Understanding Mental Health Apps: An Applied Psychosocial Perspective

Lewis Goodings

School of Psychology and Sport Science

Anglia Ruskin University

Cambridge

CB1 1PT

Darren Ellis

School of Social Sciences

University of the West of England

Bristol

BS16 1QY

Ian Tucker

University of East London

Stratford Campus

Water Lane

London

E15 4LZ

Acknowledgements

This book is the culmination of a variety of projects exploring the role of apps in our everyday lives, which is an ongoing project and one that has seen us work together for several years. We would like to thank the participants that feature in this book and in the other research projects we have conducted over the years. Without your insight none of this would be possible. We need to give a special mention to James Ritchie for his guidance in the collection of the Reddit data. Thanks James.

We feel it's important to acknowledge the people that got us started down this road of applied social psychology and affect: Steve Brown, Paula Reavey, John Cromby, Abi Locke, Paul Stenner, Tony Sampson, and Dave Harper. We are very grateful for all your guidance and kindness.

We would also like to thank current colleagues and friends. Lewis would particularly like to thank Matt Bristow, David Pearson, Nic Gibson, Emma Kaminskiy and Mick Finlay for their continued support and friendship at ARU.

To Marcia Worrell, who brought joy and laughter to so many, you are gone but not forgotten.

Finally, we would like to thank our families: Beth, Nora and Edie; Nicola, Lily, Otto and Arthur; Noah and Isaac. Thanks to you all.

Contents

About the authors

Lewis Goodings

Lewis Goodings is a Senior Lecturer in Psychology at Anglia Ruskin University. His research focuses on the intersections between digital technologies and mental health. His work is dedicated to an applied version of social psychology that focuses on the role of space and place, with an overriding interest on the affective aspects of interaction. He has published in a range of journals on these topics including *New, Media & Society*, *Social Science Information* and *Media, Culture & Society*. Lewis has received external funding from the Economic and Social Research Council (ESRC) for a project on the role of peer-support in contemporary digital tools for mental health. He is a member of the Social Justice and Empowerment Research Hub at Anglia Ruskin University.

Darren Ellis

Darren Ellis is a Senior Lecturer in Psychology at the University of the West of England Bristol. He was awarded a PhD in Social Psychology from Loughborough University in 2007. He co-authored Social Psychology of Emotion (Sage Publications 2015) and Emotion in the Digital Age (Routledge Publications, 2020). Additionally, Darren has co-authored and edited two books: *After Lockdown, Opening Up: Psychosocial Transformation in the Wake of COVID-19* (Springer, 2023) and *Affect and Social Media: Emotion, Mediation, Anxiety and Contagion* (Rowman and Littlefield, 2018). Darren has been interested in representations of emotion, for example, how it is experienced and conceptualized. This has led to research in areas such as: surveillance studies, social media, and psychotherapy contexts. Darren is also a practicing psychotherapist.

Ian Tucker

Ian Tucker is a professor of health and social psychology at the University of East London. His research focuses on mental health, emotion, and affect with a specific focus on how they are shaped through interactions with digital technologies. He has published widely in these areas, including *Emotion in the Digital Age* (Routledge, 2020).

CHAPTER 1

INTRODUCING MENTAL HEALTH APPS

Abstract Mental health apps (MHapps) are designed to provide psychological tools and techniques for self-managing psychological forms of distress (e.g. stress and anxiety). In a psychological context, the power and efficacy of these apps is typically evidenced using methods from clinical methods (e.g. randomized controlled trials). This chapter will describe the benefits and challenges to using these methods and will then develop an applied psychosocial approach to understanding MHapps. This will explore the ways people negotiate the emotional and affective landscape of these apps, considering how MHapps allow for certain ways of thinking, acting, and feeling. This follows a vital materialist perspective and aims to recognize how the lived material experience of using MHapps shapes (and is shaped) by the intersection of a range of different bodies (both human and non-human) in the unique space of MHapps.

Keywords AI - Affect - Apps - Bodies - Mental Health - Psychological Health and Wellbeing - Vital Materialism

What are mental health apps?

Mental health apps (MHapps) are mobile applications that can be downloaded to a smartphone, tablet, or other mobile device (e.g. wearables). These technologies include tools and techniques for attending to psychological health and wellbeing. MHapps represent a new branch of general health apps that are growing in popularity and prioritize supporting mental health issues through the self-management of distress. These apps include a range of activities for engaging with and focusing on different aspects of psychological well-being. It is estimated that there are already over 10,000 apps dedicated to mental health (Torous & Roberts, 2017). MHapps emphasize the ability to assist with issues of psychological health on

a 24/7 basis, having the technology in the palm of the hand and accessible at the touch of a button (Miller & Polson, 2019). They are a low-cost intervention and are frequently praised for their potential to fill the “gap” in mental health resourcing (Donker et al., 2013; Hollis et al., 2015).

Bakker et al. (2016) argue that the majority of apps are either reflection-focused, education-focused or goal-focused, with many apps providing direct content or techniques for supporting positive mental health (e.g. meditation). More recently, there has also been a rise in apps which offer a direct link to counseling sessions with a psychological practitioner (e.g. Talkspace, BetterHelp), and apps which make use of the advantages of peer-support (e.g. Kooth, Side by Side). The realm of MHapps can also include social chatbots (e.g. Wysa, Replika, Woebot) in which users receive support through AI-based interactions and communication. MHapps aim to provide a way of supporting an individual with mental health issues, ranging from on-the-spot crisis intervention for someone who needs urgent help, through to people who might just download a mental health app on a whim. In the current app culture, it is likely that most people have at least one app that is of a mental health nature on their tablet or mobile device.

