that I can use, not a sort of front for a person that I'm interacting with. If I want to talk to a person, I'll talk to my family and friends. But I want that kind of idea of talking to a person and*

interacting with an app to be very different. ... because I think some apps do something similar to if you put a low mood it will come up with a message saying, 'Oh no, are you okay?' And I'd just want it to kind of just be like a logging place or like a tracking thing, where I just put a number in and it's not kind of attaching any emotional weight to it with you were happy the last seven days, you know. 'Is everything all right? Do you want to chat to one of our paid counsellors?' And I think a lot of apps tend to blur the line between just being an app and having like a personification. And it's almost like talking to a real human, and the kind of I feel like the gamifying of that also comes into that, where it's like we're friendly, we're just, you know, we might just be a computer, we can act like a human."

Charlie went on to explain that they want apps to fulfil their purpose and do no more than this:

"I don't want to have sort of these like, almost like quasi- human responses of 'oh, that's brilliant, I'm so glad that you're doing well' in all pre-recorded sort of text messages. Or the kind of 'oh, you've not logged, you've not tracked your mood today. You should do that; you should interact with it now.' And just it's almost like encroaching on my time and want, not wanting me to use it, but it doesn't feel like a kind of a passive thing that I go to when I want to do something. But it feels like almost it's coming to me at points, which isn't something that I'd want. I'd want it to sort of be there, and when I stop interacting with it, that's it, it doesn't interact with me anymore."

Charlie thus wants apps and humans to be separate and for the relationships they have with them to be different in kind, not just degree, which may limit the capacity of the app for transference. The different features of the app, such as the pre-recorded messages, give a paradoxical space of automation *and* emotional weightiness. Apps blur the line between computer and human and this results in feeling like the app is going *beyond* its role as a tool. The app extends and continues its reach after the user has stopped using it (Clark et al., 2022). As Charlie evocatively describes: *"it feels like almost it's coming to me at points".* This suggests important power dynamics that need to be assessed in human

and app relationships, a form of *pouvoir* (power over) rather than *puissance* (power to) (Adkins, 2015). Notifications prompting the user to engage with the app extends the apps' power over the user, which Charlie clearly does not want. This results in a feeling of their time being intervened in, lessening the autonomy of how, when and in which ways, Charlie chooses to use the app.

In academic research on digital mental health interventions, the *type* of human encounter, inclusive of researchers and technical support, is increasingly assessed (Torous et al., 2020a). Fran, an academic researcher of digital mental health interventions aimed at young people, told me about the role of a *"guide"* in a digital therapeutic game. The *"guide"* asks users questions which they are unable to respond to, but this intends to make the user *"feel like there's someone"* as you would *"with a face-to-face CBT".* The onus is on creating an affective sense of feeling that there is someone else there and to make young people *"actively engage"* rather than rush through the game to complete all the levels as this does not *"help them to put any of the CBT principles into play"*. Fran refers to various thresholds of engagement and how, for the game to have therapeutic potential, the temporal rhythm of game play needs to be slower, staggered and more considered to result in the users' active reflection on the CBT principles they are learning.

What perhaps these techniques *cut* is the relationality that occurs through participating in human-to-human mental health support or therapy over a sustained period. This includes communication and interactions that are 'more-than-therapeutic' (Emmerson, 2019). Volunteers at emotional wellbeing services, such as Hamza, discussed these more-than-therapeutic elements, for example, the general conversations (e.g., about music) they have with young people during group sessions based around activities. In therapy or counselling, relationality and the more-than-therapeutic includes setting appointments, greetings and discussing absence or holidays. For some staff at the services, human connection cannot be distilled, modelled or automated. Amelia, a service manager, said the following when I asked them what, if any, role digital technologies could have in youth mental health support provision:

> *"I think, one of the problems with people like me, and it is a problem* [laughter] *that I've been, 'cause I've been doing direct practice like my whole working life. I've seen the harm and it's not to say that all, you know, digital resources you know media is harmful, but I really have seen how detrimental it has been, and actually the, the ability for young people to come away from that to have a break from that, to create and to actually build those human connections … A lot of the young people we speak to, you know, a lot of it does stem down to connection with people, being misunderstood, not feeling like they belong, my concern is that the use of digital media you know and digital apps and stuff kind of reinforces that isolation?"*

Practitioner Jasmine expressed similar sentiments, describing embodied interactions:

> *"So, you can't replace physical interactions. The eye-to-eye contact, so important. I think if they, and the brains are really, really important, how its rewiring itself. So, if you don't use that side of stuff, you kind of, it kind of goes away those connections. So, I come to the essence of you need to know how to, you need to how to read body signs and body language and expressions and emotions and being in contact with people physically. And I think that gets lost when getting into the world of these apps sometimes, well it does. And if they use it at such a young age, maybe they've never known how to interact.*
>
> …
>
> *I'm constantly saying learn to know how to play and laugh and do things and just, use your imagination, creativity, but not via the app-y stuff, because it's different. You're not really getting that. You're not doing that. Reciprocity. Reciprocity. Where you're having that sort of dance with each other when you're reading each other? And that's what happens in play."*

Amelia and Jasmine are not referring to the specific mental health apps and chatbots discussed in this chapter, but the quotes suggest the importance and centring of *human*

connection and presence, which cannot be scaled. They illustrate practitioners concerns over the growing use of digital technologies in youth mental health and worries that digital technologies, more broadly (e.g., social media), are affecting young people's social development and mental health.

4.4 Non-human therapeutic practices

Now I turn to analysis of techniques of personalisation practices in mental health and wellbeing apps and non-human therapeutic practices. Firstly, this section introduces 'suggestion' and 'filtering' as new digital therapeutic practices that require continual data. I then discuss the use of scripts and generative capacities of mental health chatbots. Finally, I turn to how personalisation algorithms can be read psychoanalytically through theories of projection and transitional objects.

Suggestion was used by Sigmund Freud in early work on hypnosis which preceded psychoanalysis. Suggestion is a dual process; it involves self-judgment and the influence of others. Psychoanalytically, suggestibility refers 'to the psychological capacity to be influenced by others, especially those in positions of authority and power over the subject. Under the sway of this tendency, the individual puts his own perception and judgement aside and begins to believe what he is told' (Akhtar, 2009, p.829). Suggestion is a form of *pouvoir* (or power over). Taking this as a line of departure, I think with how suggestion and the associated process of *filtering* could be conceptualised as emerging *digital* therapeutic practices.

From points of suggestion to filtering

Suggestions to download mental health apps are one way in which young people interviewed first heard about specific apps, and what prompted them to use them in the first place. Several young people told me about seeing adverts for a range of commercial mental health and wellbeing apps on social media platforms (e.g., TikTok, Instagram, Facebook), YouTube, and TV streaming platforms. Natasha, for example, started using a mood tracking app after seeing an advert on Instagram. Young people also told me that

friends, counsellors and mental health professionals suggested specific apps. Yasmin spoke about searching on app stores for mental health and wellbeing apps and on a later date the self-care app that they now use *"just popped up as like a suggestion"*. As well as influencing what apps to download, there are suggestive practices at work *within* mental health and wellbeing apps.

Once apps are downloaded, their specific 'units' (Ash et al., 2018b), such as menus, opening questions, and buttons work to hold the attention of users. Emojis, signs, symbols and animations play a role in suggestive practices by curating and guiding user response, through different 'amplitudes' (ibid.). As Nisha a young person who uses meditation and mental health apps, described in our follow-up 'walkthrough' interview, emojis help users to *process* emotions:

> *"...sometimes it helps me kind of process it, because sometimes you just see a word and it doesn't really mean much but when you see it in a face, you're like 'oh yeah, yeah' or um, you think you're feeling something but then you see a face that's a bit more like something else and you know, I actually feel like this face and it's like, 'oh, this face is actually something else'. So, it just helps with clarity."*

Nisha describes how emojis come to be proxies for mood that do not only mirror or represent mood but are goalposts that Nisha can use to consider how they are feeling, to form associations between emoji (face) and current mood. Apps and chatbots do not only offer suggestions for users about how they feel (e.g., mood rating) but often provide suggestions of what users could or should do based on this rating. In our first interview, Nisha explained that the meditation app they use:

> *"...gives you like suggestions of things to do, and what I like about that is that they send you emails which was annoying at first but um 'cause sometimes, sometimes I'm like I don't know what I'm doing but then I get like an email and it you know it just pushes me to go onto it."*

For Nisha, these suggestions were annoying but now they *"push"* them to use the app. Several young people interviewed told me that suggestions made by the app need to be bespoke to the user. When asked about what they would like future digital technologies for mental health and wellbeing to be like, Cara who uses a meditation app, explained:

> *"I think it's quite related to what I mentioned earlier about personalisation. Yeah, I don't know how that would work … because it definitely has to go beyond just like … addressing the user by name but perhaps there could be like more options for individuals that would maybe be more specific to their needs and like kind of build up a repository of that from the collective input from many different users … I guess at the same time … there has to be a way for users to filter these information … because if not, it might lead to like an overload … which can be quite overwhelming … So, I think there has to be a balance that can be struck by the app and help users' kind of manage that potential overwhelm, but still trying to have it kind of specific to their needs*."

Cara describes the workings of personalisation algorithms without naming them, suggesting the increasing normalisation of personalisation practices across society (Day et al., 2023). Cara expresses the importance of going beyond referring to the individual by name, the mode of address is less pedagogical (Fullagar et al., 2017a, 2017b), and more personalised and specific. Cara says there is a need for *filtering.* Which suggests the app having the capacity to autonomously filter irrelevant information because otherwise it would lead to *"overwhelm"* – indicating excess of information and affect (Clough, 2018), and this could result in disengagement with the app. A more desirable pathway would be one that employs *filtering* to exclude unnecessary or unwanted information to reach the optimum output for the user: bespoke meditations, psychoeducational advice, or specific feedback to state of mood, for example. Filtering is a well-used practice in social media apps. Aanya, a young person who has used mood tracking and mental health apps, discussed the ways that social media apps are designed to enable filtering of content and proposed that this would be a good feature for new mental health apps. They explained that when signing up for TikTok they selected the categories that interested them and *"so filtered out anything else like football and like sports, I only see what I*

wanted to see". The temporal effects of vision in algorithms are prescient here: the algorithm works to ensure that users only see what they want*ed* to see.

In the follow-up 'walkthrough' interview with Nisha in response to a video of a chatbot, Nisha described forms of filtering practices as making chatbots a *"good tool"*:

> *"OK, yeah, it's just clicked for me that this is kind of. I think this is a really good tool now, you know there's like self-help books and stuff or like and they'll say, they'll have like pages and pages of different emotions and what to do when you're feeling like that. This is a really good tool for, because when you're feeling something, you don't really wanna be like searching through what to do but this is really good because you tell it how you're feeling and then it comes back to you with the prompts."*

The prompts of the chatbot relieves the burden of searching for relevant information. At the same time, the prompts potentially pre-script responses through providing limited choices and sculpting user action, a form of modulation (Ash et al., 2018b). Landing pages of mental health apps work to hold the user's attention when they open the app which can lead to smooth or striated encounters and produce feelings of flow or frustration. Lucas, a clinician and lecturer told me about future plans for a mental health app that they developed:

> *"So that landing page will be broadened out so we can collect more richer mood data and that means that we can provide even richer recommendations as well, we can give you, we can give you like if you're already feeling great then we'll give you some positive psychology strategies but if you're feeling you know awful in these eight shades of, you know, blue, um then we can give you different strategies relating to those too."*

Lucas articulates a strong link between *"richer mood data"* and *"richer"* recommendations, emphasising the belief that the more data users provide, the more precise the content suggested will be. The changes to the landing page are due to user

feedback Lucas received and signal the desire for greater personalisation across the app's user base. Nevertheless, Lucas described tensions with these types of practices in the context of digital mental health. There is currently a more *"restricted"* app landing page which was an intentional design feature. It gives fewer options in terms of mood rating because if a user is feeling low in mood, the app developers do not want to present the user with too many options as there is the assumption that this would deter engagement. The user needs to be 'hooked' in the moment to proceed with using the app. The app takes part in the cognitive work by filtering the options. Individuals working in research and development and young people who use apps spoke about filtering as important in digital mental health technologies because users may be experiencing lack of motivation, low mood, or indecision – as Nisha describes above. At the same time, Lucas tells me that they want to give enough choice so that they can *"cater to all emotions and mood states in between"*. Lucas describes a fine balance between providing categories that users must 'fit' *into* or to provide too many options and lead to overwhelm, closing the app and disengagement. The filter creates an experience through which the classification may change how the user thinks of themselves. Or in psychoanalytic terms of projective identification (Sedgwick, 2007), the app projects categories into the user, and the user becomes such categories. The app needs to *suggest* and *filter* to ensure the user is held in the digital 'therapeutic' relation. The future data collection practices that Lucas describes may circumnavigate the need for users to make such choices at all in the future, through the use of more advanced tracking and algorithmic mechanisms to anticipate users' movements, desires and actions.

Natural delivery, context and risk

Similar to the way that therapists or practitioners draw on the context of an individual, which they learn over time, when some mental health chatbots make suggestions there is a process through which it delineates context. In the 'walkthrough' follow-up interview with Nisha where we discussed screenshot images and videos of a chatbot, Nisha was curious about the different responses:

> *"There's quite a few options there and I wonder, I wonder what it would look like on like a flow chart. You know, if you said, 'pretty good'* [selected the option 'pretty good' on the chatbot]*, we've seen what they do when it said, 'pretty good' and I wonder what like the other options would look like? Um especially, 'I wanna reframe my thoughts' or something like that."*

This curiosity about alternative options poses the question of what is included and excluded in the making of personalised responses in a mental health chatbot. For Lury and Day (2019, p.17) algorithmic personalisation 'describes a mode of numbering that involves forms of de- and re- aggregating, in which a variety of contexts are continually included and excluded'. They denote this as a *pathway* of 'a-typical individuation'' and argue in relation to recommendation algorithms, the trajectory of the pathway is not set in advance but is 'in response to contexts that emerge in the making of a path' (Lury and Day, 2019, p.17). These algorithms continue to 'learn' in action, whereas the chatbot Nisha commented on is less advanced and most likely pre-scripted. Still, young people interviewed discussed how their data was being used to formulate responses. In the follow-up 'walkthrough' interview, Charlie told me:

> *"... one thing that I do often think about with these apps, is to what extent is all of this data just kind of staying on my phone in my device. I can't remember if I talked about it last time, there was I think it was the* [anonymous] *app that was for managing anxiety and different thoughts. And in between it would say write down some of these things. Write down some examples of this. Write down some examples of that. And it wasn't clear at all to what extent that was then just being deleted, and it's just, well, you know, you've got it, you've typed it out now, that's the kind of cathartic bit. Or whether it's, we're now extending this, it's all the for greater good, but we're going to collect everyone's responses and see if there are any sort of themes, then we can tailor everyone's experience to that. But not kind of being told that it's being collected and stored in some database somewhere."*

Charlie identifies two purposes of inputting data to mental health apps. Firstly, an *expressive* (*"cathartic"*) therapeutic practice and secondly, to contribute to a dataset,

assumedly for personalisation and recommendation algorithms to be trained on. AI and pathways were also discussed by Richard, an academic researcher who researched mental health chatbots:

> *"... a lot of the chatbots out there use like pathways to work out what, based on your responses which is their next response rather than giving you a personalised response to something, it's something that's already been pre-scripted, so it feels a lot less natural in terms of delivery."*

The chatbot Richard worked on, however, pulled responses together, so that when a user communicates, the chatbot responds based on the users' previous responses. This is what young people interviewed often said they want, for the chatbot to not use 'pre-set' answers. The chatbot gives a sense of human feeling when it can deviate from the script. Layla, a volunteer at one of the emotional wellbeing services, discussed this 'human' capacity as *"uniqueness"*:

> *"...do you know what it is as well, it's like that uniqueness, you know that app they're saying the same to everyone else. But with actually speaking to a person that conversation, yeah it might be like if you're speaking to a therapist, yeah, they might ask the same question, but their response is gonna be different because it's tailored to you, it's unique to you so I think that personalisation, that uniqueness, something you can't get online."*

The notion that the response will be different, unique to each user, suggests less control in human-to-human mental health support or therapy and more space for personalised interactions. Another central part of understanding and empathy is context. Returning to Nisha, who was curious about other chatbot responses, what technical *contexts,* as in, other data, does the chatbot encounter when offering a reply? Nadia, who works in a clinical role at a digital mental health company, spoke about the process of checking that the chatbot picks up key words, particularly around risk:

"... trigger words and initially when I think we came on board it was words, now we're looking at statements as well. So, and also a combination of... so let's say you write something in one line and then go on and then another line and if it picks up three trigger words together in isolation it might not mean anything but if you're, if you're kind of saying three different words that might add up to a, a kind of a crisis point. So, we're trying to build in all of that kind of stuff as well, not just single words, but often people do or phrase, common phrases, but actually trying to make the chatbot intelligent enough to be able to kind of go OK in the last few lines you wrote this, you wrote this, you wrote this, 'are you OK'?"

Nadia talked me through the process of training the chatbot. The discussion gives a sense of the semantic patterns and importance of distance (nearness/farness) of words from each other. It indicates a mode of technical 'intelligence' that reconfigures conventional ways of spotting 'warning signs' of people experiencing mental distress. The ways that bodies become attuned to changing dispositions and how to plug this intuition into the chatbot, *linguistically* – emphasises a disembodied privileging of mental capacities for detecting distress through language, rather than connection, sharing space and embodied signals which many young people and practitioners stated are extremely important in therapeutic contexts. Critical psychologists argue that the application of AI to emotion relies on individualistic notions (Tucker, 2018). This example illustrates how responsibility (for detection) is dispersed among human and non-human computational and clinical actors. Questions remain as to who or what has oversight or responsibility. Moreover, there are doubts as to whether AI can work in mental health 'risk' management. Service manager, Amelia, told me:

"I'm not confident in AI's ability to pick up on those social nuances. And you know pick up on the use of slang, those terms, talking about a particular WhatsApp group that they're a part of, that's my concern with working with young people who we feel are higher risk of self-harm and suicide, that could be missed."

Amelia points to important contextual information that could be overlooked by AI, such as slang or WhatsApp groups. This shows how expression of risk is transformed from social and cultural factors to words and their order.

To summarise, for potential users of mental health chatbots such as Nisha, the alternative pathways offered by AI are concealed. Whereas for those working in the industry, the workings of pathways become a little clearer through research and development of chatbots (Richard) and by experiential learning when training chatbots (Nadia). People that work in youth mental health services flag, however, that descriptions of risk may not be included in a vocabulary of risk words at all, but require specific social, cultural and local knowledge (Amelia). However, in the process of AI getting things wrong, algorithms and artificial intelligence systems learn (Amoore, 2020). In the context of the chatbot Nadia trains, new trigger words may emerge. These examples demonstrate how a clinical lexicon of risk or crisis comes together in AI. For certain words to be known as triggers, they must be in proximate relation to others, which obfuscates more contextual reasons for risk and distress. New notions of risk and warning signs, reduced in polysemy, are produced. These could potentially inform future knowledges about mental health. Models and thresholds of risk are iterative productions made in collaboration with AI, not because of AI alone. Pathways thus come to be known in practice rather than in advance (Viney et al., 2022).

Personalisation algorithms: projection and transitional objects

Now, using psychoanalytic theory, I consider how algorithms in mental health and wellbeing apps *mediate* therapeutic relations. Firstly, algorithms can exhibit a 'prosumer' relationship with users, as Risi and Pronzato (2022, p.158) describe in their conceptualisation of algorithms in contemporary society:

> 'they both feed data extraction and content recommendation procedures. Thus, the relationship between individuals and algorithms is interdependent: on the one

hand, users are fed personalised content by algorithms; on the other hand, users feed platforms by sharing and producing their own content.'

This practice can be read against psychoanalyst D.W. Winnicott's (1971) concept of 'transitional objects'. Ogden (2021, p.839, original emphasis) quoting Winnicott states:

> 'I find quite remarkable the wording here: "to weave other-than-me objects into the personal pattern". So much is conveyed here about the texture of the experience of transitional objects: *they are very early encounters with what is not-me, and yet they are being woven into what is absolutely personal to an infant who is early in the process of becoming a subject*.'

Personalisation algorithms, read as transitional objects, afford users' encounters with what is 'not-me' but at the same time, they weave what is 'absolutely personal' *into* the person. Sophia is a co-founder of a self-care app with social features aimed at young people. The app is designed similarly to Instagram, for example the 'grid' posts design. Sophia described exchanges between young people on social media in connection to the values of their app:

> *"Ultimately* [anonymous] *is a place for you to develop your most…* [interruption] *…. a place for you to develop your most authentic self, over time, and so we want the algorithm to support that. Um and we see strong evidence of this from our SMS platform, but also just in the way that young people talk about algorithms on social media, right, like "I did it for the algo", "I liked it for the algo", you know there is this sense of a relationship that they have, it's very toxic relationship….we've talked to thousands of young people about their experiences currently and what they want, that it is a toxic relationship that they're always trying to catch up to."*

Sophia wants the algorithms in their app to hold the user and guide them to their *"most authentic self"*. Sophia describes the *"algo"* as a transitional object for the user. The idea of *"doing it for"* the algorithm, engaging with content, for the specific purpose of refining

an algorithm also suggests an awareness of the specific ways that personalisation algorithms *perform* (Parisi, 2013), but also *project*. There is an intersubjective dimension to the process of projective identification: 'projector and "recipient" enter into a relationship of simultaneous at-one-ment' (Ogden, 1992, p.618). Increased engagement with personalisation algorithms, liking posts or watching reels for example, will, purportedly increase the specificity of the algorithm: it becomes more 'like-me' than 'not-me'. In this process, other-than-user (or me) objects (such as data) are woven into the algorithm's personal pattern. However, there is a key difference to other transitional objects. The archetype transitional object is 'the blanket'. In Winnicott's work, the blanket is an early object of attachment that provides security when the Mother is not available (Schneiderman, 2000, p.298). Algorithms, however, are not stable objects. They encounter numerous 'other-than-me' objects (Winnicott, 1971; Ogden, 2021) such as data. As well as not-me/other-than-me contributing to subjectivity, these emerging relationships across 'digital' and 'real' environments are often monetized (Day et al., 2023). There are imperceptible (molecular) and perceptible (molar) ways that personalisation algorithms become more specific. A kind of iterative differentiation process, where the user encounters numerous other subjects and objects, and distinguishes what is part of my values or representative of me and what is not. This ongoing process of bringing the 'inner world into convergence with external reality' is a part of human subjectivity that Klein theorised as ongoing and never complete (Seitz, 2023, p.364).

Rather than algorithms operating in the dark, in the 'backend' of technologies, without users' awareness, the increased public knowledge of personalisation algorithms among young people (e.g., "*doing it for the algo*"; Sophia) potentially amplifies the personalisation of the algorithm. Awareness can prompt users to engage *purposefully* with an algorithm. This can create a hyper-personalised algorithmic feed that supposedly becomes ever-more personalised as algorithms continue to present content and the user opens, selects, clicks, scrolls, swipes, likes, watches, reads, listens and engages with content that resonates with them. The implications could be an intensification of engagement with specific types of mental and emotional health content, where other pathways, for example, to alternate content, information or relations are quickly shut off.

Several of the youth mental health and emotional wellbeing practitioners at the different services spoke about the addictive, negative or "toxic" effects social media, particularly young people comparing themselves to others, creating damaging self and social relations. Platforms such as TikTok and Instagram were described by service manager Liz as addictive *"by their very nature"* and *"subliminally"* through cycles of *"scrolling endlessly"*. Orla, a young person, told me that they felt their *"bad thoughts"* were *"reflected" into* TikTok. This is not exclusive to conscious human actions; a term could be searched for once, but it returns multiple times, projecting *"bad thoughts"* back at the user. The same content coming up time again mirrored back at the user is reminiscent of the *ritornello* (or refrain; Deleuze and Guattari, 1987). In this context, repetition can have a harmful effect. Repetitive embodied and psychical sequences of engaging with personalisation algorithms and the feedback of your own data, as well as hyper-personalised feeds (e.g., "doom scrolling"), show how personalisation, as psychopolitical, produces logics and practices that act on both conscious and unconscious levels.

Sophia, co-founder of a self-care app, distinguishes their app from social media. They told me that the algorithms they developed have a *responsibility* for users:

> *"I can't speak in specific terms, but I can tell you, you know the two main responsibilities of our algorithm and I say that very intentionally, that our algorithm has responsibilities to our users and our community. Umm the algorithm, so part of it right like is ported over from our SMS platform. But the two main functions of* [anonymous] *are really as an emotional relevance engine and as an anti-toxicity engine."*

Sophia did not tell me the *"specifics"* of their algorithm or the ways in which it was trained. Thus, reinforcing the 'black box' image of algorithms. What Sophia does tell me are the specific *responsibilities* granted to computational processes: responsibilities are dispersed throughout the assemblage rather than solely in individuated subjects and objects (i.e., user and app). Algorithms are described in terms evocative of their autonomy. This arguably conceals the data, infrastructures and relations of production. Sophia says that the main functions of the self-care app are as an *"emotional relevance"*

and *"anti-toxicity"* engine. Here, mental health apps take on different purposes and the capacities of algorithms to filter become more important. The algorithm goes further though. Sophia describes algorithms as needing to understand *"emotionally and developmentally what you need".* The responsibility placed on the algorithm is weightier than the responsibility held by human workers at the app. In the interview, Sophia made clear that the people who work at the app company are not therapists or mental health professionals. If a user shares harmful content or suggests that they may harm themselves for example, the app flags to the user for them to seek professional help outside of the app.

4.5 Discussion and conclusion

Informed by psychoanalytic geographies and object relations theory, this chapter elucidated the spaces, objects and materialities of different forms of mental health and wellbeing support and therapy across in person, telephone, virtual, chatbot, app and algorithm. It explored how responsibilities are distributed among these components. Throughout the chapter, different spaces emerged: insecure spaces produced by the systems of digital platforms (e.g., email notifications); apps providing safe spaces where users feel they can confide; and the emphasis on sharing space in mental health support. Young people, for example, emphasise how in-person therapy makes it feel like "their space". Conversely, the materialities and 'backend' systems of digital mental health platforms produce digitally mediated experiences such as the stretching of space. As part of this stretching, young people sense practitioners conducting sessions with multiple other people at the same time. Systems for allocating cases also signal a certain ordering of risk. This exemplifies the need to consider digital platform systems, interfaces and their materialities as productive of specific socio-spatial 'therapeutic' relations. This is more than considering the functionality, suitability or appeal of features and extends to what these features *do* in organising digital therapeutic spaces and how young people experience these. Digital technologies do not just change the degree of therapeutic relations but also the kind.

I analysed how human connection and presence, for example, is *cut* in technological therapy and support – from telephone to algorithm. In the process of scaling interventions, certain components of therapeutic relationships are cut and split. These parts can then be put into new relations and automated. This is not to reify human-to-human psychotherapy. Nor is it to essentialise what 'good' therapy is or to say that therapeutic relations can or should only occur between two human bodies. In this chapter, I potentially stretched the word therapy and notions of therapeutic relations. But this served to highlight types of digital therapeutic encounters and the relationships that can form between human and technological components. As argued throughout, *feelings* of someone or something being there are produced by digital mental health technologies. Some young people interviewed have attachments to apps, and particular units, such as digital characters/pets in self-care apps. Digital characters/pets are looked after by users as something outside themselves, and at the same time, self-care activities are enacted to look after it. These types of self-care apps thus have a promissory charge of feeling better.

Apps and chatbots 'acting' like humans or provoking human attachments do not always make young people want to engage with them, as evidenced by Charlie wanting apps to be entirely separate to humans. Perhaps the pseudo-humanised chatbots in mental health and wellbeing apps that link to premium paid-for digital counselling platforms are scripted to indeed make users want to speak to a human instead. To pay for a service that the app company also provides or has a partnership with. In some ways, these apps and platforms create and then exploit the lack of uniqueness, context and understanding in chatbot responses. Moreover, mental health apps that utilise personalisation algorithms operate a 'prosumer' business model. The interdependent and recursive relationships between algorithms and users produce data and engagement. Young people's experiences and emotional responses to these technologies therefore should not be separated from the economic rationales of the companies that design and develop such technologies.

Bridging psychoanalytic and cultural theory, I developed how mental health and wellbeing apps, particularly personalisation and recommendation algorithms, produce *internal* object relations and processes of differentiation, for example, 'not-me' transitional objects. Lury and Day (2019, p.19) argue that personalisation seems to

provide a ‘familiar recognition’, a form of ‘knowing you better than you yourself do’. In some ways this recognition is a form of therapeutic relation. In mental health and wellbeing apps this personalisation is often without another human therapist in the loop. At the same time, personalisation constrains ‘who and how we can be’ (Lury and Day, 2019, p.19). I argued that repetitive embodied practices of engaging with personalised feeds and repetitive psychical processes of differentiation (not-me/me) could be harmful in themselves and lead to content siloes. This shaping of subjectivities underlines the need for mental health and wellbeing apps to be transparent about how data recursively feeds back to users.

