Understanding User Behaviour and User Experience of a Mental Wellbeing Mobile Application:
A Semi-Structured Interview Study

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NOTE BY THE UNIVERSITY

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ABSTRACT

Digital mental wellbeing interventions are increasingly being used by the general public and within clinical treatment. Among these, mindfulness and meditation programs delivered through mobile device applications are gaining popularity and clinical relevance. However, little qualitative research has been conducted to understand user behaviour or user experience of such interventions. A qualitative semi-structured interview study was carried out with 16 participants between the age of 25 and 38 (M=32.5) using the commercially popular mindfulness application Headspace for 30 - 40 days. The study design and interview schedule were influenced by an autoethnography carried out by the author for thirty days before the main study began. A theoretical model of behaviour, The Reasoned Action Approach, was used to gain insight into the results. The study revealed that the core concern of users was fitting the application into their busy lives. Responses to this concern were influenced by patterns in daily routines, on-going reflections about the consequences of using the app, perceived self-efficacy, emotion and mood states, personal relationships and social norms. The research suggests that mobile wellbeing interventions should attempt to manage behavioural beliefs, normative beliefs, control beliefs, affective states, and should be flexible to meet the needs of different users. The research also suggests that the Reasoned Action Approach is a useful theory to inform future research and design of persuasive and mental wellbeing technologies.
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CHAPTER 1. INTRODUCTION

In recent years, there has been a growing interest in the relationship between technology and healthcare. A worldwide market now exists for the delivery of healthcare and wellbeing services using ubiquitous medical devices, websites and mobile applications. Among these technologies, mobile applications offer cost-effective methods of healthcare delivery. Mobile devices are carried with the user throughout the day, can connect to the internet and can deliver a wide variety of interventions using features such as reminders, text-based information and rich media content.

These features make mobile devices particularly suitable for the delivery of mental health and mental wellbeing interventions. Consequently, there is a growing market for consumer healthcare applications that deliver mental wellbeing interventions such as stress reduction and anxiety management programs. There is also a growing interest within clinical mental health services to explore the use of digital interventions alongside more traditional forms of healthcare delivery. One of the most vibrant areas of the consumer healthcare application market is mindfulness and meditation. These applications seek to facilitate meditation and mindfulness practices and habits. Clinical programs that teach mindfulness techniques can be supplemented with mobile mindfulness interventions to help patients learn skills in their day-to-day lives.

In order to develop effective mental wellbeing technologies and improve current interventions, it is essential to understand the relationship between users and the technology. This involves understanding complex psychological phenomena and behaviours occurring over a period of many days. It involves a process of analysis and informed reflection to produce design recommendations for future development of such technologies. Although clinical studies have demonstrated the effectiveness of mindfulness and meditation delivered through technology, little qualitative work has been done to gain insight into the user experience of these interventions. Furthermore, little work has been done to develop and apply theories that will help us understand how mental wellbeing applications are used and why they are used in these ways.

This paper reports on a semi-structured interview study that sought to understand the user experience of Headspace, a commercially popular mental wellbeing application for mobile devices and desktop computers that aims to teach and facilitate mindfulness meditation (www.headspace.com). An autoethnography
and semi-structured interviews were chosen because these empathic and in-depth research methods are effective ways to understand user experience over an extended period of time. The findings are discussed in the light of a psychological model of behaviour that has been applied to other health and behaviour change interventions: the Reasoned Action Approach (Fishbein & Azjen, 2011). Although this study is primarily aimed at understanding the user behaviour and user experience of Headspace and other similar mindfulness applications, the findings can be extended to other mobile mental health interventions and indeed to other behaviour change technologies that seek to engage a user in new patterns of behaviour and new ways of thinking.
CHAPTER 2.   LITERATURE REVIEW & BACKGROUND

E-Mental Health

The penetration of ubiquitous technologies into every corner of our lives provides an excellent opportunity for new forms of mental health and mental wellbeing interventions. The UK telecommunications quango, Ofcom reported that in early 2014, 93% of UK adults owned a mobile phone, with 61% of the population owning a smartphone with internet access (Ofcom, 2014). NHS publications such as Cotton et al. (2013) assert confidently that electronic mental health (e-mental health) interventions can address some of the biggest future resource challenges facing health services. These interventions include the delivery of health information, diagnostic tools, reminders, instructions and guidance, behaviour and lifestyle feedback, taught courses and video contact with healthcare professions.