MHapps are developed in the context of a “global mental health crisis” (Torous et al., 2018) and the World Health Organization (WHO) and other institutions champion the use of digital healthcare solutions to respond to this crisis (WHO, 2016). This is particularly significant for young people for whom mental health issues are on the rise (Adams et al., 2014), and where issues of mental health have been amplified by the Covid-19 pandemic in recent years (Creswell, 2021). As MHapps are popular with young people, they have been labelled as a direct response to the “problem” of the mental health crisis (Hollis et al., 2015; Fullagar et al., 2017) and the Department of Health & Social Care (2021) released a guide for good practice for digital and data-driven health technologies that identifies the desire for the NHS to achieve “widespread digitally-enabled care” as part of their response to this problem. There is a growing recognition of the area of “digital psychiatry” and the increasing use of digital technologies to communicate and interact with patients (Torous, Keshavan & Gutheil, 2014). This illustrates how the future of mental health care is likely to continue to harness the power of digital technology and seek to find ways to ensure

that technologies, like MHapps, can be integrated into formal mental health provision.

MHapps include a range of psychological techniques for support, with many apps making use of techniques from Cognitive Behavioural Therapy (CBT). Table 1 illustrates some examples of popular apps and the use of the psychological techniques that feature in these apps.

MHapp	**Intended for**	**Type of App**	**Psychological techniques**	**Device**
Calm	Mood disorder, sleep, stress and anxiety	Mindfulness via videos and stories	Mindfulness, meditation	iOS, Android
Happify: For Stress and Worry	Chronic pain, mood disorders, stress and anxiety, sleep, PTSD	Symptom tracking/self-monitoring	CBT, mindfulness, psychoeducation, gratitude	iOS, Android, Web
NOCD	OCD	Direct therapy, community support, OCD information and education	Exposure response prevention treatment, Mindfulness	iOS, Android

PTSD Coach	Those with experience of PTSD	Symptom tracking/self-monitoring, assessment, screening	CBT, psychoeducation	iOS, Android
SuperBetter	Chronic pain, PTSD, mood disorders, stress and anxiety	Gamified app to build resistance, self-tracking, self-care	Cognitive training, gratitude	iOS, Android, Web
Headspace	Stress and anxiety, mood disorders, sleep	Mindfulness courses and materials, community forum, progress tracking, self-tracking	Mindfulness meditation	iOS, Android, Web
MindDoc	Stress and anxiety, mood disorders	Symptom tracking and communication for a health provider	Online CBT following initial assessment, video-based psychotherapy	iOS, Android
MindShift	Stress and anxiety, specifically for young adults	Information about different types of anxiety, guided relaxation, coping plans	CBT	iOS, Android

Feeling Good	Stress and anxiety, mood disorders, eating disorders, sleep	Positive mental health program through audio tracks	CBT, Mindfulness	iOS, Android, Web
Woebot	Stress and anxiety, mood disorders	AI Social Chatbot	CBT	iOS, Android
Wysa	Stress and anxiety, mood disorders	AI Social Chatbot	Cognitive reframing, breathing exercises, connection to a licenced therapist	iOS, Android

Table 1. A few examples of MHapps and associated psychological techniques (available via https://onemindpsyberguide.org/).

MHapps often make use of tools from CBT, particularly for the treatment of mild to moderate symptoms of anxiety or depression (Donker et al., 2013). This could include other variations of CBT such as Dialectical Behavioral Therapy (DBT) or Acceptance and Commitment Therapy (ACT). These are similar approaches that involve guiding awareness towards an understanding and recognition of life challenges and then focusing on these issues, in a non-judgmental way, to identify improvements. Non-CBT MHapps might also include tools for journaling and self-reflection, a variety of tests and scales for tracking mood, or external links to community forums and discussion spaces. The strength of MHapps has been demonstrated with a wide range of populations including parents (Liverpool et al., 2019), employees (Muuraiskangas et al., 2016) and adolescents (Donovan et al., 2016).

Grist et al., (2017) found that MHapps can address the shortfall in face-to-face mental health service provision in the context of adolescents who self-harm. This shows the potential for these technologies to provide instant support to vulnerable and hard-to-reach groups who do not typically access formal healthcare practices (see also Hategan, Giroux, & Bourgeois, 2019; Srivastava et al., 2020). Furthermore, Ramos and Chavira (2022) claim that apps present a promising approach for some racial and ethnic minorities given the accessibility of technology. However, they also warn about the perils of advocating this approach and further enhancing pervasive mental health disparities if these already disadvantaged groups are unable to make use of these technologies.

The next section will explore one of the reflection-type apps (Headspace) in more detail and will explore how psychological support is delivered through an app. This is not indicative of all apps but is intended to provide an overview of the look and feel of a mental health app, giving information on the ways that people connect with the tools, activities, and support services in an app of this kind. The description of the app will be followed by the psychological evidence for its use, providing insight into the ways that apps of this kind are tried, tested, and evaluated.