Projection is typically theorised between people. In this chapter, I extended projection to digital objects to analyse relations between user, app and algorithm, particularly to examine who, or what, holds the weight of responsibility in these relations. By engaging with projection (rather than projective identification) I arguably used a more tamed (Callard, 2003) psychoanalytic concept. Projective identification, Segal (1993, p.36) notes ‘involves a very deep split, where the aspects of the self-projected into others are very deeply denied in the self’. Future enquiry could extend analysis of digital mental health in terms of projective identification. Still, this overall focus on *internal* psychoanalytic object relations contributes to analyses of modulation and digital interfaces.

The final part of the chapter introduced two types of ‘non-human’ algorithmic digital therapeutic practices: suggestion and filtering. It is often posited in digital mental health literature that lack of motivation and indecision that people experiencing depression, low mood or anxiety can feel makes it all the more imperative for developers and designers to make digital technologies engaging particularly on pre-reflexive levels because they do not, necessarily, require the user to think. Personalisation techniques are one psychopolitical logic used by developers to reduce the cognitive, embodied and time intensive ‘burden’ of searching through content; to ‘suggest’ particular techniques, tools or information to users; or to orient users’ attention to content they like or may like in the present and future. Together, these practices enhance the molecular force of digital mental health technologies such as apps and chatbots, conceptualised as powers of *suggestibility*

(or *pouvoir*). Suggestion is mentioned in the critical literature on mental health and wellbeing apps, for example regarding the power of suggestions in meditation apps (Jablonsky, 2022), but is yet to be fully fleshed out. I have shown that powers of suggestibility need careful consideration in research that foregrounds the affordances of apps (*puissance*) but has a tendency to negate their power to manipulate or persuade (*pouvoir*).

This chapter also presented an analysis of how risk is identified in chatbots and how this alters responsibilities for detection of distress. In chatbots, semantic proximity is used to denote context rather than understanding a person within their unique lifeworld. In some ways, this reflects part of Guattari's (1996a, pp.49-50, original emphasis) critique of transference:

> *'Transference:* in the continuation of the interpretive sifting and familialist [sic] regression, desire is reinstalled in a cramped space, a miserable little identificatory world (the couch of the analyst, his look, his supposed attention).'

Chatbots produce a form of 'identificatory world' of pre-formed categories. Rather than interpretive, or open to users' interpretation, they are scripted. How interpretation shifts in generative AI mental health chatbots is a question for future research. The 'supposed attention' of the analyst is particularly salient in relation to young people's experiences of digital platforms. Young people sensed this 'supposed' attention, suggested these were *"bot"* like encounters, felt unheard and no relations were built. This may be shaped by systems for allocating cases and the pressures this might cause for practitioners on the other side of the screen, or particular business models that hire practitioners to conduct multiple sessions at one time.

Although I used language of mimicry in this chapter, the modification of components of psychotherapeutic relationships are *productions* rather than representations. Apps can embody a friend (digital pet) to produce feelings of reciprocity of care and relations of attachment. The capacity of chatbots to be available 24/7 and their continual presence for the user is figured by some clinicians and researchers as an adequate replication of a

therapeutic relationship between a human therapist and a client. Arguably this transforms what therapeutic relationships might mean, at least digitally. I wonder how this availability compares to *being with* a practitioner, therapist or indeed any other person, what practitioner Jasmine described as the *"sort of dance with each other when you're reading each other"*.

Whilst I contrasted different technologies, types of support and therapy in this chapter, that are perhaps too different (different in *kind* not just *degree*) from one another, the focus on scaling mental health treatments, support and therapies suggests experimentation in research and development to distil exactly how much 'human' connection or presence is necessary. The mental health and wellbeing apps used by young people in this study largely rely on the individual to take part in self-reflexive psychotherapeutic practices. These apps are potentially more like a *medium* which Melanie Klein (1975, p.209) described as the role of the analyst. In psychotherapeutic thought too, it is the self that has the answers (Bondi, 2005). In the next chapter, I critically explore how digital technologies such as mental health and wellbeing apps *mediate* young people's experiences temporally and produce self-reflection.

Chapter five: Reflective practices, temporality and the associated milieu of digital youth mental health

5.1 Introduction

The aim of this chapter is to explore young people's experiences with mental health and wellbeing apps to understand: (1) key practices and logics at work in digital mental health and (2) how these change the ways young people engage with their mental health and wellbeing. I primarily draw on young people's descriptions of their experiences of the 'front end' of apps and use findings from interviews with researchers and developers to examine the 'back end' practices of mental health and wellbeing apps. As such, I respond to the research questions of this study by documenting how psychopolitical logics of gamification shape young people's experiences with mental health and wellbeing apps. Reviews have established that in psychological research on digital mental health one documented 'therapeutic' outcome of mental health apps with mood monitoring or tracking features is greater 'emotional self-awareness' (Reid et al., 2011; Williams and Pykett, 2022). But little has been said about how exactly this awareness is produced *digitally* or what other, perhaps unintentional, effects these practices may have. Mood monitoring involves tracking mood, symptoms, feelings and behaviours, and is part of cognitive-behavioural therapy (CBT) (Matthews and Doherty, 2011). Digital technologies, such as apps with tracking features, need to sustain long-term use to produce 'therapeutic' outcomes. I examine the use of psychopolitical gamification logics and techniques in mood tracking apps in this chapter.

Drawing on literature presented in chapter two, I conceptualise users, smartphone apps and the data they produce as part of a social, psychological and technical 'associated milieu' (after Simondon, 2017, p.59). Milieu makes us consider 'experience *in the making*' instead of pre-formed (Tucker, 2018, p.133, original emphasis). Apps, as digital objects have rhythms: pre-programmed and sometimes algorithmically reflexive – these disturb the temporal rhythms of humans that use them. The apps that young people in this research use do not yet have capacities (in the same way as humans) to communicate embodied signals but give other 'cues' for the user to self-reflect. To explore 'cues', I

critically engage with models of habit formation in health psychology (Wood and Rünger, 2016; Marien et al., 2018; Verplanken 2018; Harvey et al., 2022) and 'internal', 'event', 'reward' and 'time' cues. These cues populate the 'associated milieu'. I show how repeated acts of mood tracking (which I take to constitute practices), produce 'pre' and 'self' reflective digitally mediated practices that reinforce the associated milieu. Literature on digitally mediated experience, affect and habit in human geography draws my attention to the 'pre-reflexive' aspects of encounters with mental health apps. Whereas 'self' reflexive is informed by psychoanalytic and psychotherapeutic understandings of emotional life. I theorise these different aspects (i.e., 'pre' and 'self') as ways in which humans experience life as multi-layered (Buchanan, 2021a, p.48). I take the pre-reflexive as embodied, habitual or automatic behaviours that occur below consciousness. Practices of self-reflection, on the other hand, tend to be personal, emotive, and meaningful, and require a form of introspective interpretation or self-analysis. In psychodynamic talking therapies, reflection and greater awareness can be achieved through the client talking to a therapist over a sustained period. This relationship creates trust and a therapeutic alliance, I consider how this figures differently in the self-reflective processes that users enact, by themselves, with mental health and wellbeing apps.

The associated milieu is formed by recurrent and expressive components such as personalisation (feedback, algorithms), as detailed in the previous chapter. I show how spaces for automation are opened by exploring socio-psychological practices (e.g., reflection) and through analysing young people's experiences of using mental health and wellbeing apps. The cues and practices I identify in this chapter are a mixture of elements that mediate the 'technical being' (i.e., user) functioning in relation to an associated milieu (Simondon, 2017). Overall, this argument attends to the aforementioned gap in the literature on self-tracking and digital mental health to document psychical changes and unpack reflection via mood-monitoring interfaces empirically. It also contributes to a critical posthuman geography, I theorise how digitally mediated reflective practices produce 'auto-affection' (Derrida, 2011), where the individual and app become both subject and object, taking on the role of the *medium* of the psychoanalyst (Klein, 1975). This extends arguments made in the previous chapter about 'not me/me' practices. I use the findings set out in this chapter to argue that digital governmentalities still produce

forms of reflexive humanistic molar subjects, rather than a complete shift to governance of behavioural profiles (Dammann et al., 2022), data points and dividuals (Deleuze, 1992).

The chapter has two main sections. Firstly, I detail how mental health and wellbeing apps prompt users to 'check in' repeatedly and explore the role of cues in pre- and self-reflective practices. This highlights how acts become practices through repetition (repeated sequences; chapter two) and can become sedimented temporally in the associated milieu. The second part continues discussion of repetition, how technologies act as memory and examines temporalities of reflection including processes of evaluating and analysing. As part of this, I attend to how meditation apps intervene in sleep and continue to shape users' temporal experiences, after discontinuing use (Clark et al., 2022). The discussion and conclusion summarise the arguments made and shows how Derrida's (2011) concept of 'auto-affection' presents a novel way to understand relations between subject (user) and object (app) in digitally mediated reflective practices.

5.2 Checking in

The term 'checking in' is part of contemporary mental health discourse and therapeutic practice. Guidance published by charities suggest *when* to check in with a young person, for example over a meal, when you notice a change in their behaviour or when taking part in an activity (see Young Minds, n.d.,c). Repeated check-ins can have a temporal effect. In a study of mental health service provision, Kiely (2021, p.724) explains that for one of their interviewees, Tom, the 'check-ins' he received via phone calls whilst waiting for IAPT did not bring much therapeutic benefit but 'the regularity of the calls served to mark time. The monotony of his waiting was disrupted, and he was reminded that the time of treatment was coming closer' but 'the IAPT treatment never arrived'. Checking in thus punctuates the experience of time in particular ways. In this case, increasing the pace of the felt duration of time as moving towards a seemingly graspable treatment (IAPT) which never arrives.

Checking in is also part of 'self-care' discourses. An article on the website of meditation app Calm (2024, n.p.) states that 'checking in' with yourself is important for 'active engagement with your inner world' and helps individuals to: control emotions, build self-compassion and reduce stress, anxiety and 'emotional reactivity'. Checking in with yourself involves reflecting on how you are feeling. At the same time, checking smartphones or other devices is also common habitual practice (Clark et al., 2022; Markham, 2023). Many people check email or 'check in' with social media numerous times a day (Buchanan, 2021b, p.179). Geomedia platforms vie to attract most geolocated "check-ins" – constituting "check-in wars" (Frith, 2022, p.2520). Checking, then, is material of attention economies. For Buchanan (2021b, p.180):

> 'Unmediated time, or what I have called "pure time" because it is time experienced without the mediation of a digital device (in any of its manifestations), has all but vanished from our lives. And let's not kid ourselves – this has been the goal of every new piece of information technology since the invention of writing. As Fredric Jameson argued more than two decades ago, the final frontier of capitalism was always consciousness itself and that moment has arrived.'

Many mental health and wellbeing apps have features to check in, record and store mood data. As far as I am aware, 'checking in' as a practice mediated by mental health and wellbeing apps has not been substantially unpacked. It is important do so because checking in materially (e.g., notifications) and discursively shapes how young people use apps. In this section, I examine 'checking in' as a digitally mediated practice and argue that checking in with mental health and wellbeing apps (such as self-care, meditation, mood tracking apps) can result in self-introspection (conscious) and pre-reflective (unconscious) practices. I posit these as iterative practices rather than separate. This is because states of consciousness cannot be separated from one another but need to be conceptualised as a multiplicity (Ansell-Pearson, 2018). Acts of checking in over time and in response to cues (Harvey et al., 2022) become practices that are less dependent on conscious ideation. The associated milieu as a context becomes a cue to 'check in' and reflect.

To give a sense of the ways that mental health apps check in with users, Nadia, who works in a clinical role at a digital mental health company, walks me through the capacities of the mental health chatbot app that they train, telling me what it does:

> *"So, what does it do? It talks to you. It allows you to talk at any time, which is great. So, at 2:00 o'clock in the morning, if you can't sleep it, it can help, it can have a conversation with you when everybody's asleep. Um or sleep stories. There's lots of relaxation on there. So, there's lots and lots of tools on there that people find helpful. Or if you want to talk, that might also be the chat, the chatbot conversation, which is quite helpful. So, in terms of what does it do? It provides lots of tools, and it provides conversation so depends on what you were needing at that time. It can do any of that. It also checks in with you in the morning. It checks in with you in the evening so feeling heard in some way or checked on is quite nice for people who are, who are maybe isolated or isolated in their mental health, and so that checking in also provides some, some regular kind of continuity of support in some way. Umm, but you can put your check-ins at any time, you can access it 24/7, so there's … it's a neat little product in that way."*

The chatbot app checks in with the user at set times but is also available for the user to check in with them 24 hours a day, seven days a week. The continuity of the check in appears to attempt to mirror talking therapy or more traditional mental health support arrangements. Conventional therapeutic practice in talking therapies is for a 50-minute session to occur at the same time and interval (weekly, fortnightly etcetera.) for a period of time. The therapist and the client enter into an agreement with the aim to form a 'therapeutic alliance'. There are usually fixed spaces (e.g., an office), temporalities (e.g., appointments) and boundaries. This structure is part of the therapeutic practice itself. Conversely, time in the chatbot is open-ended, the chatbot is 'available' for the user 24/7. The next part explores young people's experiences of 'checking in' with mental health and wellbeing apps.

Internal, time and event cues of the associated milieu

Checking in via mental health and wellbeing apps frequently occurs in response to push notifications, these notifications signal for the user to engage. However, not all users rely on notifications from apps to 'check in' with themselves. Steph describes 'internal' cues and how their use of a mood tracking app has changed over time:

> *"Um it used to be I checked in as many times of a day like whenever I could because I kind of consciously try to be aware of my emotions and then every time that changed, then I would check in so like it could be like up to 20 times a day. It would be like good, bad, like that. And then in the last like half year, or year, or so, it's just been one, it's once a day, twice a day, if I've done something drastic, but it's usually like I can feel like a significant change and I do, but now because I only use it for journaling and stuff like that then it's just kind of at the end of the day or in the middle or something like that, I just set a minute aside and just write it then."*

Steph previously would check in as much as they could with the mood tracking app, moods appear as short in duration and variable: *"it would be like good, bad, like that"*. Steph used the app whenever they felt *any* shift in mood – rather than following cues, for example notifications from the app to engage at specific times. The 'cue' in the example given by Steph is thus 'internal' or 'deliberate' (Harvey et al., 2022, p.576). Steph describes intentionally trying to be aware of their emotions. Awareness of emotions, thoughts, sensations and feelings are part of mindfulness practice which emphasises the temporality of the 'present moment' (Coleman, 2022). Steph's conscious decision to use the app every time they felt a change in mood suggests a different form of self-reflection though, one that is repeated multiple times throughout a day, sometimes *"up to 20 times a day".* Steph and the associated milieu of the app are hooked in a 'constant state of data production' (Lomborg et al., 2018, p.4603). Over time, Steph stops recording mood in the app so frequently, potentially indicating that this once intentional practice has become more of a habitual pre-reflective practice. Steph now only uses the app for journaling which suggests that the tracking feature is an add-on to this habituated activity, reducing the frequency of check-ins. Durations of engagement potentially extend because of the *association* between mood tracking and journaling – producing less frequent but longer

periods of self-reflection. These practices are consolidated over time so although Steph's mood entries are now less frequent, responses to cues (conscious and un/subconscious) are potentially more durational. The reflective processes extend and continue in the associated milieu, without the need for the cue from the app – the tracking becomes habitual, and to a degree automated. This highlights how digital mental health technologies can continue to shape reflexive practices over time.

For young people, such as Natasha, who also uses a mood tracking app, notifications work as 'event-based' cues (Harvey et al., 2022). Natasha uses the app as soon as they receive a notification: "*…yeh just when I remember it and then when it pop up, the notification, then I'll use it*". For others such as Rose, notifications do not lead to instant use but act as reminders to engage with a meditation app:

> *"… everyday they'll send like little message, it might not necessarily say come and meditate, but it will say, it will give a little like keep tip or something like that, which is quite nice and then it kind of reminds me it doesn't always make me really use it any more, I don't think … because then those notifications come in the day I don't really use it as much in the day anyway, so I don't think it changes it, but I like them."*

Jack, similarly, to Rose, describes not using a self-care app immediately after receiving notifications:

> *"… it notifies you when you should sort of um, what's the word? Sort of check in with yourself and um just sort of yeah, check in on your mood. Um and that sort of thing so … most of the time, I sort of leave them till later."*

In practice, some young people do not respond to notifications straight away nor do they feel that notifications increase or decrease their use, but they still act as reminders in the associated milieu. As Rose states, the daily notification works as a check in and *"reminds"* Rose to meditate or gives them a *"tip"*. This does not necessarily result in increased use because they tend to use the app according to an established temporal

routine, in the evening and at night. If the app was more attuned to Rose's routine it may remind them in the evening, or for Jack, later in the day. But perhaps the app notifies Rose in the day to encourage them to increase their use of the app, extending use to daytime as well. Notifications with tips or reminders populate users' everyday milieus and associate with stabilised cues (event, time, reward).

In psychological models of habit, the potentiality of establishing a new habit (e.g., meditating for 10 minutes per day) is more likely if tied to a 'stable cue' (Wood and Rünger, 2016, p.306), that is, something you are already undertaking routinely. Findings from interviews with researchers and developers suggest that the process of associating a new habit with a stabilised cue informs the design of some mental health and wellbeing apps. This exemplifies the explicit application of psychological models in some mental health apps which is not surprising, but the mechanisms that are used to keep users 'hooked' make it difficult to abstract the therapeutic rationales from economic and technological logics of 'hooking'. Mia a researcher at a self-care app describes a *"hinging event"* and outlines how it works within the app:

> *"... they will pair that with what we call, 'hinging event' which is an action that they are already doing automatically so let's say brushing your teeth so it would say um and then, well, OK, so going back, so brushing your teeth, so they pair that to that so let's say I set a habit of walking 10 minutes after brushing my teeth and then you set the reminder what time you want* [anonymous] *to tell you so at 9:00 AM. And that's your habit."*

As opposed to individual users working habit formation processes out themselves, or with a practitioner, the app takes on this role. Mia told me about the *"intelligence system"* of the app, it learns from the users what habits they would like to develop. Through this process, the service learns how the respondent is progressing with habits and whether they require any intervention – a prompt from the app (e.g., a notification), or contact from a human worker in the service (e.g., arranging a phone call) – in this case, there are other human actors in the associated milieu, monitoring the suggestions of the app and the user's progress. Mia said that users *"have a weekly review"* to see what habits are

"working" and whether *"tweaks might be needed, some experimentation"*. This app is designed as a *self*-care app, but there are still human workers and technological mechanisms (e.g., *"intelligence system"*) at work in the development of habit formation. Mia tells me that once a habit is complete, such as a *"breathing habit"*, the user is rewarded with a *"confetti"* animation (unit). The confetti signify the completion of the habit. This illustrates the layering of various cues: time (notification), event (teeth brushing), reward (confetti animation) and new event – walking after brushing teeth. The aim is to make these habits automatic, to become activities that do not require conscious thought, action or response. I examine reward cues in greater detail in the next section.

"Keeping streaks": reward based cues

Temporalities of mental health and wellbeing app use are shaped by reward-based cues (Harvey et al., 2022). The use of these cues, in concert with others identified (e.g., stable, internal, event, time) are elements of models of persuasive design. Nir Eyal (2014) developed the 'The Hook Model' which has four characteristics to design 'user habits':

> '…identifying external and internal triggers of behavior; encouraging behaviors via the lure of reward; offering rewards at variable internals to generate a craving; and incentivizing the user to invest in the product/service to improve their experience (Eyal 2014, 4-7)' (cited in Beattie, 2022, p.343).

> *"I've got like a streak for like 700/800 hundred days now, I use that very regularly."*
> (Steph, young person)

Once a mood tracking habit is established, the gamified feature of *streaks* can result in continued use over a longer period of time, in Steph's case over two years. Streaks are usually cumulative days in which users have recorded their mood. It's not only the 'micro-nudges' and 'small punctuations' of 'singular, yet, addictive, micro-events' that 'hook' users, as Lomborg et al. (2018, p.4603) state, but it also appears to be the continuity and repetition of rating mood that keeps young people using these features. Streaks give insight into why young people continue to use mental health and wellbeing apps.

Arguably this is not wholly reducible to ‘external’ and ‘internal’ triggers such as cues, or personalisation mechanisms (chapter four), but in the case of streaks, it is “keeping” the streak, maintaining the continuity of the streak itself. This section details, for some young people, the streak produces affects such as satisfaction and motivation which reflects findings of Lomborg et al. (2018), but what young people also indicated to me is that they develop *attachments* to streaks. Streaks become objects of importance (Anderson, 2023). Moreover, streaks could have a role of enabling associations between mood, temporality and space to be made. In that, as the user reports and tracks mood and activities (to keep up the streak) the more data is created. Streaks are therefore part of the assembling and disassembling processes young people make with emotion and mood data (Flore, 2022).

Some of the young people interviewed suggested that they feel pressurised to log in and provide a mood rating to keep a streak. But also having the streak is a *“safety net”* (Nisha, see below), again demonstrating an attachment to streaks. In the follow-up ‘walkthrough’ interview, in response to an image of a mood tracking app, Nisha said:

> *“I've sort of like noticed is that if it's not,* [anonymous] *is kind of, is awkward and sometimes it like, it puts pressure to just log in and just do it for the sake of it but I find weekly streaks really good because then it's like maybe one, maybe once, because I really like keeping streaks right so maybe once in the week, I will just go on it for the sake of it. But then, because I have the rest of the week and I haven't done my streak, but I can, I still have that flexibility so then the rest of the week, I will. Like, go back to it. But then I also have that safety net of like still having the streak.”*

If apps use a daily streak model, there is the potential for the user to feel pressure and to just log in to the app to report mood to keep up their streak which suggests little introspective reflective practices. The pressure to report mood daily also shows that the app rewards daily engagement; valorising types of temporal and affective experience (Davies, 2017; Abdelrahman, 2023). Similarly, to Nisha, Steph mentioned the allure of keeping streaks in their mood tracking app and how it encourages them to continue rating their mood and complete previous missed entries:

"Yeah, it definitely does. It didn't until like until I got around two or three months' worth and then I saw it had, like you've been doing this for 90 days and I was like, "oh, wow". And yeah now, even if I, even if I do forget it for a day then I go back and I do the day before so I can kind of keep, yeah keep the streak or something or it encourages me to if I don't want to write like a full journal entry or something, I just tap the emotion of how the day's been going and like taking like two seconds or something but it does always encourage me. Yeah, I would always check in now with that because specifically because of the streak, I think if it wasn't there, I'd kind of, one day I wouldn't be feeling like it and then I'd just kind of stop."

These examples signal that users do not always rate their mood 'in-the-moment' but miss days and return to complete the entry. The streak works to retain the user by encouraging them to go back and complete these missed entries. Self-report mood tracking in mental health (including traditional pen and paper mood tracking and journals) have been critiqued for relying on *past* reflection of mood which is often deemed to be fallible. This is one of the impetuses for the turn to Ecological Momentary Assessment (EMA) in digital mental health research which allows for 'real-time gathering of information' (Van Daele, 2021, p.47). In EMA, participants are repeatedly signalled to report mood usually on a smartphone, in their own socio-spatial context (e.g., outside the lab or clinic), at various times of the day (random or set). This practice has most likely informed mood tracking in commercial mental health and wellbeing apps (such as the ones discussed in this chapter).

Streaks are also used to record how many days user's login to apps. In the self-care app that Jack uses: *"It has like a, you know, you've logged in three days in a row or have been, however many times, um gives you like different rewards for doing that?".* In this example, Jack is rewarded for logging in to the app on consecutive days – this app is more interactive than the app that Steph uses (mood tracking) and involves looking after a digital character/pet. In this self-care app, points reward users, seemingly to increase the use of the app. Yasmin, a young person interviewed, also uses this self-care app and describes how points (reward-based cue) motivate them to wash their face in the morning:

> *"I think it's cute and I just, it does, I don't even know why, I feel like a fool, but it does, but the fact that I get points for it and I can use them to look after my pet does motivate me to like just tick it off and say and do it and it's a nice little, like some of the ones I do and some of the little goals I do anyway like, well actually to be fair when I first got it, I wasn't like washing my face every day and stuff, well, I was, but like, I wouldn't do it in the morning, which is ideally when I would like to do it but then I made more of an effort and it became my routine. But some of the things like each day, like complimenting someone or whatever I wouldn't do. Or I wouldn't maybe like make the effort to do it, but then it reminds me to do it and that and that also brings me a bit of happiness in my day so yeah, I like that one as well."*

Although Yasmin uses a different app to the one that Mia works for, Yasmin's description implies the use of *"hinging events"* and psychological models of habit formation in the development of the app. In comparison to mood tracking, where the streak is built and maintained through consistent and singular inputs of data (e.g., mood rating), the app that Yasmin uses has more complex gamification practices. Yasmin can use the points to look after the pet and this motivates them to use the app. Yasmin receives points for ticking off particular goals. Assumedly the goals could be ticked off regardless of whether a user undertakes the activity the app suggests, but Yasmin explains that they do partake in these activities, such as washing their face in the morning or paying a compliment to someone. These activities or goals can therefore become associated with receiving a point and therefore looking after the digital pet. This exemplifies how mental health and wellbeing apps can encourage users to incorporate new activities into their day-to-day routines.

Jack, who uses the same app, described it in the following way:

> *"It's more like an animated like cartoony character that you look after. And the more you like check in with your mood the more it sort of grows and it like this, it can explore different areas. So, it's more just like it prompts you to do more like the self-reflective things in a way which can help your character grow basically."*

There is a dual purpose: to check in with the self and reflect on the self, and to check in on the digital pet/character. There is an accountability to looking after the pet, and the self, as Jack describes:

> *"It's more like the sort of accountability of you kind of looking after like a little character which is probably a bit sad but. Um I just think that it's something which is a little bit of a sort of on like a streak sort of thing. So, I don't wanna like lose track of looking after this I spose that I've got to myself."*

Accountability is modulated by the streak and Jack not wanting to *"lose track"*. The reasons why both Jack and Yasmin desire to check in with the app are arguably because of the relationships they have built with the digital pet/character in addition to the cues in the associated milieu. The motivation Yasmin experiences to enact 'self-care' is linked to relations of care for others, without an object of care, would Yasmin feel motivated to enact these new habits? When Yasmin reflected on this activity in the interview, they told me that it makes them feel *"like a fool"*. Yasmin is aware of the gamified techniques at play in the app but is still pulled by the allure of the object, that is, what it expresses (Ash and Simpson, 2019) I argue, not solely because of internal neural reward mechanisms but because of relations of attachment (chapter four). The accountability of looking after the *"little character"* in the app is the reason Jack gives for wanting to continue using it. Jack also commented that it might be a *"bit sad"* that the streak and the character make Jack want to use the app. Jack and Yasmin demonstrate forms of attachment to these digital pets/characters which are kind of uncanny objects that relate to themselves and notions of their own subjectivity. I argued in the previous chapter this is through personification, projection and transference (Klein, 1975).

Some interviewees such as individuals working in digital mental health research and development are sceptical of the use of gamification in digital mental health technologies, pointing to neurobiological arguments of depression (that reward processing is dysfunctional; Admon and Pizzagalli, 2015) but also the potentially unethical nature of using gamification techniques to engage people experiencing mental distress. Lucas, a clinician and lecturer, told me in relation to the mental health app they developed: *"...it's*

about making it as accessible, as engaging as possible without making it too um gross [laughter] *... or without you know relying on some sort of addiction loop".* Richard, an academic researcher in digital mental health, is uncertain as to whether stimulating reward mechanisms via gamification would work for people who are feeling depressed:

> *"I don't feel that gamification would work with someone who's feeling depressed, because it's kind of this reward mechanism, this idea that we can get someone hooked on something in order to sort of win, or to you know, in some way get some sort if buzz out of it."*

Jacob, a clinician who invented a wearable device that aids meditation told me:

> *"... everyone obviously tries to, particularly with younger people, tries to use gamification to increase engagement, etcetera. And it probably does increase engagement, but does it increase behaviour change? And I think that's a lot less clear ... You know, it's not hard to make something, and this is what game companies spend a lot of time and energy doing is to make things addictive. But you know, a dopamine driven reward response can get somebody you know, can get somebody using the app but with that, but actually producing a negative feedback cycle as opposed to a positive one. So, I think that's a genuine issue."*

The addictive loops of gamification techniques across digital technologies throw up ethical issues, are these feedback loops harmful or is it ethical to prompt these kinds of repetitive behaviours? In one respect, the examples from users' experiences detailed in this chapter support the notion that digital technologies 'gamify' life and increase motivation. But the role of looking after the pet, for example, does not neatly fall into a behaviourist or psychological schema of habits as responses to cues in associated milieus. As I have argued, the role of attachment (chapter four) in the maintenance of user's engagement in mental health and wellbeing apps needs to be considered and the ways in which this modulates therapeutic relations. As well as this, the quotes above point to the dynamics of engagement and the different interests at play: those of the app designer (and company) and the interests of the user. Moreover, the use of gamification techniques in

mental health and wellbeing apps arguably result in increasingly *repetitive* reflective practices which could lead to adverse effects.

5.3 Temporalities of reflection: storage, analysis and repetition

The previous section showed how cues in the associated milieu, including features of mental health and wellbeing apps (e.g., notifications and streaks), can produce desires to track mood and to engage with apps. This next section firstly argues that the capacity of mental health and wellbeing apps to record and store data enables repetitive 'self' and 'pre' reflective practices and generates associations between past, present and future mood, and ideas of the self. Associations in some sense produce 'self-images' – ideas of the self and these are 'modes of auto-affection' (Anderson, 2022, p.160). Digital technologies act as personal sites of memory that have a futurity: actively moulding what future moods become and the 'control' of mood (Davies, 2017). Later in this section I suggest what happens *after* mood tracking, or selecting a sleep soundtrack from a meditation app, for example. I argue that to understand how mood tracking, self-care and meditation apps affect users by changing the ways young people engage with their mental health, the repetitive nature of practices such as mood tracking and responding to notifications need to be better understood.