A large number of studies have investigated the effectiveness of behaviour change and e-mental health interventions across a broad range of clinical areas including weight-loss (Levine et al., 2013), smoking cessation (Hutton et al 2011), alcohol abuse (Danielsson et al., 2014), depression (Foroushani et al., 2011) and anxiety (Richards & Richardson, 2012). These studies report small to medium effect sizes across a wide range of interventions. Given the early stage of this form of health intervention, it is probable that future technologies will become even more effective.

The opportunities for digital mental wellbeing interventions extend far beyond the delivery of clinical services. There is a growing market for consumer healthcare applications as people seek to take responsibility for their own mental wellbeing. A study by the Institute of Healthcare Informatics (IMS Institute, 2013) reported that there were 558 separate mental health and mental wellbeing applications available on the iTunes and Android stores.

Mindfulness

One growing area in the field of e-mental health is mindfulness. Mindfulness is “a state of psychological freedom that occurs when attention remains quiet and limber, without attachment to any particular point of view” (Martin, 1997, p29). Mindfulness meditation is a modern adaption of a Buddhist tradition stretching back 2,500 years. In recent years, many claims have been made for the efficacy of
mindfulness for mental wellbeing. Advocates argue that increased mindfulness is correlated with greater self-control (Masicampo & Baumeister, 2007), objectivity (Leary & Tate, 2007), concentration (Young, 1997), capacity to deal with stress (Grossman et al., 2004) and increased empathy (Fulton, 2005).

Mindfulness practices have been used in psychological and psychiatric services since they were introduced in a contemporary healthcare context in the late 1970s by pioneers such as Jon Kabat-Zinn. Kabat-Zinn developed a stress reduction course that taught mindfulness to patients of the University of Massachusetts Medical Centre (Kabat-Zinn, 1990). The course taught patients a series of techniques to cultivate mindfulness including meditation practices such as attention focus exercises, body scans, breathing exercises and yoga-based exercises. The purpose of these exercises is to cultivate an awareness of self: to learn to pay attention to the way the mind actually works; to what is really going on in our bodies and in our emotional states.

Research has explored the effectiveness of mindfulness among clinical populations, finding strong evidence to reduce symptoms of depression (Kuyken et al., 2008), anxiety (Chen et al., 2012) and severe mental illness (Davis & Kurzban, 2012), and improve the quality of life of people suffering with physical health conditions such as chronic pain and fibromyalgia (Grossman et al., 2004). In non-clinical populations, mindfulness programs have been associated with reductions in stress levels and increased wellbeing in the workplace among doctors (Beckman et al., 2012) and office workers (Bostok et al., 2013).

This strong empirical basis has contributed to Mindfulness meditation becoming a growing trend in Europe and America. The global advertising company JWT recently listed ‘mindful living’ as one of ‘ten trends that will shape the world in 2014’ (JWT, 2014). This trend has also expressed itself in the technological world: There is a growing clinical interest in using digital mindfulness applications to compliment mental health service delivery (Cotton et al., 2013). These trends are also seen in the consumer technology market. In a recent study, Plaza et al. (2013) found 50 different mobile-based mindfulness apps available for Android, IOS and Windows devices. These include apps such as Calm.com, Buddify, the Meditation App and Headspace, which are among the most downloaded apps in the health and wellbeing mobile application markets. The current study specifically conducts research into user behaviour and the user experience of the Headspace application in order to better understand such technologies.
Headspace

The mindfulness application Headspace is one of a number of commercially successful web-based applications that deliver mindfulness and meditation related content. Headspace aims to be accessible to people who are new to meditation. In August 2014, Headspace had around 523,000 users in the UK and around 1.3 million users worldwide (Derbyshire, 2014). The company reports a 10-15% growth rate in users each month. In early July 2014, shortly after the release of the new version of the app, Headspace ranked as the seventh most downloaded application in the Apple iOS Health and Fitness downloads chart (Top App Charts Website, 2014).