Headspace

Headspace is a mindfulness and meditation app that has been downloaded over 65 million times, in 190 countries, with approximately 2 million subscribers worldwide (Curry, 2023). Headspace is one of the most popular mental health apps on the market in the UK and utilizes a range of self-directed meditation and mindfulness techniques. Headspace is one of a small number of mental health apps that is recommended to NHS staff in England and Wales[1]. Headspace claims that the techniques are rooted in Tibetan Buddhist traditions involving eight core techniques including[2]:

- Noting
- Visualization
- Resting awareness
- Focused attention
- Loving kindness

- Reflection
- Body scan
- Skillful comparison

The Headspace app aims to incorporate the above practices into the content in the app. Fundamentally, this takes the form of many hundreds of hours of guided and unguided meditation sessions based on well-established meditation and mindfulness practices. The app is organized via the main 'explore' page from the Headspace app where users can select content based on a desired area of focus e.g. meditate, sleep or move. These links provide a variety of videos that can be scrolled through and selected, ranging from short bitesize videos through to longer more in-depth content videos. All videos contain instructions on how to complete an exercise and give information on the benefits and principles of mindfulness techniques. Scientific support for these practices is available in the app and users are encouraged to complete one meditation-based session every day to maximize the benefits of the app. Headspace provides a wealth of meditation exercises that a user can watch and complete, such as, managing anxiety or dealing with loss. There is content to help with meditation, sleep, movement, and focus. Much of the content can be downloaded and used offline and there is an abundance of family-friendly content. Like many other MHapps Headspace monitors personal usage of the app, and this information is then fed-back to the user via the home screen. Headspace allows the user to track their stress and anxiety via frequent 'check-ins' via the app, which will include completing a short questionnaire on their feelings of stress and anxiety. These measures provide a snapshot of how the user is feeling at that moment. Unlike some other apps, Headspace does not use mood assessment ratings to provide information on the users and instead opts for questionnaires that have been validated in the field of psychology (i.e. the Perceived Stress Scale). Research suggests that Headspace provides a means to overcome traditional barriers to engaging with meditation (Mani et al., 2015). It has also been found to provide a solution to geographical constraints, social issues and financial barriers that often permit people from accessing support for mental health issues in general (Cavanagh et al., 2014). In a randomized controlled study, university students reported improvements in a range of mental health outcomes (e.g. depressive symptoms, college adjustment) when Headspace was compared to a control of generic app

users, particularly amongst frequent Headspace users (Flett et al., 2019). Bostock et al., (2019) also found that using Headspace for 8 weeks has the potential to reduce work-related stress and improve perceptions of available social connections and support. This corroborates with the typical impact of mindfulness interventions when delivered face-to-face (Borstock et al., 2019).

Clinical evidence and evaluation of MHapps

Since MHapps like Headspace entered the market, there has been a growing interest in establishing clinical evidence for MHapps, with much research looking to evidence the efficacy of a particular app via clinical methods of research (e.g. randomized controlled trials). Given that large numbers of consumers are using these apps daily, the advantages of being able to recognize these apps as a trusted method for the improvement of mental health conditions could be beneficial for use in a clinical setting. For many researchers, the need to collate this evidence is also due to the lack of clinical research that is used in the design and development of MHapps, and a recognition that these apps should be scientifically tested before being marketed to the general population (Rathbone et al., 2017; Walker & Viaña, 2023). In recent years, the bulk of clinical research into the efficacy of MHapps has been typically based on the management and treatment of mood disorders (Alyami et al., 2017; Eis et al., 2022; Firth et al., 2017: Michalak et al., 2022).

Given the growing number of MHApps available, different ways of clinically evaluating the apps have also appeared. In the US, the American Psychiatric Association (APA) devised the App Evaluation Model in June 2019. This model is hierarchically organized and is presented as a series of questions to be considered when deciding if one should choose to use a particular app e.g., “does the app appear to do what it claims to do?” The App Evaluation Model is versatile and intended for use to both clients and clinicians. This tool, like many others, bears similarity to the first rating tool of this type - the Mobile Application Rating Scale (MARS). The MARS is not specially focused on MHapps but on more mobile health technologies in general, and gives quality indicators in four dimensions: engagement, functionality, aesthetics, and information quality. Stoyanov et al., (2015: 6) argues that the MARS provides “simple, objective, reliable, and widely applicable measure of app quality”. This model requires the user to rate each of the

four dimensions on a five-point Likert scale, the mean scores from each of these dimensions is then taken together to give an overall indicator of the quality of any app. Users can reflect on this information to see if it is the right app for them. The scale also includes a measure of subjective quality of the app, which is largely missing from other models. It also asks questions such as, would you pay for this app? and would you recommend this app to people who might benefit from it? Again, these scores are intended to give a way of quantifying the use of the app and to provide a way of making decisions, for both clinicians and end-users alike, as to whether to commit to using the app or not.

Reviewing clinical evaluations of MHapps

There have been several challenges to using singular clinical research methods to support the evaluation of apps. Firstly, researchers contest the ability for users to implement clinical practices following the advice in the apps (Hendrikoff et al., 2019; Huckvale et al., 2020; Stawarz et al., 2018). For example, it can be difficult to ascertain whether CBT techniques are being used consistently or with minimal attention to formal guidelines for use in an app, questioning the “quality control” of psychological tools in MHapps (see Torous et al., 2019). Indeed, there is no formal guidelines for how the administration of CBT (or any other psychological intervention) should be displayed and produced in an app and the presentation and delivery of these interventions is most likely going to be designed with a marketing potential in mind, as opposed to the best way of organizing the psychological resources for the user. In a systematic study, the use of CBT in a range of apps was compared to the National Institute for Health and Care Excellence (NICE) guidelines for the treatment of depression in adults. Unsurprisingly, there was a shortfall in the application of NICE guidelines in the apps and the researchers urged app developers to consult relevant guidelines and standards when producing apps of this kind (Bowie-DaBreo et al., 2020). Fundamentally, clinical evaluations do not address the administration of psychological tools and developers are “app-timistic” (Eis et al., 2022) about the ways users are able to self-direct themselves through psychological interventions.