Mystic writing pads?

As explained in chapter two, philosophers of technology such as Bernard Stiegler (2010a, 2010b) argue that technology is a form of memory. Mental health apps segment, represent and visualise mood data in various ways. This data visualisation is a way in which reflection is produced in mental health apps (Caldeira et al., 2017). Apps that store mood data are somewhat analogous to what Freud (1964, p.227) discussed as the 'mystic writing-pad': '…the surface on which this note is preserved, the pocket-book or sheet of paper, is as it were a materialized portion of my mnemic apparatus, which I otherwise carry about with me invisible'. Clough (2000, p.28) notes that Freud claimed the mystic writing pad as the most suitable metaphor for the 'unconscious memory', a representation of memory (Halpern, 2014). The experience of recording mood similarly to scheduling

tasks or events on a calendar ‘is a way in which significance is defined’ (Wajcman, 2019, p.1284). In this section, I develop how processes of recording and storing mood gives it significance and modulates pre- and self-reflective practices.

Mental health and wellbeing apps as a form of ‘technical memory’ or tertiary retention (Stiegler, 2010a, 2010b; Ash, 2019a, 2020a) support practices of knowing and archiving the self. This is more than representation or inscription – digital technologies and their mechanisms process, store and represent, and re-present data to the user and others in varied ways. As Mia described earlier, data about *“hinging events”* is stored for the *“algorithm to work and like feedback on”.* Ancillary data about habits, for example what has been achieved and what has not, feed the algorithm and shapes future decisions. These forms of memory are more anticipatory and future oriented (Hui, 2016) emphasising their *digital* nature. Digitally mediated memory making, and the intricacies of digital memory storage have been recently unpacked by sociologists (see Jacobsen and Beer, 2021; Jacobsen, 2022a, 2022b). However, the connection between digital mental health technologies, memory, reflective practices and *therapeutic* relationships are yet to be explored.

Some of the young people interviewed explained that they started using mental health and wellbeing apps for storage. Ashley who uses a self-care app told me: *“I just thought would be a good place to um store any feelings or updates on my life and just a place to sort of write things down and it's portable. It's not like you have to write it”.* The app, similar to a diary, is a place in which Ashley can store their feelings, a ‘repository’ or ‘data log’ (Lomborg et al., 2018, p.4602). These practices share similarities to the ‘quantified self’ movement and the older practice of personal computing ‘lifelogging’ (Lupton, 2013; 2016a; 2017). The onus for Steph, who uses a mood tracking app, is not only being able to remember but to actively become more aware:

> *“I think I started using it firstly for like my memory, I found that I just couldn't, I never thought back of what I did in a day or like anything like that so to kind of be aware of, just be aware of what I've been doing and also like for achievements or like I can write down if I left the house today or like something like that and it's*

quite nice to write down. And also like just to keep track of my emotions kind of get going out with like days [inaudible]*, finding out what days were good and bad and trying to like link up uh trying to link up and track for things like that, that's definitely changed, though I kind of I clicked like all the buttons of like just amazing, good and whatever and then change- and with like with the family, friends and what I've done and stuff and then now I don't click, I just click the emotion button and then I type in like a little journal entry. Yeah, I use I use it now just like keeping track of what I've done, and I use it now as a journal. I don't really. Yeah, I've kind of figured out kind of everything's a lot more constant now so I don't really use it for trying to remember what I've done or to kind of encourage my memory, I kind of yeah achieved that."*

Similarly, to lifelogging, Steph documents and memorialises (Kitchin and Dodge, 2011) their achievements via the app and keeps track of their emotions. Data can also be used for *"finding out"* and to *"link"* good or bad days and to track for other things; to make associations. Practices of 'active' lifelogging via the app do come to a stop, however. Steph feels like they have achieved the purpose that they set out using the mood tracking app for: to record, become aware, associate and remember – to reflect and combine events, activities, times, people and mood. Steph now only uses the app for journaling as they have achieved what they set out to do with the app – to *"encourage"* their memory. In this instance, mood tracking apps arguably work as sites of cultural memory rather than future orientation.

Mood records are not only stored in apps. Young people still use other forms of technology, such as handwritten diaries or journals. However, there are differences between the two. In the first interview with Nisha, I asked them about app-based journaling (e.g., mood tracking) and 'physical' diary journaling:

"… the main difference is who's guiding it I think, physical stuff I'm guiding it and I kind of know what's, I know that I can change it and stuff but like apps, it's the advice that's guiding me so…"

The advice of the app actively guides Nisha potentially reducing their autonomy. Advice from the app is multi-layered involving actors and mechanisms – computational, software, code, and programmers, for example – which could draw from myriad knowledges and therapies, evidence-based or otherwise. The materiality of the journal, as a physical book, allows for amendments, annotations, crossings-out, scribbles, or ripping the paper out altogether. Or as Nisha puts it*: "I know that I can change it and stuff*".

In the interview with Jack, I asked whether they reflect during rating their mood via the self-care app or after, they told me: "*It's sort of both I spose, um yeah, I guess it's like during and afterwards, but probably more during, I would say, but afterwards it helps me feel a bit more, a bit calmer and a bit more relaxed."*. Similarly to others, Jack reflects in the moment and afterwards. As Lawlor (2009, p.17) notes on 'auto-affection': 'The temporalization of auto-affection means that the present moment involves a past moment, which has elapsed and which has been retained.' In the follow-up 'walkthrough' interview in response to screenshot images of mood tracking apps that have the option of recording activity, Nisha indicated that looking back feels more important than in-the-moment reflection:

> *"… 'cause when you look back on your journal and you see that you feel happy when you were doing this with these people in this place, it makes things clearer, I think maybe in the moment you don't find it that useful. But looking, I think it's something to look back on and it's worth recording where you were…"* (Nisha, follow-up interview)

Nisha further elaborates that looking back and recognising *"cycles"* (for example around *"student life"* and exam stress) can mean that Nisha is able to question and keep a note of what they may do differently in the future. These notes are records of Nisha's reflections on past and present experiences and notes for their future-self. Nisha said that *"recording your experiences helps with like making them better"* – and reflecting on the details and context and thinking about where *"you were"* and what you were doing *"helps you know your own habits more"*. Recording experiences, the act of recording, and

associating places, times, people and activities with mood makes them better. Nisha draws attention to the need for context when looking back at previous moods. Through recording and associating, Nisha is the 'knower' of their own habits. Knowing the self is considered valuable and an inevitable part of subjectivity (Anderson, 2022) and a crucial part of 'self-improvement culture' (Coeckelbergh, 2022).

Although emphasis is placed on 'in-the-moment' recordings in mood tracking, for Nisha the 'therapeutic' potential of the mood tracking practice is looking back and thinking about *where* you were, emphasising the importance of spaces to mood. Natasha, who also uses a mood tracking app told me that they use the app to identify particularly times in the month when they were more stressed and what activities they were doing at the time. This shows that it is not only the *act* of registration in self-tracking technologies (Lomborg et al., 2018) that is most enticing for users but the associative processes that they allow for are also appealing. These practices of self-management of mood are similar to the management of time:

> 'The notion that time is a resource that is owned by an individual, that it is a territory that can be conquered, is an integral part of the injunction to manage one's own time efficiently.' (Wajcman, 2019, p.1284).

Through observing, identifying and parsing (Callard, 2016) the data, there is a hope to spot a sufficient pattern or cause that can be causing distress or unhappiness and with this the notion that by identifying this one is able to 'conquer' it (Wajcman, 2019) and manage it better themselves. Such acts of 'managing emotion' arguably co-constitute what emotions become (Hochschild, 2012; Davies, 2017, p.43).

Data stored in mental health and wellbeing apps can be 'called on' by users in several ways and young people have different feelings about this. Steph, for example, who uses a mood tracking app, said that their favourite aspect of the app is that the design lends itself for users to quickly view previous entries:

> *"... being able to scroll through all your past entries and you can see, go on the calendar and see the month and you can, and it does the little circles around each day of how you've been feeling, I really like that as well. especially for like... for tracking my progress and to go 'oh it's not been a bad month'".*

The design of the interface, the units ("*little circles"*), the tones and amplitudes (Ash et al., 2018b) produce certain embodied responses (e.g., quick scrolling) which contribute to the making of smooth pathways and access to past mood data. These combine to produce a positive effect. Steph can access their progress and (quickly) reflect, to see the days (little circles) in context of a longer duration of time (a month) which gives them a sense of perspective.

In the follow-up 'walkthrough' photo and video elicitation interview with Charlie, they said the following in response to an image of a graph that shows mood data recorded via the app, highlighting only wanting to view specific temporal data:

> *"So, it's got, yeah, you can see it, 90 days, last week, this week, so I think, yeah. It's the kind of thing were I'd only want to necessarily be able to see 90 days and last week. And if I did want to remind myself of, I wonder how what happened yesterday that I could find it in the kind of data, but it's not necessarily being immediately presented to me, yeah."*

Charlie only wants to see past data at specific intervals, three months previously and a week ago, not data that is more immediate (i.e., yesterday). In contrast to Steph, they have more specific desires on what temporal data is presented to them but similarly they describe being able to find what happened to them in the data. Later in the interview, Charlie spoke about wanting simplified features for example a *"sliding scale"*, something more *"objective"*, that seemingly does not mediate their experience of in-the-moment rating of mood. Flicking through and reading a diary also makes possible looking back at what has happened, but the diary does not *present* the data in particular ways, and diaries are not embodied like apps (Rose et al., 2021). Young people who write in diaries can choose whether to look back on a particular entry in their diary, whereas some mental

health apps show data to users on home screens, as soon as they open the app or via notifications for example.

Lucas, a clinician and lecturer who has developed a mental health app, suggests the importance of looking back and explains how data can be shared with others:

> *"And so that's why we put like a* [anonymous] *log into the app that you can go back and see, like, at what time you did these things and how you were feeling and it's not like as in depth as it could be which is just a limitation of like what we're working with, but at least it does give users the access to their data, and it also allows us, allows users to show what they did to their psychologists, or you know if they're working with a mental health clinician, they're able to be like 'oh I did this thing and it worked and it was great and this other thing that I did wasn't really that useful'."*

Lucas suggests the importance of linking time and activities done in the app. This could include engaging with psychoeducational material, mood tracking, or going for a walk, for example. There is an element of connecting (or associating) mood, activity and time (as discussed previously) but also reflecting on the effectiveness of the activity (or intervention) itself. Lucas also points out that this data can be shared with a psychologist or mental health clinician, highlighting that this is one of the purposes of such features. This would involve sharing and reflecting on the data with somebody else, such as a mental health professional or therapist, for example. The examples from young people, however, attest to mood-monitoring and tracking being an individualised process. Mood tracking and monitoring may have originally developed in psychology (and computer science) to be shared with others (clinicians, professionals, therapists) but by in large it is used (and marketed) as a therapeutic practice in and of itself in mental health and wellbeing apps, which contributes to digital mental health technologies and interventions being scalable, because these practices can be created *without* another human.

Analysis, un/consciousness and duration

As shown so far, reflective practices are enabled through tracking mood; cues (e.g., reward, time, event, internal) amplify and encourage this. This indicates that engagement

is not solely constituted through human and technology but the associated milieu. Rating mood can make people reflect on their mood 'in the moment' but also after. I have argued that these reflective practices potentially do not stop after submitting a mood rating, this is evidenced by people looking back at data. Bergson argues that time 'involves a co-existence of past and present and not simply a continuation of succession' (Ansell-Pearson, 2018, p.18). Looking back at data enables the creation of associations between events. Young people also told me about mood tracking facilitating evaluation and self-analysis. Processes of looking back and reflecting 'in the moment' are layered in conscious and unconscious experience of time, as Bergson argued:

> 'Within myself a process of organization or interpenetration of conscious states is going on, which constitutes true duration. It is because I *endure* in this way that I picture to myself what I call the past oscillations of the pendulum at the same time as I perceive the present oscillation.' (Bergson, 2001, p.108, original emphasis)

Associations and analysis occur in processes of internal organisation of conscious and unconscious states, mediated by past and present mood ratings.

In the 'walkthrough' focus group, we discussed push notifications in mental health and wellbeing apps. Grace, a peer-representative at a youth mental health organisation, described notifications in the following way:

> *"I think it's good because it gets you thinking about it, and it gets you analysing it. I suppose it's potentially not good if, say, you've had a good day, but part of it hasn't been great and it brings that bit back. But in general, I'd say it's more good, than bad. It gets you back on to the app and kind of reminds you to keep monitoring how you're feeling rather than just pushing it to the back of your head."*

The notification (as a cue) prompts the user to think, analyse and return to a feeling state related to a rating – it *"brings that bit back"* rather than *"pushing"* it away. This indicates the creation of a form of 'analytic subject' through intersubjective processes (Ogden,

1992) with the app. The reminder to "*keep monitoring"* is similar to keeping the streak – a continuity – retaining possession of the streak. And importantly, to sustain longer term use, the notification *"gets you back on the app".* This type of monitoring could result in self-surveillance practices (Foucault, 1995), or what Kitchin and Dodge (2011, p.230) describe as 'sousveillance', the self-monitoring of one's life via surveillance technologies which are used consciously by the individual. 'Keeping' has a more durational quality rather than the separate, isolated, 'micro-nudges' (Dow Schüll, 2012; Lomborg et al., 2018). It is perhaps more akin to what Dow Schüll (2012) proposes as the 'zone' that people playing slot machines enter into and a kind of flow state (Davies, 2017). Dwelling in this flow is to lose track of time and to experience a 'melting of states of consciousness into one another' (Bergson, 2002, p.76, cited in Davies, 2017, p.37). Although in the case of the streak, the keeping and retaining is in the background even when *not* using digital technologies.

The streak and 'keeping' monitoring could also be conceptualised as a trace. Bergson (2001, p.79) explains the difference between moments and traces in the mental image of numbers:

> '…when we add to the present moment those which have preceded it, as is the case when we are adding up units, we are not dealing with these moments themselves, since they have vanished for ever, but with the lasting traces which they seem to have left in space on their passage through it.'

Returning to previous in-the-moment ratings are not to return to the exact past moment but to *experience* the durational traces. For Bergson, time as duration is 'continuous multiplicity' and therefore cannot be split or made up of 'discrete parts or elements' (Ansell-Pearson, 2018, p.19). These traces continue across unconscious and conscious states. Traces of reflection can also be conceptualised sonically as a *ritornello*. This emphasises that they bring back the main theme in fragments and different keys which is useful to consider in conceptualisations of the associated milieu. The main themes are reminiscent of experiences of talking therapies, the same themes emerging, dissipating and returning over time. Such tracking features in apps thus attempt to produce a type of

reflection that is durational, that is, it continues when the user is not using the app. The streak and monitoring maintain their longevity and duration through repeated cues in the associated milieu that re-embed them as dominant themes in un/conscious perception.

Jack tells me about what the self-care app they use helps them with:

> *"Um yeah, just sort of helps me you know, reflect on my mood, what I've done for the day, um just allows me to sort of evaluate what I'm doing. In a way which isn't sort of too difficult to do it's quite an easy thing to do."*

The app helps Jack to reflect on their mood and what they have done in the day, as discussed previously with Nisha and Steph. Jack also associates mood and day-to-day activities when tracking in the app, the app assists Jack in *"evaluating"* how they feel, similar to what Grace (peer-representative) described as *"analysing"*. Self-reflectivity produced through engagement with apps is therefore more than awareness. It includes practices of evaluating, weighing up, or analysing mood and connecting it with events, activities, social relations, times and spaces. Although people engage with these practices in everyday life, the digital mediation of these processes need to be examined in greater depth as digital technologies, their practices and the associated milieu change the pace, rhythm and repetition of self-monitoring and self-analysis. It could produce adverse effects, such as, self-criticism, shame or increased anxiety, for example. Moreover, the following definition of 'self-analysis' from the American Psychological Association (APA, 2018) suggests that in a therapeutic context it usually happens *with* the assistance of a therapist:

> '1. generally, the investigation or exploration of the self for the purpose of better understanding personal thoughts, emotions, and behavior. Self-analysis occurs consciously and nonconsciously in many contexts of daily life, and with assistance from the therapist, it is a crucial process within most forms of psychotherapy.' (APA, 2018, n.p.)

The temporalities of meditation apps differ to 'in-the-moment' use of mood tracking apps repeated throughout the day. The onus is less on cognitive psychological reflection and more on being present and relaxing the body. Some features of meditation apps are primarily intended to be used at night when people are trying to sleep, thus mediating other types of states and temporalities (not just 'active' ones). Popular meditation apps include thematic soundtracks, stories and podcasts to sonically guide the user to a relaxed or meditative state. Many interviewees spoke about the importance of sleep for young people's mental health. Jasmine, a practitioner at an emotional wellbeing service, emphasised that young people can sometimes *"need to learn how to sleep"* and meditation apps can help them to have *"a better sleep routine to help them"*. Wellbeing or 'good' mental health was often linked to sleep, having a *"long restful sleep"* (Omar, young person), and Liz (service manager) spoke about the link between anxiety and *"disrupted or disturbed sleep patterns"*. Sleep and its disruption by screen time is often considered a contemporary issue particularly relevant to young people. Apps, that intend to aid sleep are thus paradoxical objects. Sleep is one temporal experience that meditation apps act upon. Rose told me about their experience of using the 'sleep casts' feature in a mediation app:

> *"I go to bed quite early, so I'll get into bed at 9/10 PM if I can. Umm and but my mind's too busy whirring away so like you know, I put a sleep cast on and then it just starts to help slow me down a bit. Umm, whereas you know if I didn't do that. I used to sit in bed overthinking. And you know, whirring away for a lot longer and then obviously don't sleep as well."*

Steph explains the relationship between sleep and their mental health and how meditation apps disrupt repetitive thought patterns associated with sleep:

> *"And then especially with* [anonymous] *specifically about sleep, having, just having a good night's sleep and being able to get to sleep, I think part of, part of like my bad mental health was just I would lie in bed and for four hours I won't be able to get to sleep and I'd just be thinking and it's just getting into, like various thought holes. And so, I think having that has like, kind of that almost instantly*

> *improved like in the first week I was like "oh my gosh I've had a good night's sleep", woken up normal time and then because of that, I felt better about waking up at a normal time, feeling* [inaudible] *productive and all that."*

For Steph, one of the goals of using a meditation app was to improve sleep, indicating the ways in which digital technologies can mediate a specific temporal night-time milieu. Sleep and getting a good night's rest is linked to productivity and being able to carry out daytime activities. Feelings of productivity are also attached to *"waking up at a normal time"*. For some young people, however, such as Cara, sleep soundtracks (or 'sleep casts') can be stressful because *"there's usually a timer"* for *"20 minutes"* to *"2 hours"*. The experience of the timed soundtrack for Cara is that it records the time they are awake:

> *"But I guess if you're not asleep by the time the soundtrack's over, you know you've been awake for two hours … it's like you're racing against the clock, which is uh, stressful when you're trying to sleep."*

It's not the content of the soundtrack that are stressful but the defined duration that the user selects. It is assumed that this is not an intentional design feature of the app. Rather than feeling calm and 'primed' to sleep, Cara feels like they are *"racing against the clock"*. The traits of a relaxing soundtrack, when used with a timer feature, produce an effect opposite to its intended purposes. Traits when 'repeated into a different milieu or territory or repeated more rapidly or more slowly, they may be used differently, and then they produce different outcomes' (Lawlor, 2009, p.11). For Cara, the ongoing duration of sounds repeatedly signals that they are not asleep. Like a lullaby, it is the continuance of the sounds and their sequencing that produces an effect (Bergson, 2001): the disappearing sounds counting down to a pre-determined but unknowable point. The duration is *felt* as opposed to numerically measured but it does not evade digital mediation because of the feeling of being recorded. I asked Cara if they find any other parts of the meditation app that they use *"stressful"*: *"Not so much because of, because I use it for meditation, so I kind of know how long it's going to be."*. This suggests that part of the stress that Cara experiences when listening to sleep soundtracks is not knowing what interval they are at in the sleep story. Whereas with the meditation activities they do via the app, there is a

set duration that is observable because Cara is awake (conscious). With the sleep soundtracks, Cara is in one sense disoriented temporally, the experience of the duration of the soundtrack mediates Cara's ability to sleep or not. Cara does not want to check their phone while listening to the soundtrack because they are trying to get to sleep so they are unable to gauge at what point the soundtrack will end. When it does end, and if Cara is still awake, there is a measurement of the time they have been unable to sleep, which, may make sleep even more difficult to come by.

Once young people stop using meditation apps some repeat the processes learnt through using the app highlighting the continuance of particular practices. This is termed by Clark et al. (2022, p.15) as the 'myth of discontinuance'. Steph explains specific elements of the soundtrack in the meditation app, their experience of it, and how the recording stayed with them:

> *"It was, there was a voice in the background, it was like a calming sound, like rain or whatever, with a, with a voice just saying think, like look at your fingertips and moving through the, through the body to kind of be aware of the body. But it was, it wasn't talking about anything or telling a story, or it was, but I tried the bedtime story, one that they had as well, and I just got too distracted. Um it was very much. Yeah. And they'd have like pauses of like, a minute in between whilst it told you to kind of I dunno work up your body and be aware of each part or something like that, that's the only one which I did try a couple at the start and then I just stuck with the exact same one every single night. And then even. Yeah. Now as I say I don't really use it much anymore. When I go to bed most nights, to be honest, I still, if I can't sleep I kind of go through and I kind of repeat the recording in my head to kind of go through."*

Although the meditation app provides several sleep stories and soundtracks, Steph preferred to use the same one every night. The soundtrack is a *ritornello* that allows Steph and their mind and body to relax, to be able to sleep. The *"bedtime story"* was too distracting. Steph mentions the *"pauses"* and the instructions from the soundtrack that tell them to be *"aware of the body"*. These various traits compose the soundtrack. The

abstraction of these traits into Steph's associated milieu works as a *ritornello*. Repetition can have a therapeutic effect, the same soundtrack, night after night, the mind and body recall the recurring passages – the main keys. The recalling of the soundtrack does not 'imitate' but 'transforms it' (Sauvagnargues, 2016, p.132). This is because 'Ritornellos do not begin in a vacuum: they are always ritornellos of ritornellos, a trajectory from one milieu to another.' (Sauvagnargues, 2016, p.133). Repetitive activities and refrains arguably make life liveable and open space for creativity (Grosz, 2013). Buchanan (2013, p.179) argues that for Deleuze and Guattari:

> 'The lullaby itself is not the refrain; rather, it is the process that singing the lullaby initiates that constitutes the refrain. When the child sings to themselves in the dark so as not to feel alone, it is not the song that is the refrain, it is the harnessing of powers that the song initiates that constitutes the refrain. The refrain is, in other words, a mechanism of association: it brings together forces, ideas, memories, powers we did not know we had and so on.'

The song is therefore the means of accessing the refrain (Buchanan, 2013). Here the importance of *process* – which is what I have intended to highlight so far in this chapter, the processes of association, reflection and repetition that occur in young people's engagement with mental health and wellbeing apps. As the examples of Cara and Steph's experiences of sleep tracks illustrate, the *expressive* qualities of digital technologies are important (not only the content). Moreover, digital technologies produce *ritornellos* which compose the associated milieu. The singing of the lullaby or the process of repeating a sleep soundtrack bring back memories to have a therapeutic effect in the present.

5.4 Discussion and conclusion

This chapter gave an account of young people's experiences with mental health and wellbeing apps and the social, psychological and digital associated milieu. This has developed through analysis of 'checking in', 'pre' and 'self' reflective practices and the temporalities of young people's engagements with mental health apps: in the moment,

durational and sleep. Here, I provide summaries of the main arguments and develop these in relation to subjectivity. This responds to the research questions of this thesis, in particular how the practices and logics of digital mental health change the ways in which young people understand, know and intervene in their own mental health.

Empirically, this chapter showed how mental health and wellbeing apps (such as, mood tracking, meditation, self-care) mediate young people's day-to-day lives temporally. This chapter aimed to theorise processes and mechanisms at work in generating reflection digitally. The apps that participants use do not yet have capacities to mimic humans exactly, for example, to communicate embodied signals such as tone of voice, gestures or posture, but they do give other 'cues' for the user to self-reflect: internal, event, rewards and time. The logic of gamification in digital mental health was unpacked in this chapter and is exemplified in streaks. I also showed the complexities of attachments to mental health and wellbeing apps. For example, attachment to particular 'units' such as streaks and the digital character/pet, which also works as a relation to the self (auto-affection). I argued that to understand how mental health and wellbeing apps change young people's behaviour, attention needs to be paid to both 'pre' and 'self' reflective practices. Persistent nudges to record mood create intense but short frequencies of introspection 'in the moment' but introspection can continue over a longer period of time, as part of the associated milieu. There are thus more durational effects to checking in, tracking and reflecting that work as traces or *ritornellos* across conscious states. Reflection is accentuated through the storage and presentation of data and enables post-reflection, such as evaluation and analysis of mood states. Mental health and wellbeing apps work as active sites of memory, that can be re-called on, quickly in the moment and later.

Overall, I argued that mental health and wellbeing apps as part of an associated milieu produce processes of association, reflection and self-analysis. These arguments complicate accounts in psychology and health sciences that suggest key therapeutic outcomes of mood monitoring via smartphone apps is increased 'emotional self-awareness' (see Reid et al., 2011) but say little about exactly how this awareness, taking into the account the digital technology, is produced. I speculated about what the longer-term unintentional effects of mood tracking might be, for example, it could lead to

'hyperreflexivity' (Sass, 1987). More broadly, the 'hypernudge' (Yeung, 2017) in associated milieus could produce 'hyper-centring' and 'hyper-individualised' selves (Atkinson, 2021, p.3). This intense privileging of the *internal* self arguably leads to less critical reflection on wider socio-spatial, economic and political contexts which shape mental health and emotional states, this disavowal is a mechanism of psychopolitical power (Han, 2017).

The arguments made in this chapter contribute to understandings of the types of molar and molecular subjectivities produced by digital governmentalities of contemporary forms of capitalism. Dammann et al. (2022, p.3) argue that the subject of digital governmentality is not 'conceived as a sovereign, reflective and autonomous subject, but rather as a behavioural profile governable through affective stimuli'. My findings somewhat challenge the notion of a complete shift towards molecular subjectivities of data profiles or the 'dividual' (Deleuze, 1992). They suggest that digital governmentality, in a mental health context, still relies, to a degree, on a reflective subject. Indeed, digital mental health ramps up the capacities of individuals to reflect. Departing from typical psychotherapeutic relationships (e.g., client and therapist) or relationships with a practitioner on digital therapy platforms (chapter four), this is through a self-self-relation, rather than self and other, which gives an individualised intensity to therapeutic reflection. I do acknowledge that digitally mediated mood tracking does not always lead to reflection. Wieczorek et al. (2023, p.262) argue that because of the outsourcing of habit formation and reflection (one of the primary lures of self-tracking) it is doubtful that many users 'engage in attentive and in-depth practices of the self' but instead hope for guidance and 'helpful nudges'. They suggest this leads some analyses of self-tracking to overemphasise reflectivity and agency (Wieczorek et al., 2023). However, the young people I interviewed discussed mood tracking as giving them insight into their mental health and how tracking made them associate between day-to-day activities and mood, which made them reflect, evaluate and analyse. Moreover, this reflection is part of an associated milieu and therefore habit and reflection are not necessarily outsourced but expressed as a relation between app, user and milieu. To return briefly to digital governmentalities, there is increasing collection of passive and behavioural data in the technoscience of digital mental health which signals the production of behavioural

profiles. This looks to increase with the development of so-called 'pervasive therapy' which is the use of 'conversation-based interfaces' in systems that involve ecological momentary interventions – 'in the moment mental health support in natural settings' – a reality where 'mental health support is only an utterance away' (Bowman et al., 2022, p.55). If the trend towards using chatbots, digital platforms and apps in mental healthcare, both publicly (e.g., NHS) and privately (direct to consumer), continues, it is likely that pervasive therapy will become a reality, one which signifies an increasingly automated therapeutic milieu.

By critically engaging with models of habit formation in psychology and through conceiving of gamification as a psychopolitical logic, I unpacked various engagement mechanisms of digital technologies, such as notifications, points and streaks as reward 'cues' which are part of the associated milieu. Behavioural change theories (e.g., nudge and health psychology models of habit) when enmeshed with engagement tactics in digital technologies (e.g., gamification) work on both self and pre-reflexive registers to create habits. Such tactics do not always meet their aims, therapeutic or otherwise. Young people do not always respond to notifications in the ways in which they are designed. Notifications can become part of the background and cease to 'cue' behaviours, but practices potentially continue in the associated milieu. Particularly because features such as streaks are also used across social media, game and educational apps (e.g., Wordle, Snapchat, Duolingo) for example. This means that potentially the streak becomes the cue in the associated milieu and use of one app to 'keep' the streak then leads to using another app.

Through analysis of specific examples, such as the animated digital character/pet in the self-care app, I argued that 'reward based' cues speak to something more relational, emotive and affective about the app and the way it relates to the self. This evades neurobiological arguments about reward processing based on dopamine hypotheses (as mentioned by clinician and inventor Jacob). And arguably evades the image of gamification as solely manipulating users and fuelling neoliberal psychopolitics (Han, 2017). Young people become attached to streaks in varying ways, as illustrated in Yasmin's care for the animated character and in others desire to "keep" the streak. This

aligns with findings by Bergen and Verbeek (2021, p.330, original emphasis) who in their postphenomenological analysis of the app Habitca found that behaviourist models of rewards and punishment within the 'gameplay' of the app do not 'account fully for the motivation that it invokes. There is something more visceral about using of Habitica that pushes me to do better. This is not "just a game." The stakes are high: they are *me*, my responsibilities, and my personal development'. These 'self-improvement' relations between object and subject can also be read as a form of self-relation conceptualised as 'auto-affection':

> 'For Derrida, auto-affection does not simply name the self-relation of a being that would already be itself (Autos) – rather, auto-affection produces the same as the self-relation in the difference with itself. That is, auto-affection produces and interrupts the self. Paradoxically, it doubles the self into subject and object, while also being the very possibility of subjectivity. Put in phenomenological terms, auto-affection accompanies intentional consciousness and is crucial to it.' (Anderson, 2022, pp.153-54)

This notion of auto-affection captures what I described in this chapter as pre- and self-reflective practices that both form and interrupt the self. This is not to centre a contained singular vision of a self but one that is more akin to subjectivity as becoming, multiple and dispersed, individuation in correspondence with the associated milieu. Auto-affective relations are thus extensive with 'teletechnology' and the environment (Clough, 2000). Rating of mood works both as a process of interruption and a continuance of particular components of subjectivity – consolidated through reflection. Senses such as sight and touch are important for auto-affection (Anderson, 2022) and these are the privileged senses of smartphones. As Steph mentioned, the "quick" scrolling with the app enable connection to one's own mood data. The graphical representations, plotted over time, can make users visualise this and produce a self-image. When using mental health and wellbeing apps, then, young people arguably are not only forging relations (such as attachment, chapter four) with technologies (as object) but with themselves as both subject and object: 'attempts to know myself by imagining how the other experiences me

reveal not only that I am a self-relating being always already in relation to others, but also that I relate to my own possibilities' (Anderson, 2022, p.156).

Possibilities and capacities to effect change are questions being asked of digital technologies and emerging posthuman subjectivities, as Gillian Rose (2017, p.785) enquires: 'What capacity for reinvention exists in the spatial organization of a digitally mediated practice?'. In the case of mood tracking apps, is observing, identifying and parsing (Callard, 2016) knowledge about one's own mood enough for change? Associating various components of experience can lead to reflecting on what, where and when we experience certain emotions, but it does not really attend to why. It largely reinforces a discourse of responding better *to* the world rather than questioning the organisation of worlds. In doing so, these associative practices enabled by digital mental health technologies potentially grounds knowledges of mental health in individual bodies and brains that can be improved through self-reflexive technological fixes. Philosopher Todd May (1993, p.55) in a book on Foucault and the discipline of psychology describes this type of thinking as a mantra of psychological science, one that has evidently not disappeared today: '"Concern yourself not with things, but with yourself. Find out who you are, and what you can make of yourself. You can't change the world: but you can, if you understand yourself, adjust better to it."'.

Chapter six: The assemblage of digital youth mental healthcare in England

> 'Capitalism succeeds as a geosocial machine because it organizes modes of capture that capitalize on geopower. What matters are the modes of organization and the apparatus that capture and solidify strata to make certain movements difficult.' (Yusoff, 2017, p.113)

6.1 Introduction

In this chapter I analyse the arrangement, or indeed *mode of organisation* of digital youth mental healthcare in England. Strata, as Yusoff (2017) indicates, are crucial to understanding how capitalism structures modes of organisation. I raise strata here for a few reasons. Firstly, because this chapter seeks to enquire into what holds the digital youth mental healthcare assemblage together and 'to connect' different modes of 'capitalization' across strata (Yusoff, 2017, p.118). I unpack these connections later in the chapter (see 6.4 and 6.5). Secondly, strata are defined as a conceptual tool in Buchanan's (2021a) approach to assemblage. Strata are a way of '*problematizing appearances*', to see and think about types of processes that produce social and cultural phenomena (Buchanan, 2021a, p.26, original emphasis). After Deleuze and Guattari (1984, p.7), the stratum of digital youth mental health can be considered as composed of 'coded milieus, forms and substances'. In the last two chapters, I detailed forms, substances, traits and milieus of digital youth mental health, such as objects of attachment ('units' in apps such as digital characters/pets, streaks), existing 'traits' of therapeutic relationships (presence, connection, context), emerging non-human elements (suggestion and filtering), technical systems (queue orders and 'hinging events'), expressive features such as flow, trace and *ritornello,* discourses such as 'checking in' and associated milieus. In this chapter, I enquire into what connects these ('the unity of composition' of strata; Deleuze and Guattari, 1984, p.7), by examining the digital youth mental healthcare assemblage in England.

As introduced in chapter two, I adopt the definition of assemblage proposed by Lea et al. (2022, p.349) which suggests that assemblages are 'logics' and 'structural arrangements' rather than entities. Analysis needs to focus on what holds them together and gives them consistency – to question why the (contingent) arrangement is the way it is (Lea et al., 2022). The chapter gives an account of how social and structural actors and forces (Duff, 2014) assemble digital youth mental healthcare. I primarily discuss products (for example digital platforms) that are leased by public mental healthcare services (such as the NHS). The actors in the assemblage are diverse and include (but not limited to): the NHS, users, patients, practitioners, therapists, private companies, software engineers, researchers, third sector organisations, NHS commissioners and venture capitalists, for example. As introduced in chapter two, specifying the different components of an assemblage is only the first step (Lea et al., 2022). The primary aim of this chapter then is to understand *how* the digital youth mental healthcare assemblage in England comes together, by what practices and logics does it endure, for what rationales and to understand power relations in the assemblage (Duff, 2023). Using the assemblage approach to analysis I have developed broad themes across the interviewee data and present specific examples in this chapter. I also draw on online research of specific companies, policies and the *technoscience* of digital mental health. As explained in chapter three, using assemblage in relation to policy can show how policy (as a material and discursive assemblage) changes the ontology of phenomena partly by specifying its ethico-political limits (Buchanan, 2021a). I apply this to digital youth mental health in this chapter. How does the digital youth mental healthcare assemblage change the ontology of youth mental health, and what is and is not used as treatment or therapy for mental distress.

In the first section, I introduce the COVID-19 pandemic as a 'tensor' (Lea et al., 2022) that caused a change in digital youth mental healthcare assemblage in England. To understand forces in the assemblage that cause changes, Deleuze and Guattari's (1987) concepts of deterritorialization and reterritorialization are used. Deterritorialization and reterritorialization are temporal forces, they are 'tendencies toward change and stasis' (Adkins, 2015, p.49). Re- and de- territorialization are also spatial. To take a simple example, when an apple grows on a tree it is territorialized on the tree, but when the apple is picked it is deterritorialized (ibid.). When the apple is ingested or moved to the fruit

bowl, the apple is reterritorialized (ibid.). Deterritorialization in Deleuze and Guattari's writings tends to be posited as creative potential. A 'line of flight' which opens possibility for change, difference or the new: 'a rhizomatic realm of possibility effecting potentialization of the possible, as opposed to arborescent possibility, which marks a closure, an impotence' (Deleuze and Guattari, 1987, p.190). Deterritorialization suggests movement or 'escape' from a 'given territory' whereas reterritorialization describes practices of capture (Patton, 2012, p.208). I develop how various components in the digital youth mental health assemblage in England become re- and de-territorialized – that is, how they develop or lose potential in relation to a set of systems or social norms (Waitt et al., 2021) - throughout the chapter. I examine how waiting for mental health treatment is reterritorialized as a time-space for intervention in 6.2. I argue that implementation of digital mental health technologies (such as apps) into society and the market deterritorializes the need for regulation (6.4). This deterritorialization is aided by evolving labels, discourse and collective enunciation of the assemblage. In section 6.4, I suggest that biomedicalised models of mental health and the pharmaceutical industry are 'parastrata' of digital youth mental health. Parastrata can be defined as system or institution (for example) that shares forms and substances with another stratum.

There is also a principle of unity ('the abstract machine') of the assemblage (Buchanan, 2021a). Abstract machines are a 'set of conditioning relations' and 'the relation' between elements in an assemblage (Nail, 2017, p.24). One example of an abstract machine is Foucault's 'disciplinary power' (Holland, 2013). It is abstract because it 'works' and we often do not notice it (Buchanan, 2021a, p.46). Holland (2013) argues that disciplinary power is abstract because other 'strata' or institutions for example share it, such as factories, hospitals and schools. As shown throughout the last chapters, psychopower (as *puissance* and *pouvoir*) often operates without people always being aware through logics and practices such as personalised algorithmic feeds. I have shown this primarily on the user level, in this chapter I focus more on the ways this power manifests in data collection practices.

In terms of capitalism and how this relates to the assemblage, I consider desire, which Buchanan (2021a) insists holds together assemblages, at the level of the social formation

of capitalism (Smith, 2007). Investments and desires in digital mental health are driven by capitalist logics. Zuboff's (2019) theorisation of surveillance capitalism has been used to understand the logics and practices of the turn to digital in mental health and burgeoning digital mental health industry (Cosgrove et al., 2020, De Vos, 2021; Gross and Mothersill, 2023). Drawing on Zuboff's (2019) surveillance capitalism and the realisation of 'behavioural surplus' (the data produced through our mundane interactions with digital technologies and the internet), I show in section 6.3 that although data collection is not new in mental health (Bruun, 2023) practices appear to be more expansive through the collection of behavioural and analytics data. Data tracking practices recursively create dependencies and value between components in the assemblage and produces 'dividuals' (Deleuze, 1992). I enquire into how 'big tech' practices work in digital youth mental healthcare and show that analytics data is used in some instances to formulate understandings of children and young people's mental health.

The discussion and conclusion summarise the power relations between the social and structural forces and actors in the assemblage through the examples covered in this chapter. I reflect on what using assemblage, as theory and method, has done for understanding the current state of affairs of the digital youth mental healthcare assemblage in England, discuss the 'parastrata' of the assemblage (which I explain further in section 6.4) and the future trajectory of the assemblage.

6.2 The tensor of COVID-19, waiting and the technological promise of digital

This section contextualises the digital youth mental healthcare assemblage in England starting with the idea of the 'youth mental health crisis'. I argue that actors in the assemblage reterritorialized the discourse and materialities of waiting, access and crisis. The COVID-19 pandemic accelerated this, which I conceptualise, after Lea et al. (2022, p.245), as a 'tensor' or a tipping point in the assemblage. A tensor is not 'simply one element among others in the assemblage' – a tensor – 'simultaneously holds the assemblage together and puts it into variation – which is to say it causes a reaction between all elements' (Lea et al., 2022, p.245).

On the 6th of July 2020 an article was published on the British Medical Association's website stating that as the world moves out of lockdown the 'mental health consequences of the pandemic are immense and will be long-lasting' (Trueland, 2020, n.p.). High rates of mental distress among children and young people, lack of treatment availability, and moves towards delivering some mental health care digitally formed the background to what was described as a 'triple global public mental health challenge' presented by the COVID-19 pandemic (Campion et al., 2020, p.657). Critics argue that notions of an 'incipient' mental health crisis obscure the fact that due to long-term underfunding of mental health services and social inequalities, certain groups within society are already disproportionately affected by mental ill-health in the UK (Rose et al., 2020). COVID-19 has worked as a 'fog': a set of images attached to materialities (Lea et al., 2022, p.344). I argue that this fog obscures rationales for the development of digital mental health technologies and services and reinforces their image as a solution (albeit a technocratic one) to the multiple problems of COVID-19, crisis, waiting and access. As explained in chapter one, digital mental health technologies hold a technological promise of increasing access, reducing waiting and lowering the cost of interventions; technologies are 'unbound by geography' (Gratzer et al., 2021, p.6). This unboundedness was discussed by practitioners (such as Kathryn) who said that one of the benefits of the move to online sessions during COVID-19 lockdowns was that young people did not need to travel to the service. This made the service more accessible. To give context as to *why* the *digital* aspect of the youth mental health assemblage is continuing to grow in prominence, I first present interviewee data around the idea of the 'youth mental health crisis' in England.

Over the last decade, terms such as 'youth mental health crisis' have abounded in public discourse in the UK (see for example, Bawden, 2023). Practitioners interviewed discussed their perceptions of this 'crisis'. Ellie, a manager at the national youth charity told me:

> *"I'm going to play devil's advocate, the people who termed the coin of mental health crisis essentially is the NHS and the reason why that term comes about isn't necessarily because they're putting the client at the focus of it, it's because of their*

> *capacity… that's, that's it. That's where that term comes from. I think in terms of mental health crisis, you look at every generation in history and there's always been some form of mental health crisis as per se, um there's swings and roundabouts in terms of triggers."*

Ellie suggests that it is the NHS itself, as an institution, that coined the term 'youth mental health crisis' because it has little capacity to respond to young people experiencing mental distress, not because there are necessarily increased rates of young people experiencing mental distress at this time. Ellie also told me that CAMHS will never tell people how long the wating list is but that they know it's *"8 to 11 months"* unless someone is *"in crisis"*, such as people who have attempted suicide. If someone is in crisis, after being assessed at a hospital, for example, they are often *"discharged to a third sector mental health support service because the NHS don't have the capacity".* Ellie emphasises that there is no capacity *in* the NHS. Practitioners, such as Jennifer, painted a similar picture and told me that the: *"youth mental health crisis"* will continue *"in this cycle of"* services such as CAMHS *"not being good enough"*. Jennifer referred to waiting lists, a quick turnover of staff at CAMHS, and suggests that the service needs reforming. Kathryn, also a practitioner, in reference to the term *"youth mental health crisis"*, pointed to social media (e.g., Instagram and TikTok) and felt that there are a lot more external *"factors"* and *"impacts"* nowadays for example *"all this media thrown at you of how you're supposed to be".* At the same time, Kathryn told me that there is greater mental health awareness, but overall there is a *"little bit of a crisis"* and they *"don't think there's the services around to manage it"*. These accounts suggest a lack of power (*puissance*), the capacity to affect, in terms of resources, funding and staffing of statutory mental health services to respond to young people experiencing mental distress.

There are geographical variations in the provision and availability of mental health care support and treatment across England, and the UK more broadly. In part because of the organisational structure of the NHS and the existence of NHS Trusts and Commissioners for specific geographical areas (system at the time of fieldwork, now integrated care systems; Cubbon, 2022). Commissioners buy in services for their area, this means that different third sector organisations and private healthcare companies operate in different

parts of the country in youth mental health service provision. NHS Talking Therapies delivers therapies (primarily CBT) in person or remotely. Since the COVID-19 pandemic an increasing proportion are delivered remotely via video-call or digital platform (NHS Digital, 2022). Richard, an academic researcher in digital mental health, explained the variation in therapies across geographical areas:

> *"…it's all a bit of a free for all in terms of the digital therapy that you receive and this is the other problem because we've given the NHS all this freedom, different parts of the country use different apps and different digital technologies, so there's no, in terms of across the board, you might get a better service in one area of the country than another because they're using a different set of digital technologies to give you whatever therapy you want to receive … it's open for tendering and basically there's no consistency really in terms of what's offered."*

Richard points to a lack of *"consistency"* in what digital therapies, apps and services are offered across England, suggesting its deterritorialization. Richard states that *"it's open for tendering"*. This refers to the ability of different NHS Trusts across England to outsource IAPT (now Talking Therapies) services to different companies and partnerships. Amanda, a digital health consultant spoke similarly and suggested that the purchase of specific technologies (as interventions or services) in individual NHS trusts can "*sit on top"* of everything else and are often not integrated. Amanda also said that in some cases where technologies are licensed and not procured (because they are under a certain amount of money) problems such as the technology not connecting *"to anything else and then you potentially start to create patient safety risk, a data quality siloes or data siloes"*.

To illustrate how digital mental health companies and services reterritorialize the assemblage, I turn to waiting and the new development of 'waiting-list interventions'. Waiting times for mental health treatment in England were discussed by most interviewees. According to the NIHR Maudsley Biomedical Research Centre (2024, n.p.):

> 'In 2022 NHS mental healthcare in England has a waiting list of 1.6 million people. A further eight million people with psychiatric disorders are unable to

> access waiting lists because their conditions are not deemed sufficiently severe. Closing this gap is an urgent priority and digital therapies have a vital role to play in this.'

Young people interviewed described various experiences of waiting for support from university wellbeing services, waiting for access to a mental health app via the GP, to waiting for counselling for a few years and referrals being 'lost' in the system. These experiences signify a 'cruel optimism' that exploits the 'immanent potentiality of waiting' (Kiely, 2021, p.717). Although this phenomenological experience of waiting is important to document, I focus here on the development of 'waiting-list interventions' because they illustrate how phenomenological experiences, in this case, the experience of waiting for services and treatment (see Punton et al., 2022), are reterritorialized in the digital mental health assemblage.

A recent survey assessed the use of 'waiting-list interventions' in NHS trusts providing CAMHS in England (A. Valentine et al., 2023). Of 16 NHS trusts that responded to the survey, 12 trusts have implemented 'waiting-list interventions' and many of these are digital interventions such as mental health apps and digital platforms (ibid.). A critical issue of wait-list interventions is whether these are proposed as forms of treatment in themselves or to support people whilst they wait for assessment, support or treatment. This issue is detailed in the survey study conclusions:

> 'Interventions for children and young people and families on waiting lists for CAMHS may be used as a stepped-care approach being offered to all families initially, for some families this may be all the support that they need. *How interventions for families on waiting lists are framed is therefore important and the term 'early intervention' may be more appropriate rather than WLI which implies that there will be a need for further treatment or support.*' (A. Valentine et al., 2023, p.82, emphasis added)

Here, the purpose of the waiting-list intervention splits: as low-level 'early intervention' or support for people whilst they are waiting for support. The way in which interventions

are ‘framed’ is vital, emphasising how labels and definitions are sculpted by actors (the discursive side of the assemblage). There are arguably aspects of both deferral and diversion at work here (Kiely and Warnock, 2023): young people wait for treatment, a promise of an intervention to realise the waiting and waiting-list intervention is *the* intervention. This changes the ontology of what mental healthcare is by redefining the ethico-political limit of the assemblage.

To return to the example of IAPT and digital mental health services, Richard, an academic researcher, thinks that digital technologies and services *“fit”* as a waiting-list intervention, as in they are suitable for people on a waiting list, but has concerns that the ‘digital’ is becoming a *“fill the gap method”*:

> *“… my concern is digital is now becoming a bit of a fill the gap method of getting people ticked off as having something … that is my concern at the moment, that’s not to say that the products don’t work, but people they feel don’t quite hit the border in terms of diagnosis so you know how IAPT services work in terms of, they sort of do measures such as PHQ-9* [Patient Health Questionnaire for Depression] *and GAD-7* [Generalised Anxiety Disorder Assessment] *and things to sort of measure where you are on the scale and I think what’s happening now if you are pretty low on the scale and you feel you need therapy, they’re sending you through using the digital platforms and I don’t know if that’s necessarily the right approach to take but I think it’s down to the discretion of who’s doing the diagnosis at the time but I do think they fit on the waiting list…”*

It's easy to see, from what Richard described, how waiting-list interventions become *the* ‘intervention’ or the *“fill the gap method”* for a large amount of people that *“don’t quite hit the border”* in terms of anxiety and depression measures. In assemblage terms, the measures (discursive), IAPT and digital (machinic content) work together. Arguably, as digital technologies, interventions and services continue to *“fill the gap”* they become more powerful in the assemblage and reterritorialize. The phenomenological experience of waiting and being on a waiting list for mental health support is reterritorialized (that is, captured) as a space for digital technology intervention.

One example of a waiting-list 'solutions' offered by commercial digital mental health technology companies is that of SilverCloud who claims to be the leading global provider of 'evidence-based behavioural and mental health solutions delivered digitally' (SilverCloud, 2023, p.4). SilverCloud (2019) programmes were reportedly used in more than 75% NHS IAPT services in late 2019. In a report on waiting-list interventions, SilverCloud (2023, p.3) explain their purpose:

> 'Now, digital therapeutics are starting to be deployed at other points on patient pathways, a change accelerated by the COVID-19 pandemic. These innovative models give services the opportunity to improve patient experience before, during and after treatment, for example by giving a patient help to manage their symptoms while they are waiting for treatment.'

These digital therapeutic service delivery models build on the stepped care model of mental health treatment which is used in many NHS trusts and mental health services across England. In this specific guide on waiting-list interventions, SilverCloud present waiting as an issue that is not solely due to lack of adequate funding of NHS mental health services or workforce retention issues and argue that it cannot be fixed in the short-term through greater funding or staffing. However, it:

> '…requires the introduction and expansion of other approaches. This could involve building partnerships with third-sector organisations to expand a mental health service's capacity for live support. Or it might mean the introduction of digital solutions to provide instant access to online or app-based mental health services, at scale.' (SilverCloud, 2023, p.3)

Online and app-based mental health services (primarily iCBT) are what SilverCloud sell to NHS trusts. Issues of waiting for mental healthcare, support or therapy are recast as time-spaces in which to intervene or can constitute the intervention full stop. SilverCloud propose that the 'crisis' can be solved through further capture (introduction and expansion) and thus reterritorialization through creating relations of dependency with

partners (other social and structural actors such as charities) which could expand capacities for 'live' support. This again suggests temporalities (present and waiting) are key to digital mental health companies' power in the assemblage and both time and space reterritorialization.

To summarise, access to mental healthcare, support or therapy is evidently interrelated with waiting and this connection is something that companies can exploit to sell their products. COVID-19 as a tensor in the digital youth mental healthcare assemblage caused access to shift and put all elements into a new variation. This does not exclude the third sector organisations that practitioners I interviewed worked at. To contextualise how the COVID-19 tensor affected third sector youth wellbeing organisations, the final example in this section turns to one of the youth emotional wellbeing services that I interviewed practitioners from. Although not going as far as providing the 'live support' that SilverCloud (2023) describes, the services where practitioners worked (e.g., S1) had to quickly adapt from providing in-person drop-in support to online video call and telephone support. But there were also more implicit changes as a result of this transition. The 'tensor' of COVID-19 changed the *qualities* of the space, the service offered, and arguably limited the types of therapeutic approaches used and forms of expression enabled, as I now go on to show.

At the time of interviewing staff, practitioners and volunteers (January to July 2022), one of the services (S1) that prior to COVID-19 solely operated an in-person drop-in model with no appointments, had transitioned to a 'blended' approach, offering telephone, video call and in-person drop-in. By offering more options via technologies, such as video and telephone sessions, pathways of access to support increased. At the same time, the immediacy of support afforded by the drop-in service model, the spatiality of instant support, *"being seen"* was felt to be compromised by some practitioners. Maya, a practitioner, felt that this kind of digital triage made it more challenging to see people in a *"timely manner"*. The drop-in that Maya works at now operates a form of waiting list, a two week wait for young people to see practitioners in person. This felt at odds with what the service should be doing:

"...two weeks is technically not what our service should be doing, it's not bad but technically we're meant to be an immediate almost there and then service and we're not if you're having to wait two weeks to see us."

The waiting list needed to be implemented because of how busy the drop-in service became since operating the 'blended' approach. With the diversification of access, the introduction of more technological components into the assemblage, a different mode of conduct emerged or what Maya describes as *"mindset"*:

"...I think the difficulty we're having is now we see when a practitioner's not doing a session, we see it as, someone could be being seen whether that's like an online appointment...

....

... how are we gonna get out of that mindset of like I could be speaking with these four people that are like left there but I'm here in this space [drop-in] *so it's kind of try and again separate that a little bit so I think it makes it more challenging if I'm honest because our service is almost more accessible, there's people so it makes it more challenging in how we kind of make sure we see all these people in a timely manner."*

Because of also offering online and telephone support there was an increased expectation to see young people in every available session, increasing the productivity of the service. Valerie, also a practitioner, tells me about how the changes made to the service because of COVID-19 have had a prolonged influence on the service:

"...whereas previously you'd be able to sort of you know play games or sit on a beanbag or have that bit of relaxation, it is, I wouldn't say it's more clinical but it's more structured, in that and I think that's um taken a lot of getting used to, instead of being able to almost free flow you have to sort of stick within that structure but we shall see as time goes on what happens."

The *"free flow"* of the past service model was discussed by practitioners in various ways. Kathryn, for example, described the drop-in as a space that young people could *"…rock up and turn up to the service as and when they wanted to, so that was what was designed."*. The spontaneity and immediacy that the drop-in allowed for was contrasted by Kathryn with *"waiting lists"*. The way the service is designed, but also the technologies used affects the type of expression made possible, as well as the types of therapeutic practice. From the outside, it might appear like little has changed, but practitioners' experiences attest to the longer-term changes to the service from COVID-19. These longer term, tacit and organisational effects of COVID-19 on mental health service provision, such as the switch from drop-in to bookable sessions digitally triaged, and the impact this has on how sessions are delivered exemplifies relations of dependency between components in the assemblage. It also shows how services such as S1 now operate waiting lists which changes the nature of the service and what care it provides and leaves space for reterritorialization by digital technologies and services.

With the increasing use of digital technologies, interventions and services in youth mental health in England - through public and private means - there is vast production of data from measures and user analytics. Discursively, the scale of the mental health 'crisis' is linked to the desire for data production and collection. Digital mental health researcher Becky Inkster (2021), argues that:

> 'There is a need to obtain more granular and real-time information to help us understand the nature and scale of the mental health crisis. *A possible source of this information is the large number of digital mental health services providers used by millions of people globally'* (Inkster and Digital Mental Health Data Insights Group, 2021, p.2, emphasis added).

This 'need to obtain' can be described as a desire of the social formation of contemporary capitalism which is a power of selection in the assemblage. The next section turns to some of the ways data is produced in the digital youth mental healthcare assemblage.

6.3 Data and tracking

I now consider *tracking* as a process of territorialization at work in the digital youth mental healthcare assemblage in England. Processes of tracking reterritorialize flows of data in digital mental health technologies: data holds together the digital youth mental healthcare assemblage. I extend Flore's (2021, p.2040) argument that digital mental health produces forms of molecular 'data-driven subjectivity' and that 'data are what hold together and strengthen the assemblage' to analysis of the social and structural actors in digital youth mental health. It is important to underscore that data 'do not appear without an apparatus of data production, processing, and dissemination' (Williamson, 2023, p.521). This section aims to unpack some of the ways in which data are produced and processed through drawing on examples of tracking in the assemblage that are not the user tracking their own data (i.e., *self*-tracking, which was developed in chapter five) but incorporate other actors. Tracking, and the data it produces, capture and have power over (*pouvoir*) other forms and forces in the assemblage: it strengthens relations of dependency between components. Less attention has been paid to the more 'mundane' tracking practices in public digital *mental health* services. Schurr et al. (2023, p.216) describe 'intimate technologies' as those that can be found in the laboratory, clinic and the home. These are the main 'types' of digital mental health technologies explored in this section.

Digital mental health companies often claim that the more data provided, the more the service and technology learns, which in turn improves the service. Preventing the kind of *"data siloes"* Amanda mentioned. Provider of online typed therapy and partner of the NHS, ieso, is reported to be the largest provider of online CBT in the UK (Inkster and Digital Health Advisors, 2021). They describe their company in the following way:

> 'We're using science and technology to continually learn what makes therapy effective. We then share this knowledge with our therapists to enable them to be the best they can we. In short, as you get better, so do we.' (ieso, n.d., n.p.)

The website of ieso states that they have collected over 700 million data points (ieso, 2024). Monitoring, observation and surveillance of patients or those living with a mental

health diagnosis is not a new practice (Goffman, 1961; Foucault, 1995). In its contemporary form, monitoring and evaluation of mental health in the UK has been championed since at least the 1990s (Pickersgill, 2019a). Practices of data collection in mental health are not new but have arguably ramped up over the last decade; indeed, it is argued that the vast collection of data makes the 'effectiveness' of IAPT accountable (Pickersgill, 2019a; Bruun, 2023). In line with these trends, I detail some of the new ways in which tracking operates in the digital youth mental healthcare assemblage. I argue that tracking, as a process, deterritorializes data from young people and puts it to work in a new formation: this is centred around surveillant capitalism logics of production. I show how measures in digital mental health interventions produce more expansive (behavioural) datasets than traditional psychological diagnostic measures.

Interviews with young people, practitioners, researchers and developers established that tracking can have multiple roles in digital mental health: self-tracking as a therapeutic practice that aims to produce greater awareness (chapter five); a clinician or practitioner tracking a user's mood, progress or recovery over time; or tracking of the interface to capture active, passive and behavioural data for product analytics to understand users' experiences and to personalise interactions and improve engagement, for example. Some interviewees, for example young people (Charlie) and researchers (Sara) shared concerns about how data is being used in digital mental health. The capture of data for analytics are everyday practices in so many domains that its application in mental health could be easily overlooked. But these forms of tracking produce new relationships of value. To put it another way, tracking opens up spaces for efficiencies and greater profits to be made in (digital) mental health services and industry, for example, by seeing what works and what does not (i.e., what keeps people engaged *and* what produces outcomes), how much human input is required, and whether people have hit their outcome target and therefore require no further treatment or intervention. Crucially, this does not just involve commercial digital mental health companies but includes the other actors in the digital youth mental healthcare assemblage, such as public health systems (i.e., the NHS) – these arrangements between actors can be described as 'machinisms', which, as explained in chapter two, Lazzarato (2014) describes contemporary capitalism as producing.