Secondly, only a small number of MHapps have been through the process of collecting clinical data, and as a result, it is difficult to make sense of this data in practice, via meaningful comparisons of the overall suitability of an app. This is a concern for the long-term adoption of apps as there is only a small number of these apps which have clinical information presented in the app. With only a small amount of this research publicly available, the benefits of this data are obscured by the overriding concerns over patient safety, credibility, and usability (Melcher, et al., 2022). Tied to this is also the concern that information that is gathered as part of these assessments is being used without an individual's permission or knowledge (Parker et al., 2019).

Thirdly, some question a purely clinical conceptualization of the use of MHapps in which the purpose of the app was to move the user from “broken” to “fixed” (Barker, 2014). This connects with a wider critique of the “medical model” in psychology and questions a linear understanding of mental health distress (Cromby, Harper & Reavey, 2013). For many, the decision to download a mental health app is not directly driven by a recognizable issue with their mental health; but rather, it is part of one of the everyday apps that people regularly download and explore as part of typical ecology of apps. These actions are related to the everyday mixing of different technologies and different states of feelings, in a way that it is impossible to say that an app was ever directly responsible for moving mental health from ‘unwell’ to ‘well’, for example. This relates to a tendency to focus on MHapps in terms of the *individual* aspects of mental health and somewhat obscure the social aspects of mental health, presenting the user as the origin, source, and solution of mental health distress (see Lupton, 2015). Fullagar et al., (2017) argues that these tools of evaluation typically promote the self-management of distress and fail to represent mental health as a complex social issue.

Fourthly, in evaluating MHapps via the App Evaluation Model and other similar tools, there is a tendency to focus on the aspects of app usage that can be objectively measured and defined. As a result, this instils a clinical logic to the general appreciation of apps and obscures the more nuanced and complex areas of MHapp engagement. A clinical appreciation of apps encourages a detached and impersonal view of apps that focuses primarily on the outcomes of using an app. Thus, when

considering whether to use a particular app or not, the questions that are of most importance are about the scientific grounding of the potential impact of the app, as opposed to thinking about what sort of support that might be encountered when using an app. It also assumes that the different types of MHapps (chatbots vs. meditation apps) can all be understood through the same review process, which given the differences across these apps is unlikely.

Finally, and in a wider discussion of the power of digital data, David Beer argues that digital health data includes a cyclical logic which gives a "*promise* of making us better people, healthier, more efficient, better at connecting" (2019: 5 emphasis added). Beer argues that these "promises" obscure the real focus of this process which is to assign value to personal data. Beer is not just commenting on the sorts of evaluation on offer here, but of the ways that digital data produces certain ways of *knowing* that are tied to processes of capitalism and power. As a result, Beer asks the question "how can we detach ourselves from this in order to see what is really happening?" This is a powerful question and demonstrates the market consumption and proliferation of personal data. To study MHapps, as Beer suggests, we need to "detach" ourselves from this sort of thinking and ask questions about what is really happening in this space.

The following section aims to provide a way of thinking about, as Beer proposes, "what is really happening" in MHapps and introduces a way of theorizing the social and material aspects of MHapp use. This is intended to complement clinical evaluations of MHapps by describing the affective life trajectories that unfold as part of the everyday actions in apps. This builds on recent advances in social science of health that identifies *materialist*, *affective* and *posthuman* frameworks for studying digital technologies. This focuses on how MHapps are part of a complex socio-materiality in which the technology is embedded in a network of relations that mediates an ever-changing set of affective intensities. As Ellis and Tucker argue, "the digitization of mental health support presents a new materiality in and through which individuals can access services as well as engage in a range of forms of communication" (2021: 86). Therefore, the growing use of apps for mental health prompts investigation of the way that affect flows through and is maintained by these spaces.

Affective approach to studying MHapps

> "Mental health monitoring apps as a broader social phenomenon [are] implicated in the production of posthuman forms of subjectivity, instead of merely as a tool for the treatment of anxiety, depression and mental health" (Williams & Pykett 2022: 2)

This is a useful quote with which to begin the introduction to an affective perspective on studying MHapps, as it acknowledges the need to move beyond seeing MHapps exclusively as an instrument for mental health "treatment", and to start considering MHapps in terms of a wider set of affective forces and practices. This perspective recognizes the complexity of relations in which mental health apps are a part and identifies the subjective and nuanced aspects of using this technology. Studying apps from an affective perspective encourages us to think about *how* people live in concert with these apps and to consider exactly *what* is happening in these apps. Therefore, this aims to develop an understanding of MHapps which is not about their physical design and use, but about how people feel when they are moving through the different objects on the app or making changes to impact their psychological health and wellbeing through an app. The study of affect allows for the exploration of the dynamic between multiple bodies (both human and non-human) and the resulting relations that are constituted in the coming-together of these bodies.

In cultural theory more broadly, affect theory provides a vocabulary for the force or interactional dynamic between different actors in a social-material setting, some seeing this as being similar, and distinct, to the use of the term 'emotion' in psychology (Gregg & Seigworth, 2010; Wetherell, 2012). In a widely accepted definition, following Spinoza and Deleuze, affect relates to the coming-together of different bodies and the subsequent ability to affect or to be affected. That is, what a body can *do* rather than what it is (Fox, 2016). Affect is often described as something that hits and captures us and moves us to connect with other bodies (Clough, 2010). The benefit of this approach is to overcome some long-standing dualisms around internal/external, mind/body and psychological/social that have plagued psychology and other social sciences for many years. This is of particular interest in the field of digital technology as the individual is routinely displaced as a part of function of this technology, and where this perspective serves to immediately blur notions of

interiority, exteriority, individuality, and collectivity (Ellis & Tucker, 2021). Therefore, an affective analysis focuses on the relations that emerge through technology, providing a more expanded understanding of emotion and affect as integral to the way we relate to ourselves as bodies, as well as relate to social and collective life.

Deborah Lupton (2020) describes a “more-than-human” perspective to identify how people can live with and through their data, the sort of which might be found in a MHapp, and how this provides an approach which recognizes the entanglement of human and non-human bodies in “hybrid, unstable and generative ways” (Lupton, 2020: 42). Incorporating aspects of affect theory, Lupton argues for a complex entanglement of human and non-human actors, in which, the precise nature of how those actors are assembled forms a network of potential relations through which a person can think, act and feel. From this perspective, both the human and the material are inextricably linked. Lupton recognizes the intensity and affective forces that are brought-to-life in human-data assemblages, building on concepts from posthumanism and feminist new materialism (e.g., Barad, 2007; Braidotti, 2006; Hayles, 2012). This establishes the role of the material shaping of affective experience and identifies the “distributed and performative nature of agency” (Lupton, 2020: 27). Here, agency is not exclusively located within the individual or the environment, but is fully distributed across multiple people, spaces, places, and things. There is a strong focus here on the material shaping of experience (or the “thing-power” as Lupton refers to it) and how people can “feel” about their health when mediated via these digital health technologies (Lupton, 2017).

Vital materialism

The role of materiality in examining the experience of mental distress is now well-documented (McGrath & Reavey, 2015), particularly in terms of the role of material objects in the production of spaces of mental health (Mol, 2002; Pols, 2012; Tucker, 2011). In adopting this approach to studying MHapps the focus shifts from the clinical, individualization of apps, to the “vitalities” of affective bodily performances in the everyday material use of MHapps (see Lupton, 2018, 2019). Lupton argues that:

> "Vital materialism perspectives highlight the relational, dynamic, interwoven, and non-linear dimensions of human/nonhuman worlds. Ways of knowing and learning are based in experiencing the complex more-than-human worlds through and with which humans move. From the vital materialism position, humans are always more-than-human, part of constantly changing assemblages with a variety of heterogeneous actors. These assemblages generate lively forces and vibrancies." (Lupton, 2022: 756).

Recognizing the vital material shaping of an experience requires looking closely at the role of technology in any given assemblage; both in terms of spoken ways that people can discuss the impact of technology on their lives, but also in terms of unspoken, ineffable aspects of everyday experience. The focus is on the *relations* that are routinely opened-up or shut-down in the ever-changing assemblage of socio-technical bodily arrangements. This calls forth the different ways that an assemblage affords an individual to feel as though they have the capacity and the potential to act in any given setting and, equally, the ways an assemblage embeds a feeling of restricted movement or an inability to make changes.

Lupton (2020) recognizes the influences of Bennett (2010) and Coole (2013) in the origins of the term vital materialism. These scholars emphasize the "thing-power" of human and non-human actors in terms of the affective intensities, forces and actions that emerge in the specific coming-together of bodies in a network of relations. This is particularly interesting in terms of the potential for action within these relational constructs: What are people able to do? How can they move in space? What things are they not allowed to say or do? In this context, the ability to move and change is not located within the individual and a vital materialist perspective ascribes to the notion of distributed agency. Meaning that, agency is performed between objects, people, places, and things; it is formed at the moment of moving through space and time, constantly shifting and changing as bodies enter or exit the assemblage. Lupton (2020: 11) argues that "when humans come together with apps, they are creating new worlds of movement and place". Opening an MHapp and joining the assemblage of relations therein, means activating the agentic properties of that space and the ability to move, change, and feel within that space emerges from the

interactions with the digital material entanglement of relations that are located in those, as Lupton described, “new worlds”.

Fullagar et al., (2017) criticizes viewing an app as a representational object through which people can simply access their mental health. Instead, an app should be seen as an assemblage of human and non-human actors that are co-constructed in the ability to affect and be affected. This raises questions such as: How can people view themselves via an app? What do they make of the data in the app and how do they feel they can act on that information? How do other bodies (such as AI) contribute to and support feelings of mental (ill) health? And fundamentally, how do we understand the role of a wider app ecology in the generation of these feelings?

AI and MHapps

To answer these questions, we propose that this discussion of MHapps needs to not just focus on explicit MHapps like Headspace mentioned above, but also needs to include other digital spaces that are considered to have a mental health benefit, that is, social chatbots. These tools use AI to provide human-like contact for support and many of the features are geared to help people manage everyday stress and anxiety. For example, Wysa uses AI technology to help people manage their mental health in real time by suggesting self-care exercises for mental health support. Wysa endorses tools from CBT and collects other wellness information on the user e.g., feelings, sentiment, mood, and major life events. The use of Wysa and other chatbots have been found to be shaping the current nature of what digital “recovery” looks like (Meadows et al., 2020). More advanced technologies, such as Replika, involve the creation of a digital social companion that is designed to provide real-time support. Replika is an AI chatbot that involves creating and maintaining a virtual ‘friend’ who is available to talk to and role-play through a range of issues (e.g., there are dedicated sessions on ‘managing difficult emotions’ or ‘positive thinking’). This technology is not solely designed to offer mental health support as with the other MHapps discussed so far, however, Replika has been found to provide general support with social isolation and loneliness (Laestadius et al., 2022).