To give a sense of the diversity of data that can be collected in digital mental health interventions, Priya who works in development at a digital youth mental health company, told me about some of the types of data that can be *"captured"* and *"stored"*:

> *"... so, all of that data is stored, including worry scale scores, um you know how much time that they're using, how they're progressing, that sort of data is captured as well as um a couple of other sort of goal based outcome scores."*

In digital mental health services, tracking and the data generated become a way of recording and reporting recovery (e.g., improved scores on measures) and therefore the success of the intervention. Researchers and developers talked me through relationships between data, outcomes and funding. Lucas, a clinician and lecturer, described a digital mental health service in the UK:

> *"... in order to get the funding, you have to collect outcome data and show that your service is providing like outcomes. So that's where they* [company name] *step in and use an AI chatbot to collect data from patients."*

Peter, who works in development at a digital mental health company spoke about the *"clinical need"* to track progress:

> *"... there is a clinical need to like track progress that's one of the few things that I think we use to be able to say to Commissioners, hey it's called, I can't remember like measure, progress moved or I can't, but basically it's like by engaging with our site they came here and they said this and they were at this level and then over time that you know they became, they achieved that more and more. And so that's something that I think is actually a quite crucial part of our like how we sell the system is actually a very under looked at from a tech like we, no, I haven't touched, like no one's touched any of that stuff in in years and it's like we know it's really important."*

Peter explains the *"clinical need"* to track users to prove the efficacy of the product. The language of clinical need enmeshes with financial desires, such as the necessity to secure further funding from NHS Commissioners to guarantee the futurity of the product. Later in the interview, Peter described how both active (e.g., answers to evaluation survey questions) and passive (e.g., time spent on a webpage) engagement with the platform need to be high to gain and maintain funding: *"...there is a specific business need around driving up user engagement and so they're building out something that's going to help with that."* Peter here is referring to engagement and the needs of the business. Peter told me that they try to stay clear of *"Skinnerian Behavioural stuff"* or the *"dark arts"* of user engagement, questioning whether *"grabbing user retention"* is "*appropriate for a mental health platform".* This is a conversation they have in the company. Such digital mental health companies can occupy a somewhat liminal position between social and technology company, particularly when key clients are the NHS. Because it is a machinism (Lazzarato, 2014) it is difficult to clearly identify what the main purpose of the company actually is: for profit or public health? It is likely to be a combination of both. There is desire to ensure high levels of engagement with the platform to achieve better outcomes for the users but also to secure further funding and contracts with the NHS, highlighting the conditioning relations of psychopolitical power in the assemblage. As a measure of engagement *and* efficacy, users' data could be used to support these bids. Individual users of the platform can thus be conceptualised as 'dividuals' (Deleuze, 1992) which to reiterate is a dividable ensemble. Here, the data points that comprise the dividual move through networks of digital mental health continually monitored, assessed and modulated (Schüll, 2016) and valorised. This reduction of the user to a series of data points and using this as a proxy to understand the person is critiqued for separating the person from the world (Cosgrove et al., 2020), but here we can see that a user's engagement (whether meaningful or not) becomes a key driver of the platform itself, emphasising the machinic nature of the digital youth mental healthcare assemblage.

Priya who works in development at a digital youth mental health company described the *"need"* to track users progress with digital mental health interventions and the use of platforms where professionals:

> *"... have their own unique account um and they can create a young person's profile so they can invite little Johnny to come and play* [anonymous] *for example, uh complete a short form, invite the parent and then that would sort of document uh that young person's journey through um using the intervention so you know uh how much time they're spending in the game, how they're progressing, all of that analytics data is automatically captured for the practitioners use so that they can make better decisions and you know write outcome reports and just make the whole process seamless."*

Aggregated behavioural data points are proxies for the human user. At the same time, this data informs decisions the practitioner makes about the user's progress and treatment. Combined, these represent a behavioural and computational mode of intelligence of mental health that shapes decision making about whether a young person requires further support, treatment or intervention and if so, what 'type' could work for them. Priya also indicates that other actors in the assemblage, such as parents, can review how the user (child) is progressing with the intervention and how much time they spend on the game – this *"analytics data"* is *"captured"*. As argued previously, this type of tracking has a dual function in that it informs decisions about an individual user but also produces knowledge about the intervention and informs future decisions about it. Data can be used to justify (or not) the future purchase or funding of particular interventions, services or technologies. The platform for professionals is a new space through which additional tracking and monitoring can be conducted - reterritorialization (or capture) of digital space. Time spent in the game is reterritorialized as a measure of engagement and therefore success of the intervention. Through tracking and data, the platform and intervention work together.

To take a different example, Ella, who works in research at a digital mental health organisation, described the different ways in which engagement is measured in their youth mental health platform services. Ella delineates between *"direct engagement"* which includes *"therapeutic messages"*, *"chatting"* or "*goal setting"* and "*indirect engagement"* which includes *"reading content"* and *"click data"*. Ella further tells me that the *"product team and tech team will only record something, in terms of store that*

data, if it's critical". Ella said they ask themselves: *"Should we be recording everything, or should we just be recording what we know we need to look at?".* Ella suggests a less emergent and inductive analysis of data because they already *"know"* what they need to look at. These storage practices exemplify ethical considerations about data collection practices, suggesting that there is further space to ethico-politically intervene in the assemblage. Although the analytics data described are not that of the 'behavioural exhaust' (Zuboff, 2019), sold to third-party companies (as far as I am aware), it is behavioural data that is used to indicate engagement and efficacy, with the former a dominant logic of digital mental health. The expansive practices of tracking are arguably what is new about this digital form of mental health. It enables the assemblage which includes humans (practitioners), young people (users), digital mental health intervention or service to work as a *"seamless"* process (Priya, developer).

Different types and frequencies of tracking exist in the assemblage. Peter, who works in development at a digital mental health company, describes methodological approaches in software development and how the application of these to a digital mental health space introduces new dynamics:

> *"I'm sure you've heard like in the technology world the idea of like 'move fast and break things', right? So famous, I think Facebook motto, and when you're dealing with a system, a service like* [anonymous]*, you really can't move because you have like lots of safeguarding concerns and so there's like quite interesting tension where in software development there's this kind of agile methodology and this desire to kind of experiment, try, just try things out, see, you get feedback, get it in front of users, see how they respond to it … so this agile methodology is sort of move away from that, but it kind of uh, it doesn't quite work with like safeguarding concerns? And a lot of the actually* [sic] *have to do things very carefully, we have to be super mindful of things … you can't move fast and break things right, like, um you have to be more considered and so yeah, just raises some, like, quite interesting, an interesting spin on like how a lot of more like traditional software development might work."*

Peter describes an *"agile methodology"* and a *"desire to experiment"* which does not translate well in a digital mental health space. Calls for these types of methodologies have been made in literature on gamification in digital mental health because of the pace of technological development, 'non-traditional' methods and forms of evaluation are necessary whilst ensuring no harm is caused to 'intervention testers' (Cheng et al., 2019, n.p.). Peter talks about not being able to *"move"*, suggesting the ethical limitations of the assemblage, or the end of this particular assemblage (Duff, 2023). Safeguarding concerns intervene in what the company can do in terms of development and whether it can compete with digital technologies that perhaps do not position safeguarding or data protection quite so highly. However, there are signs of shifts in the assemblage. Peter told me about the *"DNA"* of the company being *"social care"* with an *"NHS"* background, but the future direction of the company is towards being a *"technology company"*:

> *"... the big thing is we are aiming to become a lot more data-driven and begin to start harnessing more like machine learning sort of um technologies in our system, so we yeah, we at the moment it's still a very, it's not very dynamic site it's still very flat and static, there's not much things like personalisation or you know, even like notifications, recommendations, stuff like that."*

Peter sees the future of the platform as data-driven with the use of machine learning in the wider 'system'. This will require vast collection and processing of data. Questions remain as to how 'rules' around safeguarding may apply or how to avoid psychopolitical logics. Assemblage theory urges us to consider how this is not incidental. There are a series of relationships and dependencies between components. Part of the move from social to technology company is because of the direction of the new Chief Technical Officer (actor), re-platforming (which introduces new processes, technologies and conducts), opening a version of the digital platform in another country, the use of notifications and personalisation of the platform (expansion and reterritorialization) and data-driven mental health practice (data and social formation of capitalism) and discourse (collective enunciation). The organisation is deterritorialized from its social care model and reterritorialized as primarily a technology company, that could operate by the socio-technological principles of big tech. There could thus be a move towards more 'agile'

practices that are conditioned by psychological logics and surveillance capitalism (Zuboff, 2019), at the potential expense of 'safe', careful and slow practices.

It is likely that the use of more advanced data production, collection and dissemination practices will continue to grow in the digital youth mental healthcare assemblage. However, the *"data-driven"* future that Peter suggests is not everyone's image of the future development of digital mental health platforms more broadly. Ella, who works in research at a digital mental health organisation, sees platforms as a *medium* to connect counsellors to clients:

> *"So, the digital technology is the platform that enables counsellors to engage with other people across anywhere in the UK, that's what really makes it rather than the platform itself".*

These conflicting discourses set the digital youth mental healthcare assemblage in flux again: two lines of argument, the technology is the intervention, and the technology bridges or connects humans and facilitates the therapeutic encounter. To understand what version endures attention needs to be directed to where desire is oriented in the assemblage. These desires are part of the capitalist infrastructure (Smith, 2007). Other visions of the future of digital mental healthcare are not so concerned with the technology connecting individual to practitioner, therapist or psychologist but technology *mediating* the relationship. Lucas, clinician and lecturer, told me:

> *"... that vision I think is really exciting where you go to your GP and you get a referral to see a psychologist and then you've got an app and it's kind of like getting you ready to see the psychologist and it's collecting some data that the psychologists gonna need and then once you get to see the psychologist ... my dream would be when you see the psychologist, the psychologist already kind of knows from the data that has been collected, what will help you ...*
>
> ....

> *I think a lot of the time we make decisions based on our guts, which can be really fallible, sometimes they can be good, but often we make a lot of bad decisions. Uh, I think computers can make really great decisions in some circumstances, and it would be great if psychologists were able to be um informed by that and yeah, I think we're getting better outcomes because then you have the human connection between two um you know, living beings, plus, the psychologist is able to be informed by all the data, all of the research and yeah, and make some data-driven choices."*

Lucas discusses the fallible nature of human judgement that are often based on 'gut instincts' and suggests that the psychologist could make better decisions if informed by data collected from the patient before meeting the psychologist. Lucas goes on to say that they do not know *"how the data is gonna be collected"*, *"stored"*, *"used"* or *"respected"* but that they hope it will be a *"collaborative process"* where the patient will have the choice to provide data or not:

> *"If you answer these questions, you're gonna get better therapy if you don't wanna answer them you don't have to, it's fine. Like you don't have to, we don't have to collect this data. If you want, you can just go straight in and see that psychologist and they will be blind, and you can have that experience if you want to. But if you want the psychologist to or the mental health clinician or whatever treatment you're getting, to be as effective as possible, then you're gonna try and give as much data to us as you as you can with this security around it. Umm, that's my hope."*

The notion that the psychologist will know *before* they meet the patient is reminiscent of the way that Deleuze (1992, p.7, original emphasis) describes the 'hospital system' in control societies:

> 'For the *hospital system*: the new medicine "without doctor or patient" that singles out potential sick people and subjects at risk, which in no way attests to

> individuation – as they say – but substitutes for the individual or numerical body the code of a "dividual" material to be controlled.'

But the example given by Lucas goes further than this still, it suggests a new form of data-psychologist-computer intelligence and modes of decision making that could be used in everyday spaces such as GPs and youth mental health services. Components of the assemblage such as data, human connection, GP, psychologist and referrals are reterritorialized to 'enter into new relations' (Patton, 2012, p.208). These relations (e.g., psychologist-computer-patient) and visions for mental health signify the creation of a new assemblage of digital youth mental healthcare that is data-driven, anticipatory and produces new molar and molecular subjectivities.

6.4 Implementation and regulation

This final empirical section considers regulation of digital mental health technologies, interventions and services in England, as discussed by interviewees. I suggest that the pace of technological development of digital mental health through molar (perceptible) and molecular (imperceptible) forces differs across social and structural actors, for example digital technologies developed by private companies compared to those developed in academic and publicly funded healthcare research. Secondly, I unpack how the different labels used for these technologies affect the trajectory of regulatory policy in the assemblage. I put forward the argument that current practices of implementation, that is, the introduction of digital mental health technologies into society, healthcare or the marketplace, before substantial academic or clinical research is conducted, deterritorializes components. With new regulatory policy in England, these components may become reterritorialized which, to reiterate is 'the ways in which deterritorialized elements recombine and enter into new relations in the constitution of a new assemblage or the modification of the old' (Patton, 2012, p.208).

Lack of regulation of health apps is an international problem (Bauer et al., 2020). Research in the field of digital mental health suggests that owing to the rapid development and pace of technological change, frequent software updates and evolving scientific evidence of mental health apps, overarching regulatory frameworks have been difficult

to establish (Rodriguez-Villa and Torous, 2019). In the academic literature on digital mental health, the slowness of mental health and wellbeing apps developed in academia and supported by clinical trials to 'reach the consumer marketplace' is often contrasted to the 'proliferation' of industry apps, with lack of regulation one of the decisive barriers to clinicians recommending them to patients (Punukollu and Marques, 2019, p.162). Indeed, the practitioners at youth mental health services spoke of not being able to *"vet"* (Maya, practitioner) mental health and wellbeing apps and this put them off recommending apps to young people. Kathryn mentioned trying to briefly risk assess apps before recommending them. There have been attempts by the NHS to provide public resources of 'approved' apps such as the 'NHS App Library'. The library, however, was decommissioned in 2021(NHS Digital, 2024).

A common practice in commercial digital mental health technology implementation has been to introduce the technology (e.g., release an app on the app store) *before* research is conducted on the app to see if its effective (or safe) because of the cost involved in running randomised control trials (RCTs), to prove clinical effectiveness, for example. Phillip, a clinician and academic researcher, told me about differences between mental health apps developed in academic research and commercial products:

> *"I think in the research world, we tend to focus on research guidelines, like the Medical Research Council's guidelines for complex interventions, or the development and evaluation of complex interventions where there's clear guidelines on the development, feasibility, effectiveness, evaluation and also implementation. It's a very rigorous approach, and it's probably more likely that the products are trusted, and maybe taken up by guidelines, and… But on the other hand, it's a very time-consuming approach, and expensive approach, and often technologies, the field of technology changes rapidly and given this fast pace, it could be argued that certain technologies need to be updated or changed, and by the time they get to that evaluation stage, things are already outdated. Whereas what I understand… I'm less familiar with the commercial approach, but from what I understand, there's more emphasis on getting products out more quickly into the real world, and for it to be continuously evaluated in the real world and*

> *updated. Having said that, I know that certain technologies, commercial technologies, have been evaluated rigorously and published in their own approach. So, there's pros and cons of doing both."*

Phillip explains a thorough and time-consuming approach in academia, which other researchers also discussed. Sara, an academic researcher in digital mental health, talked me through the difficulties of implementing digital mental health technologies and interventions into the NHS, telling me *"... it just stops when it comes to right the trial showed it was good, the papers out, it's got loads of press going for it, but then it just stops."*. It is difficult to get interventions implemented or *"out of the lab as it were"*. They told me how this is *"disheartening"* and compounded by seeing adverts of popular commercial apps such as *"Headspace"* that are easily *"out there"*. Phillip also explains how in the commercial approach to implementation, there is increased emphasis on "*getting products out more quickly into the real world"* and the use of continual evaluation through user analytics and feedback. As argued in section 6.3, tracking can enable continual user feedback which reduces appetite for slower, rigorous or perhaps more critical, academic research protocols which Phillip describes. What assemblage shows is that this emphasis on 'real world' implementation and continual evaluation is not necessarily confined to the 'commercial approach'. It appears to be a new line of action for the National Institute for Health and Care Excellence (NICE) and health technology implementation in England. This highlights how commercial practices (as a force) affect other components in the assemblage. NICE (2023b, n.p.) suggests that the digital technologies they have initially recommended should be used to generate further evidence 'while they are being used in the NHS' and:

> '… after the end of the evidence generation period (3 years), the developer should submit the evidence to NICE in a form that can be used for decision making. NICE will review all the evidence and assess whether or not the technology can be routinely adopted in the NHS.'

This is a new development of which I could not ask participants about since it occurred after the interviews. But taking a step back, perhaps this practice is a response to digital

mental health interventions developed through publicly funded research not being able to compete with commercial digital technologies in terms of implementation. Indeed, the commercialisation 'pathway', that is, to commercialise a product developed in academic research, is now deemed to be a secure way of implementing mental health services more broadly (see Carl et al., 2022).

The notion that academic digital mental health interventions trail behind commercial digital mental health technologies was discussed by academic researchers in who work in youth digital mental health, such as Fran who told me: *"... the speed that the field is going and like the speed of technology, we're just not able to keep up with"*. Fran further explained how and why the pace of technological development limits getting digital mental health technologies and interventions developed in academia into the *"real world"*:

> *"... the scary thing is the commercial apps that have been created, that are not evidence based. So, what your kind of seeing in research is that we do not keep up pace with what is actually being developed, and therefore people are going to be more likely to go for the newer, fancier looking thing? Umm. And really in research, I'm not seeing a huge amount of change in that area, but that's because it takes us so long to get anything out and it's really difficult for universities to create anything that then becomes commercial because it will never, ever meet up to the standards of commercialised and apps anyway."*

As well as not matching the pace of technological change, Fran points to another difference, or incapacity, in academia's potential to compete with commercial digital mental health technologies: an inability to meet the *"standards"* of commercial technologies. Thus, commercial digital mental health technology companies 'set' the pace of the assemblage and the 'standards'. Fran is not referring to the *quality* of the intervention or standards of ethics or safety but to the design, aesthetics, capacities and features of commercial digital mental health technologies. Or what Adele, a researcher of mental health and wellbeing apps, described as apps developed in academia are less likely to have a *"smooth interface"*. The content of apps developed in academia tend to be

"really rich" but have a more *"mechanical user interface"* and apps developed in industry tend to be *"sticky"* (Adele, researcher). Which suggests more engaging. Mia, a researcher at a self-care app expressed similar views, and said that *"funding is always a big challenge"* particularly because *"we are not, you know, like a deep tech, very shiny product that everyone wants to throw money at"*. Similarly, Priya, who works in development at a digital youth mental health company describes differences in the technological capabilities and aesthetics:

> *"A lot of the interventions that exist, the level of gameplay it tends to be quite poor when you compare it to something like an Xbox so there's this um you know there's this real balance of yes it needs to be uh a therapeutic, yes it needs to deliver clinically but it also needs to be super engaging for a young person and it needs to be a really high quality product..."*

Priya refers to balancing the clinical and therapeutic outcomes of the intervention with designing engaging content and features and makes the comparison of digital mental health interventions to gaming devices such as the Xbox. Some digital mental health interventions are registered 'medical devices' and this may bring a medicalised discourse to the assemblage, it arguably makes interventions more desirable to public mental healthcare systems over commercial technologies that do not fit these criteria. Priya told me that part of becoming a medical device is to gain feedback from users and update the product at least once a year based on feedback, this feeds into a *"co-creative approach"* to developing products. When I asked Priya about how long users need to engage with a specific digital mental health intervention, for it to have an effect, Priya replied, *"... so I guess you're talking about dosage really?"* and elaborated that:

> *"... the gameplay aspect itself is limited to a maximum of 30 minutes so we're not encouraging binge gaming, it is very much a prescribed amount of time and once a young person completes that dosage, that prescription, they have to wait until the next day to be able to continue".*

Priya speaks in pharmaceutical terms which reterritorializes the digital mental health intervention within a biomedical and pharmaceutical realm. Pharmaceutical treatments such as antidepressants are still dominant forms of treatment in England for anxiety and depression for young people. In assemblage terms, pharmaceuticals, bio-medicalised models and Big Pharma are 'parastrata' (Deleuze and Guattari, 1987; Holland, 2013, p.59) that coexist alongside the digital mental health 'stratum' and are made from similar forms, substances and milieus (Deleuze and Guattari, 1984). The use of parastrata in this chapter is developed from Holland's (2013, p.58) example of Foucault's study of the modern prison. This shows Buchanan's (2021a) assemblage theory at work. The prison is a 'prison-form', a form of *content.* This form is linked with a 'specific substance' of content (e.g., buildings, power relations and bodies) (Holland, 2013, p.59). The substances of the digital mental health form are technologies, bodies and power relations, for example. The *expression* of the prison stratum is not the signifier 'prison' but an 'entire discourse' on 'delinquency' and 'corrective punishment' which is 'coupled with specific substance of expression' (ibid.). This includes 'legislative acts' and 'policy' for example (ibid).

In digital mental health, pharmaceutical terms (e.g., "dosage") are part of the biomedicalisation of mental health. Content and expression were not 'born together in one stroke', each has its own individual lineage, but they 'eventually fall into a relation of reciprocal presupposition almost as if by chance' (ibid.). Deleuze and Guattari considered Foucault's study of the modern prison to be a prime analysis of 'stratification through double-articulation' (Holland, 2013, p.58). Double-articulation does not occur in a 'vacuum' there are 'parastrata' alongside it. To give a more concrete example, 'the prison stratum co-exists in reciprocal presupposition with the judicial system: neither one causes the other, but they are inconceivable and totally impractical without one another' (Holland, 2013, p.59). To return to digital youth mental healthcare, the pharmaceutical industry and biomedicalised models have not necessarily caused the emergence of digital mental health, but they exist in reciprocal presupposition. The label of 'medical device' as a specific substance of expression, that is, a 'legislative act' exemplifies this. I further explore the expression of the digital mental health strata in the next examples.

Phillip, clinician and academic researcher, also compared digital mental health technologies to pharmaceutical treatment:

> *"I think there needs to be a similar threshold for rigour in terms of the development and evaluation to other resources and interventions, for example in pharmaceutics."*

Whether a digital mental health technology is classified as a medical device or not impacts the type of language it uses and the claims it can make. Jacob, for example, told me that they cannot describe the wearable that they invented to aid meditation as 'therapeutic': *"...the therapy. I'm not allowed to say that cause it's not a medical device, but the therapeutic element is delivered via a piece of hardware."* Still, across commercial mental health and wellbeing apps terminology of 'therapeutic' and 'evidence-based' is widely used. Interestingly, although Jacob makes clear that the wearable they developed is *"not a medical product, very much by design"* they are pursuing *"FDA regulation"* which is the US Food and Drug Administration to become a medical device. This is purportedly to make the product saleable to a US audience, in this case regulation is a deterritorializing force. Lucas, a clinician and lecturer, explained their perspective on regulation of the global digital mental health industry:

> *"I think it's a largely unregulated space and it uh, I mean, I mean digital world is like you know, it's full of these sorts of risks, but particularly in a mental health wellbeing space because it relates directly to health without really relating to health so uh, companies can make the claim that it's just a wellbeing product like it's not, it's not health, it's not, it's not medical device at all, we don't need to get any of that sort of approval. It's just for like wellbeing. But in actual fact, the data they're collecting is directly relevant to health outcomes, and it's not just like, you know, buying patents and like it's yeah, it's way more targeted."*

This recourse to general wellbeing rather than mental health contrasts with pharmaceutical discourse, demonstrating conflicting discursive forces in the assemblage. Lucas draws attention to the data collected in apps labelled as wellbeing rather than

mental health as highly relevant to *"health outcomes"*. There are potential future uses of this data that may not be evident to individual users such as *"ramifications on insurance"* or *"employability*". Lucas continued to tell me that it is so expensive to be *"accredited"* or *"regulated"* that it's not worthwhile for companies and there is a need for regulation that *"still encourages innovation"*.

Polly, an academic researcher in digital youth mental health, points to the ambiguity of diagnostic categories, labels and language used in digital mental health technologies and interventions:

> *"... at the moment, to become a medical device, essentially as like the treatment um or identification of um of a health condition essentially let's say. Now if you say anxiety disorder, then that's you know a condition, but if you just say anxiety then that's just a state, isn't it? So, you know it's not a medical device, so it's those kind of things as well. Umm, I think there's a lot of avoidance and finally, I think there is a lot of bias of big companies doing their own research and proving that they're amazing um it's I think it's yeah, that needs to change, there needs to be more independence in the evaluations of these things."*

Polly suggests that language used to describe anxiety disorder (clinical) and anxiety (emotive state) is potentially capitalised on to avoid regulation. Polly also discusses the bias of *"big companies"* conducting their own research which is a common practice. Priya, who works in development at a digital youth mental health company, discussed the NHS as very difficult to *"get into it"* and there are *"few core players"*. They suggested the reason for this is largely because the NHS does not want to use services if you do not have evidence, but it is difficult to get evidence unless people use the services. My research has found that many commercial mental health and wellbeing apps and digital platforms leased by the NHS have carried out trials with in-house researchers. Studies are published on company websites to demonstrate that products are 'evidence-based'. It is also worth reiterating the partnerships between universities, research funding councils, private companies and big tech that exist in the digital mental health industry. SilverCloud, for example, is a company with strong connections to academic research

groups in Ireland that have conducted numerous studies of their own programme of computerised-CBT. A systematic review and meta-analysis of internet-delivered interventions for anxiety and depression in CYP carried out by researchers affiliated to SilverCloud showed a significant small effect for anxiety and a small but not significant effect for depression (Eilert et al., 2022, n.p.). The conclusion of the authors is that the potential of these interventions has not been 'tapped into' to date (ibid.). SilverCloud have collaborated with Microsoft on 'Project Talia' to examine how AI and machine learning can be used to enhance SilverCloud's platform and deliver personalised treatment (Belgrave, 2019). Assumedly the data was drawn from 'real world' use of SilverCloud programmes. Use of 'real world' data is made explicit in a secondary analysis of RCT data where patients were recruited from an NHS IAPT service where they used SilverCloud iCBT (Cumpanasoiu et al., 2023). Data production in digital mental health, even in public spaces (such as NHS), can become reterritorialized for capitalist means and uses. Data has an afterlife and can be repurposed in what may appear as mundane ways (Leszczynski, 2020). Data shadows can be threatening as well as potentially enabling or empowering (Milne et al., 2022). The 'data residues' (Amoore, 2020, p.59) of thousands of past iCBT sessions inform algorithmic decisions.

Returning to the application of 'medical device' to digital mental health technologies and interventions, Fran, an academic researcher of digital youth mental health, discussed the changing applications of the term 'medical device' in the UK. They suggest differences in testing and research of digital mental health interventions and pharmaceutical treatments (e.g., antidepressants):

> *"…. what we're seeing now is that medical device regulation, which would have been applied to a pill, for example, is now also being applied to digital health interventions so those bureaucratic difficulties are increasing um … So for example, a medical device is classified as, at the moment, for something digital as something that changes behaviour, so a psychoeducational tool wouldn't be something that changes behaviour but now a medical device is something that changes behaviour, but it also there's like some like weird like niche of it that's something, along the lines of um, if it just presents to you CBT then it might not*

be a medical device it's if it learns and changes its responses based on your responses is that's when it's becomes a medical device. Now the likelihood is that soon anything that tries to change behaviour that is a digital intervention is going to be the thing that is, like is a medical device so I think that that's all probably gonna become under the umbrella term of medical devices anyway…"

Fran describes how pharmacological, behavioural, medical and technological knowledges of mental health combine to produce new regulation. These discourses can be described as what Foucault (2016, p.119) terms 'morphologically medical'. New rules and regulations for digital mental health interventions apply if the device has technical capacities to feedback to the user based on the data the user provided – what I described as personalisation practices in chapter four. The conditionality of medical device is premised on this capacity and this capacity is contingent on the production of vast amounts of data and computational procedures such as machine learning to process the data (relations of dependency not just circumstance). What comes with the label of registered medical device is potentially a smoother pathway 'into' the NHS or specific NHS trusts, and with this a reconsolidation of biomedical, behavioural and perhaps pharmaceutical ways of knowing mental health and greater partnerships between commercial digital mental health companies, academic research and public health institutions. The NHS as an institution has an integrative force in the assemblage. Drawing on Deleuze, Lazzarato (2006, p.173) states that 'Power is a relation between forces, while institutions are agents of the integration and stratification of forces. Institutions fix forces and their relations into precise forms by according them a reproductive function'. Whether the NHS will continue to take this type of role and the ethical and regulatory concerns that arise will need to be a focus of future research.

Using assemblage thus shows, through regulatory discourse, research, policy and the claims that digital mental health companies make, that there is a transformation of what mental health is (ontological). If the 'medical device' regulation of digital mental health interventions in England described by Fran comes into existence it is likely that there will be increasingly close ties between academic research, the digital mental health industry and public health systems to create, manage and regulate digital mental health

interventions as ‘medical devices’. This brings a (re)consolidation of biomedical and behavioural knowledges of mental health, but also potentially creates new *technoscientific* knowledges. Whilst at the same time, the development of products that work by the data collection logics of surveillance capitalism.

6.5 Discussion and conclusion

This chapter has given a sense of the digital youth mental healthcare assemblage in England. I have not attempted to describe this assemblage in its totality but to provide exemplars, such as: the COVID-19 tensor; the reterritorialization of waiting as a time-space for intervention; different processes of tracking and data production; and the relationship between implementation and regulation. Assemblage theory and method has drawn attention to these different aspects of the digital youth mental healthcare assemblage in England because of tracing the relations of dependency between social and structural actors. There are other concepts I could have used in place of assemblage, such a Foucault’s (2009) *dispositif* (apparatus). In digital geographies, Ash et al. (2018c, p.37) argue that there is a need for geographers to unpack digital *dispositifs* which Kitchin (2014) does with ‘data assemblages’. This is through examining digital objects and infrastructures comprehensively, paying attention to their material and discursive practices, understanding how these shape development and implementation, serve particular economic or social interests and consolidate and sculpt the exercise of power (Ash et al., 2018c). By using Buchanan’s (2021a) approach to assemblage I have arguably also unpacked the digital *dispositif*. This is because of Buchanan’s insistence on collective enunciation (the expressive and discursive side of assemblage) as well as the material side. This chapter, and use of assemblage theory therein, thus contributes to digital geographies and posthumanist enquiries into digital technologies by centring the material, the discursive and power relations.

There is also the scale of the assemblage and *dispositif* to consider. Regulation in digital youth mental health, for instance, could be an apparatus *within* the assemblage. This follows Legg’s (2011, p.131) suggestion that apparatuses could be a ‘type’ of assemblage

but one that is more 'prone' to reterritorialization in the 'sense of anticipating, provoking, achieving and consolidating'. The examples given in this chapter are more 'prone' to reterritorialization. For example, waiting time-spaces captured by capitalistic enterprise and the territorialization of data for clinical *and* business needs. The version of assemblage theory that I mobilised departs from a 'flat ontology' which eschews 'recourse to deep structures or hidden mechanisms' and advocates a '"generalized symmetry" in which social, material and symbolic entities are treated equivalently' (Atkinson, 2024, p.80). Ash (2020b, p.345, emphasis added) writes that flat ontological approaches across ANT, assemblage, theories of affect and practice 'differentiate between entities in terms of *degree* rather than *kind* in order to avoid hierarchical or binary modes of thought. Working with these perspectives, geographers theorise entities as relational'. While I accentuated the relations between entities and, in some ways, treated the differences between types of digital mental health technologies, services and interventions in terms of *degree* rather than in *kind*, I also emphasised the differential power relations within the assemblage and argued that specific components (e.g., digital mental health companies/industry) have more force, capacity to affect (*puissance*) and power [over] (*pouvoir*) to determine the trajectory of digital mental healthcare for young people. This consideration of power supports Duff's (2023, p.5, original emphasis) assertion that within assemblages '*power relations function to make the selection of elements more or less likely*'. This 'likeliness' I have conceptualised as the abstract machine of psychopower that conditions the relations in the assemblage (Nail, 2017). This version of assemblage materialises power relations whilst at the same time shows how and why heterogenous materials (human and non-human) produce an assemblage.

In terms of the expressive side of the assemblage (collective enunciation), which includes the 'application of labels' on bodies (Buchanan, 2021a, p.151), I have shown in this chapter how labels on human bodies and digital technologies fluctuate in the assemblage: clinical, general wellbeing and pharmaceutical, for example. I also noted an increasing force in the assemblage, or parastrata, which is pharmacological. This parastrata is familiar to the mental health assemblage more broadly, with 86 million antidepressant items prescribed in England in 2022/23, which is an estimated 8.6 million patients overall (NHS Business Services Authority, 2023). For children and young people, psychological

therapies are still the main treatment for anxiety and depression, but research establishes that the 'number of 12- to 17-year-olds prescribed antidepressants more than doubled between 2005 and 2017' (Kwint, 2022, n.p.). This increase has continued over the last few years, with a rise of 8% from 2021-22 in prescriptions for 10- to 19-year-olds (Kwint, 2022). Evidently, pharmaceuticals are still a dominant form of treatment in England for mental distress, and how this parastrata combines with digital mental health treatments is an area necessary of further study. Discursively, there will invariably be further shifts in the assemblage with the introduction of new labels for digital mental health technologies, services and interventions. The term 'digital therapeutics' (or DTx) to describe 'evidence-based' digital mental health interventions driven by software (European Data Protection Supervisor, n.d.), appears to be gaining in popularity in the academic literature on digital mental health (see Carl et al., 2022; Nwosu et al., 2022) and digital therapy companies alike, with ieso raising £39 million pounds of funding to develop digital therapeutics 'to address global mental health crisis' by developing a so-called 'autonomous therapy system' (ieso, 2021, n.p.). How these labels conflict with regulatory labels of 'medical device' and other parastrata of digital mental health could be a focus of future research.

The assemblage has not occurred in a vacuum but in relation to other assemblages, or parastrata (Holland, 2013). These parastrata include the development of CBT and its links to economics, the development and roll-out of IAPT (Clark, 2011; Pickersgill, 2019a), stepped care models in England, and historical practices of monitoring and tracking symptoms in the 'psy' sciences. Behavioural and analytics data does not only make digital mental health services accountable (Pickersgill, 2019a; Bruun, 2023) but also saleable and can inform assessments of mental health and diagnoses. Moreover, with increasing data collection and future uses of mental health data (e.g., regarding employment; Lucas), it is important to understand how this assemblage may interact with other parastrata such as the judicial system. For example, how will the vast collection of mental health data interact with the Mental Health Act in the UK and forced detainment in hospital? Turning to Foucault's (2016) analyses of the histories of psychiatry, medicine and discipline may help us to understand the potential implications of the 'penal mechanism' and the *digital* psychiatric mechanism.

In this chapter, I demonstrated how assemblage is a suitable analytic for understanding institutional phenomena in digital mental health rather than 'human-app' assemblages (Lupton, 2019a). I argued that forces in the digital youth mental healthcare assemblage are dictated by the desire of the social formation of *technoscientific* capitalism (Smith, 2007) which harnesses the generation, accumulation and valorisation of behavioural data (Zuboff, 2019). This works in rendering machinic, through production and reterritorialization of space for capitalist capture, such as the time-space of waiting. Each reterritorialization contributes to shifting the digital youth mental healthcare assemblage but also adjacent assemblages (or parastrata), such as the NHS assemblage which is moving from public health service to increasingly privately operated mental healthcare. I argued that lack of capacity of NHS mental health services is capitalised on discursively and materially by other actors in the assemblage such as digital mental health technology companies, the incapacities of the NHS are reterritorialized by these companies. What Buchanan's (2021a) approach to assemblage highlights is that this space, captured by digital mental health companies, is not incidental. There are a series of relationships and dependencies between components in the assemblage – this is the 'how' of assemblage. But there is also a *why* inexplicably linked to the 'how'. Arguably the 'why' is the chronic and long-term underfunding of state public mental health services (i.e., the NHS and CAMHS, for example) and austerity policies by the Conservative-led Government in the UK since 2010, as well as increased privatisation in the NHS (Powell and Miller, 2016). Digital mental health as a case shows the new markets and for-profit actors now at work in mental healthcare provision in England. This is mirrored in mental health support in the UK university sector (Callard et al., 2022; Kotouza et al., 2022). Moreover, recent reports referring to in-patient psychiatric care in England by The Guardian (2022, n.p.) suggest that the 'independent sector' earns nearly '£2bn a year for treating patients with psychiatric conditions' – this is, '13.5% of NHS England's entire mental health budget'. The reasons given are that the NHS does not have resources or the staff because of years of underfunding of mental health services. The article also posits that there needs to be answers that 'address[es] the underlying question of *why*, with average profit margins of 15%-20%, it has been made so easy to make money out of acute psychological distress' (The Guardian, 2022, np., emphasis added). I have attempted to show how, and why, in a

digital context it is ‘easy’ to make money from so-called ‘mild to moderate’ psychological distress.

Assemblage draws attention to tracking as machinic (content) and expressive force in the assemblage. This argument furthers critical literature on digital health technologies that largely considers *self*-tracking practices (Lupton, 2016a, 2016b, 2017) whereas this chapter highlighted various instances of tracking *of* users in digital mental health, particularly platforms and services leased by the NHS. These processes of tracking produce data that is surplus value, or what Cosgrove et al. (2020, p.620) discuss as mental health apps making individuals ‘part of a hidden supply chain for the marketplace’. I use the term surplus value (Clough, 2018) because it points to the ancillary value that is produced: there is an *excess* (from data and tracking) that becomes commodified and reterritorialized. The tracking practices documented in this chapter could be overlooked as part and parcel of mundane digital technologies and services, but it is vital that attention is paid to this. If the assemblage continues in its current trajectory there will undoubtedly be an increase in tracking, monitoring and surveillance in the future of ‘data-driven’ mental health support, care, therapy and treatment. This is not confined to commercial digital mental health technologies or big tech surveillance capitalism but, as this chapter has shown, is increasingly becoming part of our everyday interactions with public mental health services and healthcare institutions in England and globally.

The forms of tracking discussed are often described as *ecological* processes in the digital mental health literature. Tracking the ways that users interact with an interface, for example an app or a digital platform, has a dual function of providing data on usability and tracking the users’ engagement which can be used as a proxy for outcome, that is, whether the intervention is effective. The material components (content) in the digital youth mental healthcare assemblage, such as, the various technologies, bodies and institutions, are described in the academic literature as an ‘ecosystem’ (Spadaro et al., 2021). Assemblage de-naturalises ecological discourses. Arguably, the digital ecosystem metaphor can obscure the relationships of dependency between components, what makes it come together, that is, what forms of desire and power, or in Krivý’s (2023, p.8) words the digital ecosystem metaphor produces a ‘neonaturalism that mystifies political

economic agency and obscures power through analogies with dynamic, self-generating and complex nature'. To reiterate, digital mental health is a global multibillion-dollar industry (Nwosu et al., 2022), that involves multiple actors, some of whom profit greatly from mental distress.

As I have argued throughout this thesis, although digital mental health technologies are often described as an adjunct to other forms of support, or an intervention to support people whilst they are waiting, there is desire in academic research and commercial practices to explore what 'traits' need to be included in the digital therapeutic relationship and what can be *cut*. These processes of contraction are coupled with processes of expansion which in this chapter, I have used re- and de- territorialization to analyse. At the same time, there is contingency to the assemblage, and I have perhaps analysed it as stuck on a particular trajectory – an assemblage is an 'active, ongoing process, not a static whole' (Buchanan, 2021a, p.33). I have largely concentrated on processes of reterritorialization but there could be a 'technoaesthetic' (Lapworth, 2020), condition of possibility (Buchanan, 2021a), or ethico-aesthetic (Guattari, 1995) edge to the assemblage, which I have not given sufficient attention to. With the social formation and psychopolitical conditioning relations of the assemblage neoliberal, informational and surveillant capitalism, there are drives towards contraction, reduction, efficiency and stripping out. But as this chapter has shown, through assemblage, there are also less visible practices, of extension and capture, by continuing to map these out we can hopefully better intervene in them.

Chapter seven: Conclusion

7.1 Introduction

In this thesis, I provided an account of the changes made to youth mental healthcare in the turn to digital in England, with reference to three groups of people: young people (users of digital mental health technologies), practitioners, researchers and developers. The results give insights into practices of research and development, practitioners' experiences of digital service provision and young people's everyday experiences of using digital mental health technologies Together this shows how digital technologies interrupt and transform therapeutic encounters and relationships. There is little existing research that integrates perspectives from these groups. This thesis therefore makes a novel contribution to understanding the relationships between key actors within the field of digital youth mental health. The emphasis on digital therapeutic encounters and relations; temporalities of self-tracking and modes of reflection in an associated milieu; and power and the relations of dependency between social and structural actors in the assemblage advances a critical posthuman geography. I set these arguments out further in section 7.4.

Theoretically and empirically, I was inspired by the 'intimate geographies' that Felicity Callard (2016, p.219) documents in 20th century experiments with panic disorder, which:

> '… drew together a complex network of material objects (e.g., the drug imipramine), socio-spatial setting (spaces of psychotherapeutic consultation vs. the regular space of the ward), discursive elements (the speech of patients, therapists, ward staff), bodily movements (patients running, or not running, to their nurses), and changes in affective rhythms and demeanours (e.g., increases in patients' "aggressive self-assertion" upon taking imipramine)'.

Although I did not conduct this type of observation or an ethnographic study and the object is different to a medication, in the analysis of users' experiences with digital mental health technologies, and through speaking to practitioners, researchers and developers, I have described how digital mental health technologies shape users' lives in intimate ways.

Callard (2016) argues that by paying attention to these multiple elements the ontological status of phenomena is thrown into question. In the case of Callard's study, this is psychopathological anxiety, and in the case of this thesis, my focus is on the (digital) therapeutic encounter and relation. Callard (2016, p.219) asks: 'For psychopathological anxiety to be transformed from one into two ontologically distinct kinds, which elements in this network were prioritized and valorised and which ultimately, were ignored?'. This is a pertinent question that I have just started to explore in this thesis, using a psychoanalytic vocabulary (e.g., splitting and cutting), what components of therapeutic relations are valued? What parts can be automated? And what is ignored?

7.2 Chapter summaries

Chapter one set the context by situating the field of digital mental health research as *technoscience*. I introduced the research questions and described the main technologies: digital platforms and mental health and wellbeing apps. Chapter two presented the conceptual framework: a critical posthumanism that combines assemblage theory, digitally mediated experience and psychoanalytic theory. Chapter three outlined the methodology, giving a sense of the practicalities of carrying out this study. It also introduced the analytic frame: assemblage. The next three chapters presented analyses of the empirical data from interviews and focus groups. Chapter four primarily explored the ways in which digital and in-person spaces, objects and materialities intersect and affect therapeutic encounters and relations. It provided analysis of how human connection, for example, is *cut* in technological therapy and support – from telephone to algorithm, and how this is transformed algorithmically. Further eschewing the artificial divide between real and digital space, in chapter five, I analysed the 'associated milieu' of young people's social, psychological and technical practices with mental health and wellbeing apps, such as 'pre' and 'self' reflection. I examined temporality and how the discourse of 'checking in' produces short and durational introspection, reflection and self-analysis. Chapter six built on the analyses developed in chapters four and five and the milieus, traits forms and substances identified to develop an account of relations of dependency between social and structural actors in the digital youth mental healthcare assemblage in England. It

examined re/de territorialization and exemplars: the tensor of COVID-19, waiting as a time-space for intervention, data and tracking, and how implementation deterritorializes regulation.

7.3 Research questions

The main aims of this thesis were to explore young people's experiences and engagements with digital mental health technologies and to analyse the assemblage of digital mental healthcare for young people in England. The outcome of this was to advance a critical posthumanist geography which takes seriously the capacities of digital technologies without losing sight of the humanness of the concept of the psyche and therapeutic relations, or the production of these by technoscientific capitalism. I sought to answer two research questions. Here, I provide answers to these research questions, drawing on the empirical findings and informed by my conceptual analysis. I expand on these findings in the advancing critical posthumanism section (7.4).

1. What are the practices and logics of digital mental health?

As introduced in chapter three, after Mol (2008), logic describes the rationale of practices. In terms of practices used to engage young people, personalisation and gamification were shown to be significant psychopolitical logics in mental health and wellbeing apps: young people 'check in' with their mood and submit mood ratings to maintain 'streaks', become attached to digital pets/characters in apps. As part of this attachment users enact self-care practices to win points in the app, and personalisation algorithms in self-care apps intend to support users to be their most 'authentic self'. In line with the existing literature, self-tracking remains a key practice, young people track meditations, mood, activities and sleep, for example. I unpack the effects of these practices further in my answer to the second research question. The thesis also gave insight into some of the 'backend' practices at work in digital mental health, such as models that inform habit-based apps (e.g., hinging events and cues), processes of training of chatbots to detect risk through language, trigger words and semantic proximity, and the ways platforms are designed to assign and order cases to practitioners. These accentuate how software and interface

design mediate young people's experiences of mental health support or therapy and secondly, how they produce new knowledges of youth mental health, for example around risk.

Across the thesis, I identified one prevalent logic of the digital youth mental healthcare assemblage: automation. This logic could be reconceptualised as a 'power of selection' (Buchanan, 2021a) of the assemblage or part of its conditioning relations (Nail, 2017). I argued that automation is achieved through various practices including scripting, optimisation and scaling. Young people's accounts of therapy sessions via digital platforms made visible components of automation, such as speed of responses and email notifications that made interactions less personal and feel more machinic. Some of these components are perhaps unintentional on the part of the digital mental health technology company. Notably, the sense of speaking to a 'bot' is produced even when a human practitioner is synchronously communicating with young people via instant message on digital therapy platforms, which signals that experiences already *feel* automated even when a human practitioner is present. In some digital mental health platforms, practitioners speak to multiple users at once. This allegedly lowers the cost of 'therapy' and increases access, but young people interviewed sensed that practitioners are holding sessions with multiple people, and results in them not feeling heard. Digital therapy platforms used in the NHS, such as SilverCloud, may increase the number of hours of therapy offered, but arguably reduce the quality and capacity for connection, the latter of which practitioners and young people underscored the importance of. In terms of optimisation, there were residual effects of COVID-19 as a tensor, practitioners felt like the service model, the immediacy of being seen, was compromised and that every session needed to be filled.

With automated technologies, such as chatbots, there are human clinicians at work training them, but humans play less of a front facing therapeutic role. Parts of humans are valued over others in emerging digital therapeutic relationships. With increasing automation in mental health, human practitioners are not completely replaced, but certain components are cut or automated. In chapter four, I used psychoanalytic theory to conceptualise personalisation algorithms as transitional objects that have capacities for

projection and transference. In doing so, I posited that these are parts of therapeutic relationships that are scaled and primed for automation. This feeds into an overarching logic to distil what components make 'therapy' in its many different approaches and guises 'work' and to what degree these components could be cut, automated or ignored.

I also identified new practices produced by digital mental health: suggestion and filtering. Suggestion relates to the psychopower of digital technologies to produce a kind of flow state where conscious questioning of advice or guidance whilst using an app is lessened, making suggestions land more easily. Suggestions can be implicit and explicit, for example to download a specific app, or try out a new meditation. Suggestions are not necessarily nefarious but tend to operate in a logic of 'power over' (*pouvoir*) *rather* than increasing the user's capacity or 'power to' (*puissance*). Filtering techniques take part in the cognitive work of decision making when using mental health and wellbeing apps, again contributing to a flow state, or what Till (2019, p.428) describes as encouraging people to 'act (or react) automatically without engaging consciousness', or in Deleuze and Guattari's terms, filtering techniques engage users as *molecular ensembles* of components parts. Filtering and suggestion work to guide the user but also make suggestions to the user. A question remains as to how this compares to psychotherapeutic practice that tends to avoid giving advice, or psychoanalytic practice of Klein (1975) that suggests the analyst is a medium.

Chapter six demonstrates that digital mental health *services* - often provided by private companies - such as digital CBT, instant-messaging and platforms are becoming a standard 'treatment' offered to people experiencing 'mild to moderate' depression or anxiety who access support via NHS Talking Therapies. Self-monitoring data and its basis for mental health knowledges driven by IAPT over the last few decades (Pickersgill, 2019a; Bruun, 2023) have diversified to include data analytics collection practices. Data collected by digital platforms such as SilverCloud or ieso, similarly to IAPT, make the service 'accountable' (Pickersgill, 2019a), but also make the platform saleable and the data can be repurposed to continue developing the services or create new products. Findings from interviews with researchers and developers suggest that digital mental health platforms targeted at youth and the NHS, occupy liminal positions between social

enterprise and tech company with competing logics (e.g., 'social good' or profit), and conflictual discursive understandings of what the purpose of these types of platforms are: a medium to connect client to practitioner/therapist? Or is the digital platform itself the intervention? This again underscores what 'part' is doing the therapeutic work, where funds should be located, who and what should be automated and what the intervention is at all.

Long waiting lists and lack of in-person mental healthcare is a long-term political decision which is difficult to change in the short-term through training and recruitment. Chapter six argued that these material realities are capitalised on by digital mental health companies to justify the turn to digital and automated technologies, interventions and services in public mental healthcare. Digital mental health is a constituent part of increasing privatisation of mental health services in England.

2. How do these practices and logics change how young people engage with their own mental health and wellbeing?

Departing from research in public health, digital psychiatry and information and technology sciences on digital mental health (conceptualised as a form of technoscience), my intention was not to determine whether mental health and wellbeing apps or digital mental health platforms are acceptable to young people, or if they are effective in reducing mental distress. I took two lines of enquiry from this field as points of departure: the negative or unintentional effects of mental health and wellbeing apps and the focus in research on making digital mental health technologies engaging to sustain long-term use. I set these concerns up to understand the ways that digital technologies invite young people to *intervene* in their own mental health and emotional experience.

The thesis has shown that personalisation and gamification as psychopolitical instruments shape users' experiences of digital mental health technologies. Apps, app stores and the associated milieu of recursive data can be *suggestive.* This has implications for users' autonomy and suggests power relations that tend towards a power over, sculpting users' decisions. Gamification is often experienced as a lure to keep using mental health and

wellbeing apps. The purpose of data collection practices can be unclear, for example how data is fed back to the users to personalise their experience and to make the app engaging. Or for example whether typing out problems is for a therapeutic benefit or data harvesting. Suggestive power is not always experienced as harmful or coercive, however. In response to in-app suggestions or personalised content, young people expressed changes such as improved sleep and feeling more relaxed before bed because of listening to sleep casts and developing meditation and mindfulness practices; changes to daily routines because of the development of new habits (e.g., washing face in the morning); and increased awareness of moods.

Digital technologies also change therapeutic relationships by reshaping space and time. Young people who tried digital CBT platforms experienced feelings of automation and 'bot' like encounters and stopped using the platforms for similar reasons: they felt unheard, sensed that practitioners were speaking to others at the same time, the space felt automated, and no relations were built. These findings suggest that digital mental health platforms need to be more *expressive*, that is, better able to convey thought and feeling to connect with users to reduce negative affects (Lynch et al., 2022). Chapter four showed, however, that for some young people a digital technology needs to express that it is a technology rather than imitating a human. Whether algorithmic practices of suggestion and filtering are experienced as pseudo-human and how these shape the digital therapeutic alliance could be explored in future research.

Feelings of insecure spaces and a lack of digital therapeutic alliance are compounded by other material bodies (e.g., housemates) and things being present in the young person's space when engaging in online therapy via digital platforms. Insecurity and lack of space is reflected in some young people needing to leave the house to go for a walk to access therapy over the phone, for example. If the use of digital platforms in public youth mental healthcare increases (and if there is less funding of in-person youth mental healthcare), young people could find it increasingly difficult to find a safe space to talk. At the same time, peer-representatives discussed mental health apps as providing safe spaces for young people to take a few minutes to reflect on how they are feeling and disconnect from everything else.

Young people interviewed do not want in-person services to be replaced and practitioners generally supported a hybrid model including in person, online and telephone support. This suggests that practices and logics of digital mental health are not completely changing the ways that people think about mental health support or therapeutic relationships. This contrasts with existing arguments made in digital mental health literature which states that children and young people as 'digital natives' *prefer* digital health interventions to traditional services (Hollis et al., 2017). Arguably, it is not really an 'either/or' situation. Young people tend to view digital mental health technologies, interventions and services as different in *kind* rather than *degree* to in-person mental health support from a youth mental health practitioner, therapist, GP, school or third sector organisation. It was also evident from interviews that some of the reasons for engaging with digital mental health was because of either a lack of knowledge of "what else is there" or because of barriers (e.g., long waiting lists) to accessing in-person support or counselling. Young people also told me about complex processes of referral which did not lead to support; a form of deferral (Kiely and Warnock, 2023). Digital waiting-list interventions will perhaps become more frequent in youth mental healthcare and may change young people's help seeking practices, for example, if they actually receive the in-person support they seek, at all.

Chapter five detailed how mental health and wellbeing apps change the ways in which young people respond to their own mental health temporally through repeated check-ins with apps. I argued that these acts constitute reflexive practices involving introspection, reflection and self-analysis in correspondence with an 'associated milieu'. Young people repeat checking in with their mood sometimes very frequently, for example up to 20 times per day, but sometimes they rate their mood simply to "keep" the streak. Young people told me about how they look back at mood data, what this generates (e.g., associating and analysis), and the ways that they want mental health apps to present data back to them. This thesis argued that apps can also have residual longer-term effects as part of the associated milieu (see 7.4). Self-tracking and the practices engendered (such as reflection) does not necessarily stop when the device is no longer used, and practices formed with

meditation apps (such as sleep routines) can continue when apps are no longer 'actively' used.

I problematised what some of the unintentional consequences of repeated reflection might be. This adds to contemporary psychological research by Lucy Foulkes who questions whether mental health awareness raising campaigns may have inadvertent effects, contributing to an increase in reported mental health problems among young people particularly. Foulkes and Andrews (2023, p.2) put forward the 'prevalence inflation hypothesis' and argue that one benefit of awareness campaigns is leading to reporting of symptoms that are not well known, but awareness can also lead to adverse effects, such as *overinterpretation* and self-diagnosis. I showed that mental health and wellbeing apps are part of this phenomena and quite possibly accelerate individual awareness excessively. Associated milieu and assemblage demonstrate how the material (e.g., technologies, software, algorithms, data) and discursive (e.g., mental health awareness or youth mental health crisis) need to be considered as actively shaping the ways in which young people interpret, know and intervene in their own mental health and emotional experience. Forms of 'hyperreflexivity' could lead to self-alienation (Sass, 1987). The effects of how young people perceive and engage in critical dialogue with their 'selves' through micro-encounters of reflection need to be better understood in a mental health context. At the same time, as Foulkes and Andrews (2023, p.2) point out, 'problems of living' need to be de-pathologised. I made a similar point at the end of chapter five, digitally mediated mental health tracking arguably deviates attention from social, political and economic causes of distress and further cements individualised responsibilisation of young people which works to the benefit of neoliberal governance and surveillance capitalism logics. Instead of greater awareness of mental health, there perhaps needs to be more critical societal awareness of the social, economic, political and environmental conditions that shape negative feelings and distress.

7.4 Advancing a critical posthumanist geography

This section advances the type of critical posthumanism articulated across this thesis. By drawing on psychoanalytic thought, particularly technique (projection, transference and transitional objects), posthumanist geographies could also provide an account of *internal* object relations. The added value of drawing on literature on digitally mediated experience to theorise digital mental health gives depth to discussion of temporalities and digital mental health, as well as the 'associated milieu' providing a spatialisation of people's digitally mediated practices. Using assemblage theory materialises the relations between humans, technologies, institutions, discourses, spaces and temporalities through critical mapping of orders of dependencies and powers of selection in relation to technoscientific surveillance capitalism.

Posthuman subjectivities and relations

Across this thesis I unpacked how mental health apps shape subject formation, primarily through mediation. After digital geographers and post-phenomenologists (chapter two), I conceptualised how digital mental health technologies mediate consciousness (Idhe, 2009) and influence, punctuate and structure (Leszczynski, 2015) young people's experiences and everyday lives (chapters four and five). By using the term mediation, I am suggesting a kind of intermediary non-human agency that belongs to neither subject (user) or object (mental health app) but in the relation, the product of mediations. As embodied objects, I focused primarily on apps to understand how data circulations with a human body (Rose et al., 2021) produce posthuman subjectivities. Gillian Rose (2017, p.789) suggests one way to conceptualise emergent posthuman subjectivity is through a vocabulary of: 'speed, rhythm, historicity, location, flow, friction, extension, futurity, splintering, distribution, fracturing, and orientation'. In understanding how digital technologies change capacities for reflection I primarily considered speed, rhythm and flow (chapter five). I supplemented this posthuman language with a psychoanalytic vocabulary of cutting, splitting and projecting to describe different parts of the human and how these are transformed digitally. Posthuman subjectivities are not exclusive to users but extend to therapists and practitioners that are increasingly working with digital technologies, systems and data. In terms of users, I challenged recent claims of a complete shift to a digital form of behavioural governance of data points and dividuals that no

longer requires a reflexive subject (Dammann et al., 2022). Young people interviewed were often cognisant of the power of digital technologies to hold and capture their attention and change their thoughts, actions and routines which suggests capacities for resistance, or to cultivate 'glitches' and refusals to be governed in a certain way (Leszczynski and Elwood, 2022; Lynch, 2022) or rejecting self-optimised and productive subjectivities.

In chapter four, I argued that therapeutic relations are *cut* from telephone to algorithm. Cut signals that the relation ceases, but analysing these as mediations meant that I viewed these relations as transformed rather than removed. Cut is also used by posthumanist theorists, such as Karen Barad (2003, p.815) who posits the 'agential cut' as a form of intra-action, a 'material configuration' in contrast to a subject-object cut. My notion aligns more with Kraftl (2020) who discusses cuts as literal (e.g., a damaged toy) because I am suggesting that parts of mental health support and therapy are cut away and automated. Nonetheless, Barad's (2003, 2007) agential cut and 'intra-action' could be useful to explore with assemblage and Buchanan's (2021a) interpretation because both consider causality. Buchanan (2021a) notably does not include analysis of Barad in his critique of vital and new materialisms.