Looking at the role of Replika and other chatbot technologies, provides a helpful reminder of the wider digital media ecology in which mental health apps reside. All apps need to be considered as being one of several apps that interact with other digital and non-digital technologies, through which affect is assembled and distributed. MHapps are not disconnected from other access points to mental health and there is a need to constantly consider the interactions with other forms of support. In a study of mental health information searching for LGBTIQ+ young people, Byron (2019) shows that an app could be the equivalent of "Disneyland" but without incorporation into existing practices of information sharing and support practices, it would be rendered useless by the end users of apps. This means that an app could have unparalleled functionality or attest to provide the best possible support for a psychological issue, but without integration in existing social processes, the app would likely have little, or no impact given that the social aspects of these apps are one of the main reasons for successful integration into everyday life. Therefore, we need to consider how the wider range of apps (Replika to Headspace) and how these apps "come to matter" (Barad, 2003; Clark & Lupton, 2023).

Data in MHapps

MHapps are sustained through multiple forms of digital data and there has been a subsequent expansion of what are called Big Data practices in recent years: the ability to search, aggregate and cross-reference large data sets" (Boyd & Crawford, 2012: 663). Some have framed these data as running alongside the practices of the body, as forms of "data bodies" or "data doubles" (Lyon, 2014). This perspective relies on conceptualizing data as inherently tied to an underlying subject and their actions, movements, and transactions, in which this data "make up" the people in the system (Lyon 2104: 6). However, this duplication frames data as always being bound to the individual subject and limited by the actions of the body. However, in following a vital materialist perspective, we accept that data has a *life of its own* and where the interconnected nature of different types of data makes it difficult to extrapolate the role of digital data in one dimension. Hansen (2012) argues that human feelings need to be conceptualized as the product of the relationship between bodies and technics, in which "the body's capacity to act is never simply a property it possesses in isolation; it is always a recursive and constantly modulated function of its

embeddedness within a rich texture of sensation' (Hansen, 2012: 186). Hansen's work encourages a way of thinking about the role of digital data in contemporary media that gives people the opportunity to be taken outside of their immediate experience to encounter "something that would not otherwise be experientiable" (2012: 223). This shows the need to study the way psychological support is mediated through the relations that are enacted in the movement of data and bodies. Our perception of the psychological individual is one that is not limited to the boundary of the body (Tucker, 2018) and is immersed the complex affective processes that emerge from the relationships entangled in body, data and environment. MHapps are "datafied" spaces (Sumartojo, Pink, Lupton, & LaBond, 2016) that are not tied to an underlying subject.

Key Issues in an Applied Psychosocial Perspective

This book will develop an applied psychosocial perspective to studying MHapps and will build on the literature from a post-humanist, affective and socio-material perspective. As the opening quote to this section suggests, there is a call for attention to be directed to the affective, technical, and sensory capacities of apps and, in so doing, this book will provide a social account of the psychological immersion and embodiment in MHapps. The following chapters in this book will each focus on a key aspect of an applied psychosocial approach to studying MHapps. Following this introduction, these issues are:

- How data is mobilized in the everyday affective use of MHapps, with specific reference to the ways that information is presented to the user and how they can "track" their psychological health and wellbeing in the app (Chapter 2).
- How social chatbots function to provide mental health support and the challenges associated with interacting with a Replika following a change to the underlying technical system (Chapter 3).
- How MHapps can be considered as part of an 'expanded' digitally mediated ecology suitable for analysis via a Ecological Momentary Assessment (EMA). This form of analysis can provide a way of exploring the way apps function 'in the field' (Chapter 4).

- How a material perspective can be used to develop an understanding of some of the main issues in MHapps including the presence of atmospheres and algorithms (Chapter 5).

Each chapter will offer both micro and macro perspectives on MHapp usage, ranging from the small, fine-grained details of the everyday use of one function of an app, through to the wider, psychosocial implications for affectivity and app usage. This supports the call for apps to be considered in terms of a wider system of mental health care and to consider the sorts of ways that we live *with* and *through* technology. An applied psychosocial approach to studying MHapps is not limited to a fixed and stable understanding of how people use MHapps to "treat" mental health, like that to be found in a clinical interpretation of MHapps, but rather on the complex, affective and entangled nature of the experience of mental health and how this *collides* with both human and non-human bodies in MHapps.

REFERENCES

Alyami, M., Giri, B., Alyami, H., & Sundram, F. (2017). Social anxiety apps: a systematic review and assessment of app descriptors across mobile store platforms. *Evidence-Based Mental Health, 20*(3), 65-70. 10.1136/eb-2017-102664

Bakker, D., Kazantzis, N., Rickwood, D., & Rickard, N. (2016). Mental health smartphone apps: review and evidence-based recommendations for future developments. *JMIR mental health*, *3*(1), e4984.

Barad, K. (2007). *Meeting the universe halfway: Quantum physics and the entanglement of matter and meaning*. Duke University Press.

Barker, K. K. (2014). Mindfulness meditation: Do-it-yourself medicalization of every moment. *Social Science & Medicine (1982), 106*, 168-176. 10.1016/j.socscimed.2014.01.024.

Bennett, J. (2010). *Vibrant matter: A political ecology of things*. Duke University Press.

Bowie-DaBreo, D., Sünram-Lea, S. I., Sas, C., & Iles-Smith, H. (2020). Evaluation of treatment descriptions and alignment with clinical guidance of apps for depression on app stores: systematic search and content analysis. *JMIR formative research*, *4*(11), e14988.

Boyd, D., & Crawford, K. (2012). Critical questions for big data: Provocations for a cultural, technological, and scholarly phenomenon. *Information, communication & society*, *15*(5), 662-679.

Byron, P. (2019). 'Apps are cool but generally pretty pointless': LGBTIQ+ young people's mental health app ambivalence. *Media International Australia*, *171*(1), 51-65.

Clark, M., & Lupton, D. (2023). The materialities and embodiments of mundane software: exploring how apps come to matter in everyday life. *Online Information Review*, *47*(2), 398-413.

Coole, D. (2013). Agentic capacities and capacious historical materialism: Thinking with new materialisms in the political sciences. *Millennium*, *41*(3), 451-469.

Donker, T., Petrie, K., Proudfoot, J., Clarke, J., Birch, M., & Christensen, H. (2013). Smartphones for Smarter Delivery of Mental Health Programs: A Systematic Review. *Journal of Medical Internet Research, 15*(11), e247. 10.2196/jmir.2791

Donovan, E., Rodgers, R. F., Cousineau, T. M., McGowan, K. M., Luk, S., Yates, K., & Franko, D. L. (2016). Brief report: Feasibility of a mindfulness and self-compassion based mobile intervention for adolescents. *Journal of Adolescence (London, England.), 53*(1), 217-221. 10.1016/j.adolescence.2016.09.009

Ellis, D., & Tucker, I. (2020). *Emotion in the digital age: Technologies, data and psychosocial life*. Routledge.

Eis, S., Solà-Morales, O., Duarte-Díaz, A., Vidal-Alaball, J., Perestelo-Pérez, L., Robles, N., & Carrion, C. (2022). Mobile Applications in Mood Disorders and Mental Health: Systematic Search in Apple App Store and Google Play Store and Review of the Literature. *International journal of environmental research and public health*, *19*(4), 2186. https://doi.org/10.3390/ijerph19042186

Firth, J., Torous, J., Nicholas, J., Carney, R., Pratap, A., Rosenbaum, S., & Sarris, J. (2017). The efficacy of smartphone-based mental health interventions for depressive symptoms: a meta-analysis of randomized controlled trials. *World Psychiatry : Official Journal of the World Psychiatric Association (WPA), 16*(3), 287-298. 10.1002/wps.20472

Fox, N. J. (2016). Health sociology from post-structuralism to the new materialisms. *Health (London, England : 1997), 20*(1), 62-74. 10.1177/1363459315615393

Fullagar, S., Rich, E., Francombe-Webb, J., & Maturo, A. (2017). Digital ecologies of youth mental health: Apps, therapeutic publics and pedagogy as affective arrangements. *Social Sciences*, *6*(4), 135.

Grist, R., Porter, J., & Stallard, P. (2017). *Mental Health Mobile Apps for Preadolescents and Adolescents: A Systematic Review*. JMIR Publications Inc. 10.2196/jmir.7332

Hendrikoff, L., Kambeitz-Ilankovic, L., Pryss, R., Senner, F., Falkai, P., Pogarell, O., Hasan, A., & Peters, H. (2019). Prospective acceptance of distinct mobile mental health features in psychiatric patients and mental health professionals. *Journal of Psychiatric Research, 109*, 126-132. 10.1016/j.jpsychires.2018.11.025

Huckvale, K., Nicholas, J., Torous, J., & Larsen, M. E. (2020). Smartphone apps for the treatment of mental health conditions: status and considerations. *Current Opinion in Psychology, 36*, 65-70. 10.1016/j.copsyc.2020.04.008

Laestadius, L., Bishop, A., Gonzalez, M., Illenčík, D., & Campos-Castillo, C. (2022). Too human and not human enough: A grounded theory analysis of mental health harms from emotional dependence on the social chatbot Replika. *New Media & Society*, 146144482211420. 10.1177/14614448221142007

Liverpool, S., Webber, H., Matthews, R., Wolpert, M., & Edbrooke-Childs, J. (2019). A Mobile App to Support Parents Making Child Mental Health Decisions: Protocol for a Feasibility Cluster Randomized Controlled Trial. *JMIR Research Protocols, 8*(8), e14571. 10.2196/14571

Lupton, D. (2018). How do data come to matter? Living and becoming with personal data. *Big Data & Society*, *5*(2), 2053951718786314.

Lupton, D. (2017). How does health feel? Towards research on the affective atmospheres of digital health. *Digital Health, 3*, 2055207617701276. 10.1177/2055207617701276

Lupton, D. (2019). The thing-power of the human-app health assemblage: thinking with vital materialism. *Social Theory & Health*, *17*, 125-139.

Lupton, D. (2020). The sociology of mobile apps. In *The Oxford Handbook of Digital Media Sociology* (pp. 197-218). Oxford University Press.

Lupton, D., & Watson, A. (2022). Creations for Speculating About Digitized Automation: Bringing Creative Writing Prompts and Vital Materialism into the Sociology of Futures. *Qualitative Inquiry*, *28*(7), 754-766.

Lyon, D. (2014). Surveillance, Snowden, and big data: Capacities, consequences, critique. *Big data & society*, *1*(2), 2053951714541861.