As explained in chapter two, object relations theory is starting to be used in digital mental health research. In digital psychiatry, a brief commentary suggests the potential utility of 'object relations theory' because smartphones are forms of 'transitional object' that provide comfort to users (Cohen and Torous, 2019). I critically engaged with this notion and showed how personalisation algorithms, as a psychopolitical logic, can be read as 'transitional objects' that are woven *into* the user and could affect subject formation. Young people may experience these as objects through which they consider themselves and make decisions about themselves (not-me/me). In chapter five, I built on psychoanalytic conceptions of projection and transitional objects as 'auto-affection' which describes a self-relation that could occur by self-tracking mood and processes of reflection. Overall, these exemplify posthuman subject formation where apps (for example) are co-constitutive and produce *internal* object relations through techniques

such as transference and projection. Psychoanalytic concepts and techniques thus can be amenable to posthuman analysis of relations between humans and digital technologies.

Attachment, when read as a relation and promise (Anderson, 2023) potentially mediates the auto-affective relation. I showed in chapters four and five how units of apps (e.g., digital pets) can be expressive of a promise to the self, as subject and object, and a future self, this motivates users to enact 'self-care' activities. At the same time, attachments can be cruel, and the potential of change may be limited, constricted by the lack of public mental health services capacities to care, for example. Attachment and its mediative role thus needs to be viewed in light of what we invest our desires in, the social formation of the assemblage, a form of surveillance capitalism. This leads me to questions of responsibility. Chapter four mainly dealt with the distribution of responsibility across 'human-app' and 'human-platform-practitioner' assemblages. Exploration of the distribution of responsibility was enabled by turning to psychoanalytic theory. Techniques of transference, projection, and transitional objects forced me to consider who or what holds the weight of responsibility for the 'therapeutic work'. This is evidenced in 'backend' systems of allotting risky cases and context formation, as well who (user) or what (technology), in the end, is responsible for 'treatment' or getting better.

Overall, this thesis developed a posthumanist argument about subjectivity, relations, digital technologies, data, and reflection. Still, I recognise a lingering humanism in my framing that as shown across the thesis is necessary. I primarily conceptualised young people's relationships with apps and platforms through a humanistic and psycho-social vernacular, drawing concerns back to the human and what this means for *human* therapeutic relations. This potentially anthropomorphises digital mental health technologies and their emerging paradoxical capacities for care, harm, therapy and support, and the oppressive and therapeutic arrangements (Duff, 2023) of the assemblages they are part of. I unpack posthuman reflection further in the next section.

Associated milieu, un/conscious, temporality and reflection

Increasing attention in studies of contemporary digital culture is given to human processes of association and attachment and their modification by digital technologies. Jacobsen and Beer (2021, p.2), for example, suggest human 'memory attachments' and 'emotional associations' with the past in their work on 'quantified nostalgia'. Similarly to arguments made about reflexivity in chapter five, Jacobsen and Beer (2021) argue for the need to unpack *processes of formation* of what Lupton (2020a) describes as 'data selves'. In chapters four and five, processes of formation were examined by analysing *how* engagement and reflection come about *with* digital mental health technologies which I conceptualised, after Simondon (2017) as an 'associated milieu'. Language of association reflects psychological processes of thought formation, how people associate between signifying (units, language and symbols) and a-signifying (e.g., algorithmic code and feedback) and how this shapes practices and experiences. Gamification and personalisation were theorised as molecular forces (chapters four and five) of the associated milieu. Repetitive check-ins occur in response to cues in a digitally mediated associated milieu. Psychological models of habit formation gave an insight into how cues in the milieu are multiple, including reward, time, event, internal. These could add to theorisations of digital object relations, both internal and external. The pervasiveness of cues reflects what Buchanan and Savat (2020, p.54) describe as a particular spatial characteristic of the 'control society': vast collection of behavioural data and Zuboff's (2019) suggestions that the goal of big tech to automate us means that 'in effect the environment is increasingly prepared in advance for our arrival and without us being aware of it'. Findings from interviews with young people highlight however, that notifications (a dominant cue in digital and social media) do not always fulfil their function to instruct users to engage 'in the moment'. Although perhaps small, this shows that there is space for avoidance. What is of more concern is the way that practices become habitual and require less conscious awareness or critical reflection.

For Deleuze and Guattari, associations are refrains, they are not representational but *affective*, they bring humans and machines into new relations (Buchanan, 2021a). I have provided a more mechanistic (rather than embodied or affective) sense of associations because of my critical engagement with psychological models of habit formation. I did so because this is one way habit formation is theorised to work in self-care apps (e.g.,

hinging events) and thus users of digital technologies are 'modelled' to act in this way. People have embodied interactions with smartphones: they check, tap, record and share their mood. In separating reflective practices, from the body to a degree, I did not intend to construct a 'Cartesian detachment' (Davies, 2017, p.39), nor to side-line embodied digitally mediated experience, but focused primarily on association and reflection. This attends to the gaps in the literature set out in chapters one and two, that posthumanist analyses of digital health technologies are perhaps neglecting psychological changes and a greater understanding of unintentional or residual effects of digital mental health technologies is necessary. Theoretically and empirically, this approach to association thus served a few purposes. For example, it opened analysis of 'pre' and self-reflective practices and the less perceptible (molecular) ways that digital technologies guide or have power over (*pouvoir*) human responses and brought insight into potential long-term effects, even once users have stopped using devices. The benefit of bringing association into conversation with assemblage is that association draws lines of convergence between different languages, practices and logics across the psychological sciences and technological knowledges (e.g., computer science), which assemblage as theory and method then guides the researcher into translating their implications.

Practices of arranging are what Buchanan (2021b, p.24) describes as a 'mode of cognition' or the 'basic operation performed by the unconscious, or indeed the mind as a whole'. I started to consider how digital technologies mediate the unconscious, for example, *ritornellos* and after Bergson (2001, p.108) the 'interpenetration of conscious states'. Pre-reflexive cues and practices of the associated milieu could be analysed in relation to notions of distributed nonconscious cognition (Hayles, 2017), teletechnology (Clough, 2000), the user unconscious (Clough, 2018), spatialisation of the unconscious (Blum and Secor, 2011), and technological unconscious (Thrift, 2004). This approach would further enhance a critical and psychoanalytically inflected posthumanist geography. Human geographer, Anna Secor (2023, p.4) puts forward the concept of 'spacetimeunconscious':

> 'Spacetimeunconscious (re)distributes the human and the nonhuman as fragments: unfolds them, flays them, stuffs and stitches them, rearranges them. Composts

> them. In this dispersal, spacetimeunconscious is recognisable as a species of the "distributed" notion of the unconscious: an understanding of the unconscious not as submerged in the depths of individual psyches but instead "distributed, spatially, in and beyond the body, and over distance" (Campbell and Pile, 2010: 404, 422; also, see Pile, 1996).'

A *digital* spacetimeunconscious could describe the associated milieus and assemblages I sketched out in this thesis: the various parts of humans and therapeutic relations as cut, reformulated and transformed, along with technical capacities and mechanisms of digital technologies and algorithms, code and the production of data dispersed spatially and temporally but feeding back and sculpting users' actions on conscious and unconscious levels, anticipating present and future actions. Digital technologies are objects of future orientation (Hui, 2016) which collect, hold and project users' desires and hopes. As shown in this thesis, these hopes and desires can be captured, stratified and organised from an associated milieu into an assemblage, as discussed in chapters two and six, an assemblage is a constellation of elements *selected* from a milieu (Anderson and McFarlane, 2011).

Assemblage: power, capitalism and relations of dependency

Assemblage as a method of analysis drew attention to various components and discourses of digital mental health technologies *and* therapeutic relations: units (e.g., digital pets), feedback, gestures, *ritornellos,* speed of response, 'checking in' and 'waiting-list intervention' for example. I demonstrated that therapeutic qualities, techniques and traits are *selected* (power of selection) and stratified in the assemblage. Borrowing, mimicking and transforming are ways automation occurs in digital mental health. By drawing on psychoanalytic and psychotherapeutic theories, I analysed personalisation practices (e.g., as projection and transitional objects) at work in the assemblage that I would not have established through Deleuze and Guattari and Buchanan's assemblage theory alone. Psychoanalytic concepts of transference could be useful to further understand relationships, such as movements of affect, in health and care assemblages. Or more

radically, assemblages, such as that of digital mental health could be analysed through psychoanalytic motifs, as a machine of deferral of care, for example.

I opened this chapter with Callard's (2016) description of panic disorder the elements in this scene are not simply added together, there is a process of selection and arrangement going on. Without specifying relations, dependencies, orders and power it is difficult to determine how adding or subtracting a variable would change the assemblage. As Buchanan (2021a, p.118) notes, Deleuze and Guattari are clear that 'one can neither add nor subtract from the multiplicity that is the assemblage without changing it'.

To return briefly to the assemblage advanced in this thesis, one final question to pose is whether the assemblage could be arranged differently. In the case of digital youth mental healthcare, it is worth contemplating what subtracting private companies would do to the assemblage in England. Would it mean less emphasis on data collection and tracking for example? Would it change how mental health is conceived of? Less individualistic, more relational? With recent developments in health governance in England, it is hard not to suggest the continuation of a *technocratic* future - that is, technology used solely as an instrument for economic productivity - future. On the 21st of November 2023, The Guardian reported that the NHS has awarded 'US spy tech company' Palantir – co-founded by billionaire and venture capitalist Peter Thiel - a reported '£330 million' contract to create a 'huge new data platform' which gives the company access to patient medical records and enable sharing of data between NHS trusts and integrated care systems (Campbell, 2023, n.p.). These moves are justified, discursively, as a way to reduce waiting times and improve patient care. The presence of this actor in the assemblage reflects a type of '*self-authorising*' power over of surveillant corporations (Buchanan, 2021a, p.151, original emphasis). This excessive sharing of data could lead to abolition or 'absolute deterritorialization' (Deleuze and Guattari, 1987, p.55). Perhaps with accelerated data sharing and the huge data platform it could lead to the assemblage coming apart which opens space for something new.

The way I used assemblage has application beyond the case of digital mental health. I argued that the social formation of the digital youth mental healthcare assemblage is a

type of contemporary capitalism that is technoscientific and surveillant. I also argued that psychopower conditions the relations in the assemblage (Nail, 2017), but did not draw out the dynamics between this form of capitalism and type of power. I could have conceived of the particular form of capitalism, capital or mode of production as attentional, cognitive (Brophy, 2011), digital (Schiller, 2000), affective (Karppi et al., 2016), emotional (Illouz, 2007) or informational (Wark 2019), for example, and each would have given a different focus. Or questioned whether it is indeed even capitalism anymore (Wark, 2019). Although drawing on Zuboff (2019) and surveillance capitalism, on the whole, I intentionally used an imprecise prefix of 'contemporary' capitalism because the social formation of digital mental health arguably contains elements from all these 'types' of capitalism. Engagement with Deleuze and Guattari's (1983) *Anti-Oedipus* could have given conceptual depth to understanding the dynamics of digital mental health and capitalism as a 'desiring-machine', the precursor to assemblage. Nonetheless, identifying the powers of selection and order of dependency, which I primarily considered as *relations* of dependency, and the social formation and principle of unity of assemblages are useful additions to assemblage thinking in empirical and methodological applications of the concept in human geography and beyond. Indeed, recent papers (see Duff, 2023) are starting to put this theorisation to work and enquire further into power in assemblages, which I began to do with *pouvoir* and *puissance*. Similarly, the use of parastrata, which can be defined as system or institution (for example) that shares forms and substances with an assemblage (or strata), strengthens assemblage thinking by opening enquiry to specify adjacent assemblages (pharmacology in the case of digital mental health). It also perhaps helps in distinguishing what Duff (2023) considers as the 'end' of one assemblage and the beginning of another.

In my analysis of young people's experiences of digital mental health services, interventions and technologies (chapters four and five) I also engaged with post-phenomenological, STS and digital geographies literature to theorise the interfaces themselves and digital mediation. Arguably this supplement to assemblage was needed to identify the different components (e.g., units) in the first place and to unpick young people's individual experiences. Future methodological applications of assemblage in digital geographies could incorporate post-phenomenological frameworks as advanced

by Ash et al. (2018b). Practically the method could be informed by the 'walkthrough' (Light et al., 2018) photo and video elicitation interview method I used as this incorporated a methodological focus on feelings and language.

7.5 Limitations

This thesis provided a snapshot of digital mental health and young people's experiences of this. I could not encompass the vast range of digital mental health and wellbeing technologies, interventions and services but instead categorised them by type and provided analysis of this sample. Secondly, I concentrated on the unintentional, negative and adverse effects of mental health and wellbeing apps, digital therapy and the turn towards digital service provision in youth mental health in England. This is not to say that there are not positive effects and experiences of digital mental health. I aimed to approach this study not through the usual prism of positive and negative impacts which dominates much contemporary commentary, but rather to explore the everyday experiences of young people which this thesis has achieved. Important analytic gaps remain, for instance examining young people's diverse lives and contexts in relation to ethnicity, gender identity, class and age, which should be addressed in future research.

7.6 Ethical and regulatory implications

There is growing public and academic concern about the negative effects of digital mental health services, interventions and technologies and the regulation of the industry more broadly. Indeed, key figures within the commercial global digital mental health industry now call for more regulation to distinguish "useful products from the digital equivalent of snake oil" (Insel, 2023, n.p.). The digital youth mental healthcare assemblage illustrates that it is necessary to be cautious and scrutinise who or what companies are setting the terms of debate in regulation.

The field of digital mental health conceived of as technoscience and the analytic method of assemblage underscored relations of dependency between actors. As such, ethical review of digital mental health research could incorporate guidelines about the involvement of researchers employed by digital mental health companies, to consider conflict of interest. Users of digital mental health platforms (including digital platforms

used in the NHS) should be clearly informed about how data is used, for example if it is used to further develop, or create new products. If this is unclear then guidelines need to be in place for platforms to state clearly and accessibly how data is used in research and evaluation of the platform, whether it is sold or shared, and what some of the outcomes of this could be. Assessment of the most appropriate regulatory protocols for the purchase of digital mental health interventions and services by NHS trusts is needed, particularly 'wellness' apps that may not fall into the category of mental health or existing regulation.

Practices of mental health chatbot apps linking to companies that sell private counselling or therapy also need ethical oversight. As discussed in chapter four, it could be that the scriptedness of the chatbot is an intentional design feature for the user to experience a *lack* of human contact and then seek out counselling or therapy also provided, at a cost, by the same companies. The quality of therapy, the accreditation of therapists and counsellors, and working conditions in therapy platforms and apps needs to be evaluated and regulated. The use of generative AI models in chatbots and digital mental health technologies more broadly will raise further ethical and regulatory challenges. For example, a US chatbot 'Tessa' developed for a charity to support people experiencing disordered eating gave users' advice to cut calories and lose weight but researchers who developed the app did not know how this advice "got into the chatbot's repertoire" (Hoover, 2023, n.p.).

Findings from this research also suggest a core tension with using gamification techniques in digital youth mental health. Is it ethical to hook someone into using something that *might* be good for their mental health? Similarly, greater transparency of the way that data is used in personalisation and recommendation algorithms in digital mental health is necessary. For mental health and wellbeing apps that include engagement features, such as personalisation and gamification (but there are undoubtedly others) one option could be regulation of particular digital practices, across a variety of apps. For example, as a result of their study of children and young people's experiences of gambling-style systems in digital games (see Mills et al., 2024) the authors suggest that paid reward systems in digital games should be regulated (Ash et al., 2022) rather than regulation of specific games or content, the latter of which is emphasised in the new UK

Online Safety Bill (GOV UK, 2023). Yet this Online Safety Bill overlooks the psychopolitical mechanisms of engagement such as algorithmic personalisation and gamification across a suite of apps, not just social media. Looking at broader practices is arguably increasingly necessary as apps become less distinct (e.g., in terms of category: health, financial, travel), for example the evolution of apps to 'everything' or 'super' apps.

7.7 Research on digital mental health futures: autonomous therapy environments?

A few ideas for future research are given here. Firstly, the digital youth mental healthcare assemblage in England (and globally) could be historicised. For example, in connection with CBT, IAPT, monitoring, stepped-care model development and discourses of personalisation in mental healthcare. Historicization could stretch further to analyses of cybernetics, psychiatry, the asylum and the human sciences (see Geoghegan, 2023). Empirical assessment of the longer-term individual and societal effects of increasing use of digital mental health technologies is needed. Research could target, for example, the relationship between motivation and desire in digital mental health, particularly self-care apps with gamification features, enquiring into *why* they motivate people to 'do better'. Future research could develop the 'walkthrough' interview and focus group method for exploring digital health technologies and people's experiences and practices. The walkthrough could also be used with practitioners as well as, researchers and developers.

Further research of data politics and justice in youth mental health are necessary particularly because data collection practices are increasingly active in mundane spaces such as the home or clinic (Schurr et al., 2023). More broadly, psychiatric and mental health data practices are increasingly expansive, for example, passive and behavioural data collection in digital phenotyping research. Although there are differences in data collection practices in commercial apps and Digital Therapeutics (DTx) that do not rely on selling data, they still collect and analyse data (Gross and Mothersill, 2023). Just because data is not sold does not mean that there are not issues. Although data is often aggregated and de-personalised it can still inform decisions about mental health

interventions and has *afterlives.* Data can be repurposed for other means. Future research could develop a network analysis similar to Kotouza et al. (2022) and Callard et al. (2022) in their project on the mental health of university students in the UK to show the direct relationships between actors in digital youth mental healthcare.

What's next for the therapeutic encounter and relation in the age of digitalisation, automation and AI? One future touted in the field of digital mental health is 'pervasive therapy', as introduced at the end of chapter five. This is the widespread use of conversation-based interfaces to deliver mental health support (Bowman et al., 2022). In bringing this thesis to a close I raise a few implications. Pervasive therapy could be the next stage of practices, logics, methods, forms of data and traits of digital therapeutic relationships I documented in this thesis. Pervasive therapy emerges through developments in passive monitoring (De Angel et al., 2022), sensor technology (Mohr et al., 2020), machine learning, speech and language models and use of voice assistants and chatbots (Bowman et al., 2022). There are numerous ethical questions around data collection, politics of continual intervention, who owns the interfaces, for example. How would such cyber-physical systems be regulated? Research needs to critically examine how to regulate emerging interventions and technologies that have very different materialities to what we are used to. Assemblage is one method in which to do so because of its attentiveness to the material, discursive, orders of dependency and powers of selection. It can help us to understand with interoperable systems which have many different types of networked components.

Pervasive therapy raises questions around *autonomous* mental healthcare. These developments portray the notion that treatment, therapy and becoming well is linear, simple or easy and not constrained by our capacities to act and conditions of living. Its description as autonomous suggests a therapy system that needs no human oversight to make decision as to when to intervene or not. It is crucial to denaturalise such developments. As Crawford (2021) states: AI is not autonomous, it depends on social and political structures. This demands a critical approach to digital mental health technologies, services and interventions that collect, store, process and repurpose vast

amounts of data, as data and digital mental health as technoscience, are what makes automated and autonomous mental health futures a reality.

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Appendices

Appendix A – Interview questions (young people)

INTRODUCTION

- introduce myself and give overview of research
- participant information, consent, confidentiality and withdrawal process
- ask if have any questions

Introductory questions

1. **To start, can you tell me a bit about yourself (such as, where you live, how old you are) and what kinds of things you do in a typical day?**

2. **Can you tell me about your relationship with digital technologies?**
    - What digital technologies do you use?
    - What do you use them for? (e.g., education, work, social)
    - How long do you spend using these on a typical day?
    - Spaces that you use these?

3. **Can you tell me about the digital technologies that you currently use for your mental health and wellbeing?**
    - What features do you use? Can you describe how you use [insert specific feature e.g. – mood tracking]?
    - How do you use them on a typical day?
        - Spaces and temporalities
    - Is your use of this app different to other apps/social media/other things you use your phone for? And if so can you tell me about this please?
    - Can you tell me about some of the things you like/dislike about [insert technology]?
    - Are there any other digital technologies that you have used before for your mental health and wellbeing but that you've since stopped using? If so could you tell me about these please
        - How did you use them before?
        - What did you like and dislike?
        - What did you use instead?

4. **Without going into detail about your personal experience of mental health, could you tell me about why you started using these digital technologies for your mental health and wellbeing and how you found out about them?**
    - How did you find out about it?
    - Why did you select this particular technology?
    - Why did you start using this technology as opposed to other sources of support, or why you decided to use it in addition to any support you receive?
    - Could you tell me about how long you've used this technology and whether your use has changed over time?

5. **Could you describe the way that you use [insert technology] in your day-to-day life?**
    - How do you use this technology on a typical day?
    - Does your use of X differ depending on the space you are in? Or the time of use? If it's mobile "on the go" use
    - If interviewee doesn't use the technology on a daily or regular basis ask them to tell me about the most recent time, they used the technology and ask about their temporal pattern of use (e.g. when they need to use it, random, weekly/monthly)
    - If applicable, can you tell me about how you respond to notifications you receive from [insert MH app], for example what do you do if you receive a notification from the app?

6. **Does your use of [insert technology] change and if so in what ways?**
    - Spaces/times/social
    - Mood /how you are feeling
    - Connections between tracking mood and other activities

7. **Will you continue using [digital technology]?**
    - Long-term/short-term use/duration
    - Will you stop when you 'feel better'?

8. **Aside from the digital technologies we've discussed, what, if any, forms of support/services, do you access for your mental health and wellbeing?**
    - [Clarify if necessary] What I mean by this are things like: MH services, GP, school, work/education, friends, family, online support, therapy/counselling, exercise, social/community groups etc. but up to the interviewee to decide what they consider a source of support
    - Differences between these forms of support and digital technologies (in-person, online, telephone)
    - Perception of these services/forms of support
    - If accessed MH services etc., have GPs/professionals recommended you to use digital technologies for mental health and wellbeing?
    - Have you ever used digital mental health technologies in a mental health service?

9. **[Follow-up question] How, if at all, does your use of digital technologies affect your use of other services or sources of support that you access for your mental health and wellbeing?**
    - Do you use other forms of support/services more or less now that you use digital technologies, and why?

10. **You've mentioned that you use (or have previously used) the following digital technologies [insert technologies that interviewee has mentioned] for your mental health and wellbeing, could you tell me about your views on the design of each of these, for example, what you like and dislike about the design?**

- Design can cover the ‘look’, ‘feel’ and functioning of the technology - aesthetics, visuals, sounds, haptics, language etc., how the device leads the user to different activities, personalisation and how user-friendly/intuitive it is etc.
- Do you find the design engaging?
- Can you tell me about whether you feel that the technologies you use are designed for young people specifically?

11. **Do you consider there to be any barriers to using [insert technology]? If so, what are these?**

12. **What, if any, concerns do you have about using digital technologies for your mental health and wellbeing?**

The next few questions are about future digital technologies and services for mental health and wellbeing for young people. I understand they can be quite difficult to answer on the spot so if you’d like 5/10 minutes to think about these questions, I can pop them in the chat?

13. **What would you like future digital technologies for mental health and wellbeing to be like?**

14. **What would you like future youth mental health and wellbeing services to be like?**
    - In-person, online, telephone?
    - What types of approaches/activities/modes of support?

CLOSE

- thank participant for time and contributions, ask if anything else they want to say, or have questions
- next steps with research

Appendix B – Interview questions (researchers and developers)

As stated in the methods chapter, I created bespoke interview guides for individuals working in research and development about the particular products, company or research they work on. This is a sample of interview questions for researchers.

INTRODUCTION

- introduce myself and give overview of research
- participant information, consent, confidentiality and withdrawal process
- ask if have any questions

1. **To start, can you tell me about your role please?**

- Background – what did you do before this?
- Day-to-day basis

2. **Can you tell me about the company/organisation that you work for?**

- How would you describe [insert company/organisation/research group]?

3. **Can you tell me about your views on the current state of the field/industry of digital technologies for mental health and wellbeing for young people?**

- When did you first hear about mental health/wellbeing apps?

4. **When did you first hear about the use of digital mental health technologies in youth mental healthcare?**

5. **Can you tell me about some of the projects that you have worked on in relation to digital mental health and young people?**

6. **Can you tell me about the development of [name of intervention/product/company]?**

7. **What are the most common features in mental health apps aimed at young people?**
    - What do you think about 'engagement' features in apps? gamification, self-monitoring, personalisation, use of algorithms etc.

8. **What, if any, do you consider to be the differences between mental health/wellbeing apps developed in academic research and commercial?**

9. **What is your perspective on the evidence-base of digital mental health technologies for treating mental distress (such as anxiety or depression) in young people?**

10. **Do you have any concerns related to the ethics or safety of digital mental health technologies for young people? And if so, can you tell me about these?**

11. **Can you tell me about what you perceive to be the future direction of the field of digital mental health for young people?**

- What direction is it going in, in terms of technologies etc.
- What do you think should be the future direction

12. What do you think are the future research/development/policy priorities for digital mental health technologies for young people?

CLOSE

- thank participant for time and contributions, ask if anything else they want to say, or have questions
- next steps with research

Appendix C – Interview questions (staff, practitioners and volunteers)

INTRODUCTION

- introduce myself and give overview of research
- participant information, consent, confidentiality and withdrawal process
- ask if have any questions

1. **To start, could you tell me about your role at [insert service name]?**

- What types of things do you do on an average working day?
- How long have you worked at [insert service]?
- What young people do you work with?

2. **Could you describe [insert service] to me please?**
    - Where is it geographically?
    - What services (in-person, telephone, online) does it offer to 16–25-year-olds specifically?
    - Development of service

3. **Could you tell me about your understanding of digital technologies designed to support mental health and wellbeing?**
    - When did you first hear about them
    - Knowledge of young people's use of them

4. **Do you use digital technologies for mental health and wellbeing in any way at the service? If so, could you tell me about what digital technologies you use and in what ways?**

5. **What, if any, digital technologies for mental health and wellbeing do you recommend to young people?**
    - What is your opinion of these technologies?
    - What do you think about specific features (e.g., self-tracking/monitoring)?
    - Guidance on recommending technologies?

6. **What role, if any, do you feel that digital technologies for mental health and wellbeing could play in the provision of mental health care and support for young people?**

7. **What do you consider to be the main challenges or barriers that prevent young people from using digital technologies for mental health and wellbeing?**

8. **Can you tell me about any concerns you have about digital mental health technologies and their use by young people?**

9. **What is your perspective on the idea of a 'youth mental health crisis'?**

10. **Can you tell me about challenges to offering mental health support to young people in [insert region]?**
11. **What do you think future digital mental health technologies for young people should be like?**

12. **What do you feel should be the focus [insert service] in the future?**

CLOSE

- thank participant for time and contributions, ask if anything else they want to say, or have questions
- next steps with research

Appendix D – Excerpt from 'walkthrough' interview and focus group guide

Some points to think about when watching the videos are:

- Things you like and dislike
- What do you think about the way the apps look?
    - Use of colours, emojis, design, language?
- What parts of the app are you drawn to, if any?
- What features would you use (if any)?
- How might you incorporate using this app into day-to-day life/routines?

The first video is of a search on the iPhone app store, and then I'll show you two videos of apps and mood monitoring features and then we'll look at some images of apps and their features. These are commercial apps available through the Apple iPhone app store.

Video 1: app store

Give background: I searched the app store on my phone multiple times, this video is just one example, I searched for the term "mental health"

- Please say any comments as we are watching the video
- And I'll pause the video at various points
- Is that okay?

[play video]

App store question prompts:

- What do you think about the range of apps that come up in the search?
- What apps, if any, are you drawn to? (could rewind the video)
- How do you/would you navigate the app store?
    - Reviews?
    - Most downloads?
- Which ones do you think seem relevant to young people?

Video 2: mood tracker and journal app

Can ask questions about features below:

- Select mood and activities
- Keeping track of your life
- Exploring charts
- Year in pixels
- Personalise
- Advance stats
- Setting goals
- Gamification: streaks, jewels, badges etc.

Additional questions/prompts:

- What do you think about giving/inputting/storing this data to the app?
- How do you feel about rating your mood, for example?

Video 3: chatbot

So now we can look at this chatbot app, this has a mood rating feature, the app is largely based around a chat function

- Aesthetics
- Use of the animation for rating mood, touching the interface
- Options given: practice mindfulness etc.
- "add a therapist" button

Questions:

- Differences between the apps – which way of rating mood do you prefer?
- Frictions/thresholds
    - What makes you want to continue/stop using the app?

Engagement features:

- View images of features across different types of mental health and wellbeing apps
- Engagement features:
    - Screening
    - Self-monitoring
    - Data visualisation (graphs etc.)
    - Gamification and games (e.g. badges, points etc. from practicing different activities)
    - Tailoring (customisation, notifications, reminders)
    - Social features (sharing data, peer support, ability to contact with therapist)
    - Chatbot

Appendix E – Participant information sheet (young people, open call)

UNIVERSITY OF BIRMINGHAM

E·S·R·C ECONOMIC & SOCIAL RESEARCH COUNCIL

Participant information sheet for interviews with young people (aged 16 to 25) – digital technologies for mental health and wellbeing

Project title: Treating negative affects among young people: the emerging technological landscape of therapeutic encounters
Researcher: Jessy E. Williams (email address: [redacted]

1. Invitation

My name is Jessy, I am a student and researcher at the University of Birmingham. I am carrying out a social research project exploring the ways that young people use digital technologies for mental health and wellbeing in their day-to-day lives. Some examples of these technologies are smartphone apps (like Headspace), chatbots, wearables and digital games. I am interviewing young people (aged 16 to 25) to find out about their experiences of using these technologies.

If you are 16-25 and currently use or have used digital technologies, such as apps, wearables, games, or chatbots for your mental health and wellbeing, I am inviting you to take part in an interview to talk to you about what you think about these technologies and how you use them in your day-to-day life. If you'd like to get involved, please read this sheet to find out more about the project. If you are under the age of 18, please speak to someone you trust, like a parent, carer, or friend, to help you decide whether to take part in the research. If you have any questions, please get in contact with me, my contact details are at the end of the sheet. Please keep this sheet in case you want to check any of the information later.

2. What is the project about?

There are lots of smartphone apps, chatbots, wearables and digital games available for mental health and emotional wellbeing, I would like to explore how young people use these in their day to day lives and to find out what they think about different features, such as, mood journals and mood trackers. I would also like to understand what young people want new technologies for mental health and wellbeing to be like.

This project is a social research study; it is not medical or psychological research. I am interested in learning about young people's experiences of using mental health and wellbeing technologies in their day-to-day lives. The interview is focused on the technologies that you use and your views of them, rather than your personal experience of mental health. I will not ask you to describe in detail any mental health difficulties you currently experience or have experienced in the past.

3. Why have I been asked to take part?

You are invited to take part in an interview because you are between 16 and 25 years old and you use, or have previously used, digital technologies for your mental health and

wellbeing. You may have taken part in a focus group with me and have indicated that you would like to hear more about taking part in a one-to-one interview.

4. Do I have to take part?

No. It is up to you. You do not have to take part in an interview. If you decide to come to an interview, but then change your mind, that's fine, you don't need to tell me why. If you decide that you do not want what you have said to be included in the study, I can take this out, but only if you let me know within two weeks after the interview has taken place. If you decide to stop taking part, I will not use what you have said in the research, and the audio recording, transcript and any other information provided will be securely destroyed. If you decide to withdraw from the study, you do not need to return the voucher.

5. What will happen if you decide to take part?

If you are interested in taking part in an interview, please email me using the email address at the end of this sheet and I will send you an email or give you a call (if you'd prefer) to tell you more about the project and to answer any questions you have. If you agree to take part, I will send you some dates and times and you can choose one that works for you. You can take part in an interview in person or an online interview.

The interview will last for around one hour. Interviews will be online on zoom or Microsoft Teams (whichever you prefer), in a secure password protected online meeting room. It would be helpful if you can have your video camera on during the interview, however if you would like to switch it off and just use audio, this is fine. Please consider whether the environment that you will be in is a space in which you feel comfortable speaking about this topic.

At the start of the interview, I will ask you to provide me with your full name and telephone number. This is just in case I need to get in contact with you if, for example, you leave the interview unexpectedly, or if a safeguarding issue arises (please see section 7).

In the interview, I will ask you some questions about the digital mental health technologies that you use and ask you to tell me about how you use them in your day-to-day life. I will also ask you about what you think new technologies for mental health and wellbeing should be like. There will be time for you to talk about what you feel is important with regards to the topic. The interview will be relaxed and friendly. You do not have to answer any questions that you do not want to, your responses will not be judged, and you can stop participating in the interview at any moment should you wish.

It would be helpful for me to audio-record the interview, this is so that I can listen properly during the discussion and so that I can listen to the recording later and type up what was said. However, if you do not consent to the interview being audio-recorded, I will take notes instead. The written research (reports, papers and thesis) may include words that you have said but I will use a different name for you (a pseudonym) so people reading the documents will not know that it was you who said them.

6. What will happen to the recording and the information I give?

The audio recording of the interview will be used so that I can create a transcript. The audio recording of the interview will either be transcribed by me or sent to a professional transcription company for transcription. The company will treat the audio recording and any identifying information given in the interview confidentially. I will keep everything you say during the interview and all the information I have about you confidential.

Your name and any contact information you provide will be stored securely on a password protected electronic document. You will be referred to by a different name in the written research (a pseudonym). Some of the things you say in the interview I may use in the written research, but no one else (apart from me and my supervisor) will be able to tell that you have said it. This means that you will be 'anonymised' in the research. The information I have about you will be stored on a secure password protected computer and only me and my supervisor will know the passwords to access the information. Any physical documents will be kept in a locked cabinet in a secure office at the University of Birmingham. All the information will be stored securely at the University of Birmingham for ten years after the study has finished, in line with Data Protection Policy.

7. Limits to confidentiality

Everything you tell me will be confidential apart from if a safeguarding issue arises. This means that if I have any concerns about your safety, for example, if you tell me something that shows that you or other people are not safe, I will need to break confidentiality to access help and support.

8. What are the risks of taking part?

There is little risk of anything bad happening if you take part in this project. But please think about the following things when considering whether to take part:

- The interview will be about your views and experiences of mental health and wellbeing technologies, and I will not ask questions about your mental health. Whilst the questions are about the technologies, talking about this topic could still be upsetting. At any point during the interview, we can have a break, or stop the interview. If you would like to ask any questions about the research, I am available between 9am and 5pm Monday to Fridays and you're welcome to get in contact with me via email. I will aim to get back to you within a few days. However, if you have any concerns about your mental health and wellbeing, please contact one of the following crisis support helplines:
    - Contact Shout by texting the word 'SHOUT' to 85258 (available 24/7)
    - Call Samaritans on 116 123 (available 24/7) or email jo@samaritans.org (response time: 24 hours)
    - Call HOPELINE on 0800 068 4141 if you are experiencing thoughts of suicide (9am-12am midnight, 7 days a week)
    - To get urgent medical help, use NHS 111 online service or call 111. If there is any immediate risk to life, contact the emergency services by calling 999.

9. Complaints

If you would like to make a complaint about the interview or ask about the University of Birmingham's ethical approval process, please contact my supervisor, Dr Jessica Pykett by email: [redacted]

10. What are the benefits of participating in this study?

Taking part in an interview will help to produce research grounded in young people's perspectives on mental health and wellbeing technologies. This research may influence future research and decisions about digital mental health technologies for young people.

You will be offered a £10 eGift voucher as a thank you.

11. What will happen to the results of the study?

The research will be used in my doctoral thesis. It might be used in an academic publication or conference presentation. A summary of the results and a presentation of this research will be provided to a youth mental health and wellbeing charity. If you would like to receive a copy of the summary, please let me know. These documents may include words that you have said but I will use a different name for you so people reading the documents will not know that it was you who said them.

12. I would like to take part in an interview, what happens now?

Please send me an email letting me know you are interested in taking part. If you would prefer to be contacted by telephone, please send your phone number to me in an email and we can arrange a time for me to give you a call.

13. Researcher contact details

Please contact me (Jessy E. Williams) by email: [redacted]. If you have any concerns or questions about this study, you can also contact my supervisor, Dr Jessica Pykett by email [redacted]

Thank you very much for reading this information sheet and for your interest in this study!

This study has received full ethical approval from the University of Birmingham's Science, Technology, Engineering and Mathematics Ethical Review Committee (Project ID: ERN_21-0044).

Appendix F – Consent form (16-18 young people open-call)

Consent sheet for interviews on digital technologies for mental health and wellbeing - participants under 18 years old

Project title: Treating negative affects among young people: the emerging technological landscape of therapeutic encounters. *This is the official title for this project, information about the research is outlined in the detailed participant information sheet, if you would like any further information about the project, please contact me by email*
Researcher: Jessy E. Williams

Please think about the following points before signing this form. Your signature confirms that you would like to take part in this project. Signing this form does not mean that you have to do anything that you do not want to do. You can stop participating in the research at any time.

Please read each of the statements below and if you agree, **TICK** the box.

If you do not agree with a statement, please **LEAVE IT BLANK**.

1. The project has been explained to me and I understand the participant information sheet I have been given for this study.	
2. I have had the chance to ask questions and have been given answers I understand.	
3. I have been given time to access support (i.e. I have spoken to a parent, carer or friend) in making my decision to take part in this study.	
4. I understand that I do not have to take part in this project and that I am free to change my mind about taking part anytime up to two weeks after the interview without giving a reason.	
5. I understand that if I decide to stop taking part within two weeks after the interview, what I have said will not be used in the research and my data will be removed from the study.	
6. I agree to provide information that will be used for research only. I understand that I will be referred to by a different name (a pseudonym) in the written research so I will not be personally identified in any written documents or presentation of the results.	
7. I understand that information collected as part of the research will be stored as physical and electronic files and will be kept according to the Data Protection Act. I agree to my information being stored in line with the University of Birmingham's Data Protection Policy and understand that only the researcher and their supervisor will have access to the data generated.	

8. I understand that if I say something during the interview that shows that me or someone else is not safe, the researcher will have to tell somebody who can help.	
9. I agree to the interview being audio-recorded.	
10. I agree that the researcher can contact me after the interview if they need to check something I've said.	
11. I wish to participate in this study under the conditions set out here and in the participant information sheet.	

If you are happy to, please give your name, today's date and signature below:

Name of participant…… Signature…….. Date……

Name of researcher…….. Signature…….. Date……

Opt-in consent. Please tick this box if you agree to the following additional request. You do not have to agree to this in order to take part in the study, but it provides open data sharing for future researchers to analyse or re-analyse the study data.

I agree that a fully anonymised copy of the interview transcript can be deposited online at the ESRC Data Archive.	

If you would like to receive a summary of the study, please tick the box below.

I would like to receive a copy of the summary of the study.	

If you have any questions about the study, please feel free to contact the researcher (Jessy) by email: [redacted] If you have any concerns or complaints about this study, please contact my supervisor, Dr Jessica Pykett by email: [redacted] If you have any concerns about your mental health and wellbeing, please call the Samaritans on 116 123 or call NHS 111 or 999 if you need urgent medical help. *This study has received full ethical approval from the University of Birmingham's Science, Technology, Engineering and Mathematics Ethical Review Committee (Project ID: ERN_21-0044).*

Appendix G – Participant information sheet (staff, practitioners, volunteers)

UNIVERSITY OF BIRMINGHAM

E·S·R·C ECONOMIC & SOCIAL RESEARCH COUNCIL

Participant information sheet for interviews with staff and volunteers – digital mental health and wellbeing technologies for young people

Project title: Treating negative affects among young people: the emerging technological landscape of therapeutic encounters
Researcher: Jessy E. Williams

1. Invitation

My name is Jessy, I am a student and researcher at the University of Birmingham. I am carrying out a social research project exploring the ways that young people use digital technologies for mental health and wellbeing in their day-to-day lives. Some examples of these technologies are smartphone apps (like Headspace), chatbots, wearables and digital games. For this project, I am looking to speak to young people (aged 16-25), staff and volunteers of mental health and wellbeing charities and organisations, and people working on design, research and governance of digital mental health technologies for young people.

I am inviting you to take part in a one-to-one interview as you are a current member of staff or volunteer at [redacted]. It would be great if you would like to talk to me about your opinions of digital mental health technologies and your experience of these in relation to your role working with young people. I would like to understand what people working within youth mental health and wellbeing organisations think about digital mental health technologies and the role that these technologies play in youth mental healthcare provision in a community context. You don't need to have extensive knowledge of these technologies, I would just like to find out what you think about them, your understanding of them, what you consider to be the priorities for youth mental health care and support, and what you think should be the focus for future services and technologies for young people.

Please take some time to read through the following information to decide whether you would like to take part. If you have any questions or need more information, please email me: [redacted] Please keep this sheet in case you want to check any of the information later.

2. What is the purpose of this research?

Over the last decade, many digital technologies for mental health and wellbeing have been developed, such as wearables, smartphone apps, digital games and chatbots. Smartphone apps (such as Headspace) are a popular example. Apps host a range of features, such as tracking of symptoms (e.g. mood diaries), education, relaxation techniques, and games. The number of available apps for emotional wellbeing and mental health is increasing at a rapid rate. Yet, research in this area has not kept pace. So far, the way that these technologies are used in everyday and community contexts has not received much attention. This project aims to attend to this by bringing together: young people's perspectives and everyday experiences of using digital technologies for mental health and wellbeing, the opinions of people who work in community mental health and wellbeing services for young people, and the views of people working on the design, research and governance of digital technologies for mental health and wellbeing.

3. Why have I been asked to take part?

You have been invited to take part in an interview because you are a current member of staff or volunteer at [redacted].

4. Do I have to take part?

No. Participation in this study is voluntary and you are free to change your mind and withdraw from the research at any point before, during or up to two weeks after the interview without giving a reason. If you withdraw within two weeks, your data will not be used and the audio recording, transcript and any other information provided will be securely destroyed.

5. What will happen if you decide to take part?

If you are interested in taking part in an interview, please email me using the email address at the end of this sheet and I will send you an email or give you a call (if you'd prefer) to tell you more about the project and to answer any questions you have. If you agree to take part, we can organise a suitable date and time for the interview.

Interviews will last around one hour and can take place online or in person. If you would like to have an online interview, it will be on zoom or Microsoft Teams (whichever you prefer), in a secure password protected online meeting room. In person interviews can take place at your place of work, a café, or [redacted]. Interviews will be audio-recorded, unless you do not agree to this, in which case, I will take notes instead. If the interview takes place online, it would be helpful if you can have your video camera on during the interview, however if you would like to switch it off and just use audio, this is fine. If the interview is online, please consider whether the environment that you will be in is a space in which you feel comfortable speaking about this topic.

At the start of the interview, I will ask you to provide your full name and telephone number. This is just in case I need to get in contact with you if, for example, you leave the interview unexpectedly, or if a safeguarding issue arises (please see section 7).

In the interview, I will ask you about your opinions of digital mental health technologies for young people and your experience of using these technologies with young people in the context of the wellbeing service that you work or volunteer for. I will also ask you about what you think are the current and future priorities for mental health and wellbeing support for young people. There will be scope for you to speak about what you feel is important with regards to the research topic. You can decline to answer any questions. Your responses will not be judged, and you may stop participating in the interview at any moment should you wish.

6. What will happen to the recording and the information I give?

All the information I have about you and everything you say during the discussion will be kept confidential. Your name, identifying details, and any contact information you provide, will be stored securely on a password protected electronic document. You will be referred to by a different name in the written research (a pseudonym) and the mental health and wellbeing service that you work or volunteer for will be given a different name (a pseudonym). Interviews will be transcribed and analysed by myself. Some anonymised quotes from transcripts will be included in the write-up of this research. Electronic documents will be password protected and only accessible by myself and my supervisor. Physical documents will be stored in a locked filing cabinet within the researcher's secure office space at the University of Birmingham. In accordance with the University of Birmingham's Data Protection Policy, the data will be stored securely for ten years following completion of the study.

7. Limits to confidentiality

Everything you tell me will be confidential apart from if a safeguarding issue arises. This means that if I have any concerns about your safety, for example, if you tell me something that shows that you or other people are not safe, I will need to speak to a member of staff [redacted] and share your contact details (name, email address and telephone number) with them to access help and support.

8. What are the risks of taking part?

There is little risk of anything bad happening if you take part in this project. But please think about the following things when considering whether to take part:

- Whilst this research focuses on your perspectives of digital mental health technologies and your experience of these in relation to your role working with young people, I understand that there is the possibility that talking about these things could be upsetting. At any point during the interview, we can have a break, or stop the interview. If you would like to ask any questions about the research, I am available between 9am and 5pm Monday to Fridays and you're welcome to get in contact with me via email. I will aim to get back to you within a few days. However, if you have any concerns about your mental health and wellbeing, please contact a helpline, such as, the Samaritans by calling 116 123 (available 24/7), or contact Shout by texting the word 'SHOUT' to 85258 (available 24/7). To get urgent medical help, use NHS 111 online service or call 111. If there is any immediate risk to life, contact the emergency services by calling 999.
- If you choose to come to an in person interview, there may be a risk of spreading COVID-19. To help prevent this, we will be sat two metres apart, face coverings will be worn during the interview and government guidance will be followed. I will provide you with a 'COVID-19 Information Sheet' before the interview.

9. Complaints

If you would like to make a complaint about the interview or ask about the University of Birmingham's ethical approval process, please contact my supervisor, Dr Jessica Pykett by email: [redacted]

10. What are the benefits of participating in this study?

Participating in this study will help to produce research grounded in the perspectives of young people and people working within a community context of youth mental health and wellbeing services. This project may also influence future research and policy about digital mental health technologies for young people.

11. What will happen to the results of the study?

The research will be used in my doctoral thesis. It might be used in an academic publication or conference presentation. A summary of the results and a presentation of this research will be provided [redacted]. If you would like to receive a copy of the summary, please let me know. These documents may include words that you have said but I will use a different name for you so people reading the documents will not know that it was you who said them.

12. I would like to take part in an interview, what happens now?

Please send me an email letting me know you are interested in taking part. If you would prefer to be contacted by telephone, please send your phone number to me in an email and we can arrange a time for me to give you a call.

13. **Researcher contact details**

Please contact me (Jessy E. Williams) by email: [redacted] If you have any concerns or questions about this study, you can also contact my supervisor, Dr Jessica Pykett by email: [redacted]

Thank you very much for reading this document and for your interest in this study!

This study has received full ethical approval from the University of Birmingham's Science, Technology, Engineering and Mathematics Ethical Review Committee (Project ID: ERN_21-0044).

Appendix H – Consent form (staff, practitioners, volunteers)

Consent sheet for interviews with staff and volunteers – mental health and wellbeing technologies for young people

Project title: Treating negative affects among young people: the emerging technological landscape of therapeutic encounters. *This is the official title for this project, information about the research is outlined in the detailed participant information sheet, if you would like any further information about the research, please contact n*
Researcher: Jessy E. Williams

Please think about the following points before signing this form. Your signature confirms that you would like to take part in this project. Signing this form does not mean that you have to do anything that you do not want to do. You can stop participating in the research at any time.

Please read each of the statements below and if you agree, **TICK** the box.

If you do not agree with a statement, please **LEAVE IT BLANK**.

1. I confirm that I have read and understand the participant information sheet for this study.	
2. I have had the chance to ask questions and have been given answers I understand.	
3. I understand that my participation is voluntary and that I am free to withdraw anytime up to two weeks after the interview without giving a reason. I understand that if I withdraw within this time, my data will be removed from the study.	
4. I agree to provide information that will be used for research purposes only and understand that all the information relating to myself obtained as part of the research will be strictly confidential, and that I will not be personally identified in any write-up or presentation of the results.	
5. I understand that information gathered as part of the research will be stored as physical and electronic files and is subject to the provisions of the Data Protection Act. I agree to my information being stored in accordance with the University of Birmingham's Data Protection Policy and understand that only the researcher and her supervisor will have access to the data generated.	
6. I understand that I will be assigned a pseudonym (a different name). I agree to the broad description of my role to be used (i.e. 'volunteer', 'practitioner' or 'service manager') in any write-up or presentation of this research. I understand that a pseudonym (a different name) will be used for the mental health and wellbeing service that I work or volunteer for.	
7. I understand that if I say something during the interview that shows that me or someone else is not safe, the researcher will have to tell somebody who can help and will have to share my contact details (name, email address and telephone number) with [redacted]	
8. I agree to the interview being audio-recorded.	

9. I agree that the researcher can contact me after the interview if they need to check something I've said.	
10. I wish to participate in this study under the conditions set out here and in the participant information sheet.	

If you are happy to, please give your name, today's date and signature below:

Name of participant..... Signature..... Date.....

Name of researcher..... Signature..... Date.....

Opt-in consent. Please tick this box if you agree to the following additional request. You do not have to agree to this in order to take part in the study, but it provides open data sharing for future researchers to analyse or re-analyse the study data.

I agree that a fully anonymised copy of the interview transcript can be deposited online at the ESRC Data Archive.	

If you would like to receive a summary of the results, please tick the box below.

I would like to receive a copy of the summary of the study.	

If you have any further questions about the study, please feel free to contact the researcher (Jessy) by email: [redacted] If you have any complaints about this study, please contact my supervisor, Dr Jessica Pykett by email: [redacted] *This study has received full ethical approval from the University of Birmingham's Science, Technology, Engineering and Mathematics Ethical Review Committee (Project ID: ERN_21-0044).*

UNIVERSITY OF BIRMINGHAM

E·S·R·C ECONOMIC & SOCIAL RESEARCH COUNCIL

Participant information sheet for interviews with researchers, designers and stakeholders – digital mental health and wellbeing technologies for young people

Project title: Treating negative affects among young people: the emerging technological landscape of therapeutic encounters

Researcher: Jessy E. Williams

1. Invitation

My name is Jessy, I am a student and researcher at the University of Birmingham. I am carrying out a social research project exploring the ways that young people (aged 16 to 25) use digital technologies for mental health and wellbeing in their day-to-day lives. Some examples of these technologies are smartphone apps (like Headspace), chatbots, wearables and digital games. For this project, I am looking to speak to young people, staff and volunteers of mental health and wellbeing charities and organisations, and individuals working on the research, design and governance of digital mental health technologies for young people.

Please take some time to read through the following information to decide whether you would like to take part. If you have any questions or need more information, please email me: [redacted] Please keep this sheet in case you want to check any of the information later.

2. What is the purpose of this research?

Over the last decade, many digital technologies for mental health and wellbeing have been developed, such as wearables, smartphone apps, digital games and chatbots. Smartphone apps are a popular example. Apps host a range of features, such as tracking of symptoms (e.g. mood diaries), education, relaxation techniques, and games. The number of available apps for emotional wellbeing and mental health is increasing at a rapid rate. Yet, research in this area has not kept pace. So far, the way that these technologies are used in everyday and community mental health contexts has not received much attention. This project aims to attend to this by bringing together: young people's perspectives and everyday practices of using digital technologies for mental health and wellbeing; the opinions of people who work in community mental health and wellbeing services for young people; and the views of individuals working on the research, design, and governance of digital technologies for mental health and wellbeing.

3. Why have I been asked to take part?

You have been invited to take part in an interview because you work in research, design or governance of digital technologies for mental health and wellbeing.

4. Do I have to take part?

No. Participation in this study is voluntary and you are free to change your mind and withdraw from the research at any point before, during or up to two weeks after the interview without giving a reason. If you withdraw within two weeks, your data will not be used and the audio recording, transcript and any other information provided will be securely destroyed.

5. What will happen if you decide to take part?

If you are interested in taking part in an interview, please email me using the email address at the end of this sheet and I will send you an email or give you a call (if you'd prefer) to tell you more about the project and to answer any questions you have. If you agree to take part, we can organise a suitable date and time for the interview.

Interviews will last around one hour and can take place online or in person. Online interviews will be on zoom or Microsoft Teams in a secure password protected online meeting room. In person interviews can take place either at your workplace, a café, or at the University of Birmingham. Interviews will be audio-recorded, unless you do not agree to this, in which case, I will take notes instead. If the interview takes place online, it would be helpful if you can have your video camera on during the interview, however if you would like to switch it off and just use audio, this is fine. If the interview is online, please consider whether the environment that you will be in is a space in which you feel comfortable speaking about this topic.

In the interview, I will ask you about the digital technologies for mental health and wellbeing that you work on, your views of them, your experience of working in this field, your perspective of future technologies and priorities for research, design and policy. There will be scope for you to speak about what you feel is important in relation to the topic. You can decline to answer any questions. Your responses will not be judged, and you may stop participating in the interview at any moment should you wish.

6. What will happen to the recording and the information I give?

All the information I have about you and everything you say during the discussion will be kept confidential. Your name, identifying details, and any contact information you provide, will be stored securely on a password protected electronic document. You will be referred to by a different name in the written research (a pseudonym). The consent sheet asks if you agree to the inclusion of the name of your employer in the written research, you do not need to consent to this to take part in the interview. The audio recording of the interview will be used so that I can create a transcript. The audio recording of the interview will either be transcribed by me or sent to a professional transcription company for transcription. The company will treat the audio recording and any identifying information given in the interview confidentially. Some anonymised quotes from transcripts will be included in the write-up of this research. Electronic documents will be password protected and only accessible by myself and my supervisor. Physical documents will be stored in a locked filing cabinet within the researcher's secure office space at the University of Birmingham. In accordance with the University of Birmingham's Data Protection Policy, the data will be stored securely for ten years following completion of the study

7. Limits to confidentiality

Everything you tell me will be confidential. The only exception to this is if you indicate that you or other people are at risk of harm, I may need to break confidentiality to access help and support.

8. What are the risks of taking part?

There is little risk of anything bad happening if you take part in this project. But please think about the following things when considering whether to take part:

- Whilst the interview is focused on understanding your views of digital technologies for mental health and wellbeing and your experience of working in this field, I understand that there is the possibility that talking about these things could be upsetting. At any point during the interview, we can have a break, or stop the interview. If you would like to ask any questions about the research, I am available between 9am and 5pm Monday to Fridays and you're welcome to get in contact with me via email. I will aim to get back to you within a few days. However if you have any concerns about your mental health and wellbeing, please contact a helpline, such as, the Samaritans by calling 116 123 (available 24/7).
- If you choose to come to an in person interview, there may be a risk of spreading COVID-19. To help prevent this, we will be sat two metres apart, face coverings will be worn during the interview and government guidance will be followed. I will provide you with a 'COVID-19 Information Sheet' before the interview.

9. Complaints

If you would like to make a complaint about the interview or ask about the University of Birmingham's ethical approval process, please contact my supervisor, Dr Jessica Pykett by email: j.pykett@bham.ac.uk

10. What are the benefits of participating in this study?

Participating in this study will help produce research grounded in the perspectives of young people, mental health practitioners and people working in the field of digital technologies for mental health and wellbeing. The results of this project may influence future research and policy about digital mental health technologies for young people.

11. What will happen to the results of the study?

The research will be used in my doctoral thesis. It may be used in an academic publication or conference presentation. A summary of the results and a presentation of this research will be provided to a youth mental health and wellbeing charity. If you would like to receive a summary of the results, please let me know.

12. I would like to take part in an interview, what happens now?

Please send me an email letting me know you are interested in taking part. If you would prefer to be contacted by telephone, please send your phone number to me in an email and we can arrange a time for me to give you a call.

13. **Researcher contact details**

Please contact me (Jessy E. Williams) by email: [redacted]. If you have any concerns or questions about this study, you can also contact my supervisor, Dr Jessica Pykett by email: [redacted]

Thank you very much for reading this document and for your interest in this study!

This study has received full ethical approval from the University of Birmingham's Science, Technology, Engineering and Mathematics Ethical Review Committee (Project ID: ERN_21-0044).

Appendix J – Consent form (researchers and developers)

Consent sheet for interviews with researchers, designers and stakeholders – digital mental health and wellbeing technologies for young people

Project title: Treating negative affects among young people: the emerging technological landscape of therapeutic encounters. *This is the official title for this project, information about the research is outlined in the detailed participant information sheet, if you would like any further information about the research, please contact me by email*
Researcher: Jessy E. Williams

Please think about the following points before signing this form. Your signature confirms that you would like to take part in this project. Signing this form does not mean that you have to do anything that you do not want to do. You can stop participating in the research at any time.

Please read each of the statements below and if you agree, **TICK** the box.

If you do not agree with a statement, please **LEAVE IT BLANK**.

1. I confirm that I have read and understand the participant information sheet for this study.	
2. I have had the chance to ask questions and have been given answers I understand.	
3. I understand that my participation is voluntary and that I am free to withdraw anytime up to two weeks after the interview without giving a reason. I understand that if I withdraw within this time, my data will be removed from the study.	
4. I agree to provide information that will be used for research purposes only and understand that all the information relating to myself obtained as part of the research will be strictly confidential, and that I will not be personally identified in any write-up or presentation of the results.	
5. I understand that information gathered as part of the research will be stored as physical and electronic files and is subject to the provisions of the Data Protection Act. I agree to my information being stored in accordance with the University of Birmingham's Data Protection Policy and understand that only the researcher and her supervisor will have access to the data generated.	
6. I understand that I will be assigned a pseudonym (a different name) in this research.	
7. I agree to the use of the broad description of my role (e.g. 'academic researcher', 'software developer') in the write-up and presentation of the results.	

8. Please indicate whether you consent to the inclusion of the name of your employer in the write-up and presentation of the results. You do not have to consent to this to take part in the interview. ☐ I consent to the name of my employer being used in the write-up and presentation of the results. ☐ I do not consent to the name of employer being used in the write-up and presentation of the results.	
9. I understand that if I say something during the interview that indicates hat me or someone else at risk of harm, the researcher may have to break confidentiality to tell somebody who can help.	
10. I agree to the interview being audio-recorded.	
11. I agree that the researcher can contact me after the interview if they need to check something I've said.	
12. I wish to participate in this study under the conditions set out here and in the participant information sheet.	

If you are happy to, please give your name, today's date and signature below:

Name of participant…… Signature…….. Date……

Name of researcher…….. Signature…….. Date……

Opt-in consent. Please tick this box if you agree to the following additional request. You do not have to agree to this in order to take part in the study, but it provides open data sharing for future researchers to analyse or re-analyse the study data.

I agree that a fully anonymised copy of the interview transcript can be deposited online at the ESRC Data Archive.	

If you would like to receive a summary of the results, please tick the box below.

I would like to receive a copy of the summary of the study.	

If you have any further questions about the study, please feel free to contact the researcher (Jessy) by If you have any concerns or complaints about this study, please contact my supervisor, Dr Jessica Pykett by *This study has received full ethical approval from the University of Birmingham's Science, Technology, Engineering and Mathematics Ethical Review Committee (Project ID: ERN_21-0044).*