McGrath, L., & Reavey, P. (2015). Seeking fluid possibility and solid ground: space and movement in mental health service users' experiences of 'crisis'. *Social Science & Medicine (1982), 128*, 115-125. 10.1016/j.socscimed.2015.01.017

Meadows, R., Hine, C., & Suddaby, E. (2020). Conversational agents and the making of mental health recovery. *Digital Health, 6*, 2055207620966170. 10.1177/2055207620966170

Melcher, J., Camacho, E., Lagan, S., & Torous, J. (2022). College student engagement with mental health apps: analysis of barriers to sustained use. *Journal of American college health : J of ACH*, *70*(6), 1819–1825. https://doi.org/10.1080/07448481.2020.1825225

Michalak, E. E., Barnes, S. J., Morton, E., O'Brien, H. L., Murray, G., Hole, R., & Meyer, D. (2022). Supporting Self-management and Quality of Life in Bipolar Disorder With the PolarUs App (Alpha): Protocol for a Mixed Methods Study. *JMIR Research Protocols, 11*(8), e36213. 10.2196/36213

Miller, E., & Polson, D. (2019). Apps, avatars, and robots: the future of mental healthcare. *Issues in mental health nursing*, *40*(3), 208-214.

Mol, A. (2002). *The body multiple: Ontology in medical practice*. Duke University Press.

Muuraiskangas, S., Harjumaa, M., Kaipainen, K., & Ermes, M. (2016). Process and Effects Evaluation of a Digital Mental Health Intervention Targeted at Improving Occupational Well-Being: Lessons From an Intervention Study With Failed Adoption. *JMIR Mental Health, 3*(2), e13. 10.2196/mental.4465

Parker, L., Halter, V., Karliychuk, T., & Grundy, Q. (2019). How private is your mental health app data? An empirical study of mental health app privacy policies and practices. *International Journal of Law and Psychiatry, 64*, 198-204. 10.1016/j.ijlp.2019.04.002.

Pols, J. (2012). *Care at a distance: on the closeness of technology* (p. 204). Amsterdam University Press.

Rathbone, A. L., Clarry, L., & Prescott, J. (2017). Assessing the Efficacy of Mobile Health Apps Using the Basic Principles of Cognitive Behavioral Therapy: Systematic Review. *Journal of Medical Internet Research, 19*(11), e399. 10.2196/jmir.8598

Ramos, G., & Chavira, D. A. (2022). Use of technology to provide mental health care for racial and ethnic minorities: evidence, promise, and challenges. *Cognitive and Behavioral Practice*, *29*(1), 15-40.

Srivastava, K., Chaudhury, S., Dhamija, S., Prakash, J., & Chatterjee, K. (2020). Digital technological interventions in mental health care. *Industrial Psychiatry Journal*, *29*(2), 181.

Stawarz, K., Preist, C., Tallon, D., Wiles, N., & Coyle, D. (2018). User Experience of Cognitive Behavioral Therapy Apps for Depression: An Analysis of App Functionality and User Reviews. JMIR Publications Inc. 10.2196/10120

Stoyanov, S. R., Hides, L., Kavanagh, D. J., Zelenko, O., Tjondronegoro, D., & Mani, M. (2015). Mobile App Rating Scale: A New Tool for Assessing the Quality of Health Mobile Apps. *JMIR mHealth and uHealth, 3*(1), e27. 10.2196/mhealth.3422.

Sumartojo, S., Pink, S., Lupton, D., & LaBond, C. H. (2016). The affective intensities of datafied space. *Emotion, Space and Society*, *21*, 33-40.

Torous, J., Andersson, G., Bertagnoli, A., Christensen, H., Cuijpers, P., Firth, J., Haim, A., Hsin, H., Hollis, C., Lewis, S., Mohr, D. C., Pratap, A., Roux, S., Sherrill, J., & Arean, P. A. (2019). *Towards a consensus around standards for smartphone apps and digital mental health*. Wiley. 10.1002/wps.20592

Torous, J., & Roberts, L. W. (2017). Needed Innovation in Digital Health and Smartphone Applications for Mental Health: Transparency and Trust. *JAMA Psychiatry, 74*(5), 437-438. 10.1001/jamapsychiatry.2017.0262

Torous, J., Nicholas, J., Larsen, M. E., Firth, J., & Christensen, H. (2018). Clinical review of user engagement with mental health smartphone apps: evidence, theory and improvements. *BMJ Ment Health*, *21*(3), 116-119.

Torous, J., Keshavan, M., & Gutheil, T. (2014). Promise and perils of digital psychiatry. *Asian journal of psychiatry*, *10*, 120-122.

Tucker, I. (2011). Somatic concerns of mental health service users: A specific tale of affect. *Distinktion: Scandinavian Journal of Social Theory*, *12*(1), 23-35.

Walker, S. L., & Viaña, J. N. (2023). Mindful mindfulness reporting: Media portrayals of scientific evidence for meditation mobile apps. *Public Understanding of*

Science (Bristol, England), 9636625221147794. 10.1177/09636625221147794

---

[1] https://www.england.nhs.uk/supporting-our-nhs-people/support-now/wellbeing-apps/headspace/ Accessed March 2023.

[2] https://help.headspace.com/hc/en-us/articles/115011850767-What-are-the-techniques- Accessed February 2023.

Williams, J. E. (2022). Mental health monitoring apps for depression and anxiety in children and young people: A scoping review and critical ecological analysis. *Social Science*, 15.

Zuboff, S. (2019). *The age of surveillance capitalism: The fight for a human future at the new frontier of power*. London: Profile Books

INDEX