Headspace delivers a course of guided mindfulness meditations, using both audio and video files. These guided meditations are voiced by Headspace founder Andy Puddicombe, a former Buddhist monk. Content can be downloaded through the company’s website or via a mobile application, available on both Android and Apple iOS platforms. Users can access ten days of free content before signing up to a subscription. The full content comprises 365 different guided meditations. Users are encouraged to complete a meditation each day. Progress through the course can be viewed on a timeline that appears on the home screen (see fig 1.). Much of the program follows a linear pathway of daily meditations. Tapping the play button on the timeline begins the next meditation in the series. This opens the meditation interface (see fig 2.), which consists of a simple timer and a play button to begin the guided meditation. Users begin with a course of ten, 10-minute, daily meditations to learn the basics of meditation. These daily meditations increase to fifteen and then twenty minutes. After the completion of a thirty-day foundation course, the user is given access to advanced content related to health, relationships and performance (see fig 3.). There are also individual ‘on-the-go’ meditations for walking, eating, commuting, cooking, running and sleeping.
Previous Research into Mindfulness E-Mental Health Interventions

The author has only discovered one research study that has been conducted into consumer–oriented mindfulness meditation applications for smartphones. Bostock & Steptoe (2014) carried out a controlled trial with 238 workers from two large UK companies. Participants in the experimental group were given access to the Headspace application, the application being investigated by the current study. The intervention was associated with increased subjective ratings of well-being and reductions in job strain in comparison with a wait-list control group. There was also a non-significant trend for lower blood pressure after eight weeks. However, the study was exclusively a quantitative study, so provides few insights into user behaviour or the user experience of the application.

A small number of quantitative studies have demonstrated the efficacy of mindfulness technology interventions among clinical populations. However, nearly all of these are web-based applications that are not available on mobile devices such as smartphones. Randomised control trials have been carried out by Glück & Maercker (2011), Cavanagh et al. (2013) and Boettcher et al. (2014) to explore the effectiveness of online mindfulness based interventions. Participants with clinical symptoms of depression and anxiety followed programs of daily mindfulness...
exercises delivered via the Internet to desktop computers in patients’ homes. In these studies, the interventions were associated with significantly decreased symptoms of perceived stress, depression, anxiety and insomnia when compared with a control group.

The author has found three quantitative studies that have been carried out to investigate mindfulness based health treatments delivered on mobile devices such as smartphones. Morris et al. (2010), Chittaro & Vianello (2014) and Ly et al. (2014) have carried out small-scale clinical trials among patients of mental health services. All studies found promising results of mobile mindfulness interventions. However, as none of these studies used a randomized design or control groups, these results should be approached with some level of scepticism.

The author was only able to find two previous qualitative studies of e-health interventions that specifically use the mindfulness paradigm. Morris et al. (2010) report a series of case studies for a mobile application that delivered mood tracking and thought control exercises. This study reported that participants quickly understood and internalized the principles of mindfulness, which they were able to apply to difficult situations in their lives. However, the study only reports outcomes that are clinically relevant and therefore provides very little insight about the user experience. Boggs et al. (2014) conducted an interview-based qualitative study of an online intervention designed to deliver MBCT (mindfulness based cognitive therapy) to depressed patients. Participants reported that they wanted greater flexibility of content to make it easier to fit the intervention into their lives, more personal contact with clinicians and access to content through their mobile devices. There are a number of differences between this and the current study. The intervention was not available on mobile devices and this was a highly structured clinical intervention for patients with depression, so findings may not generalize to a non-clinical population or to a commercial application such as Headspace.

A number of qualitative studies have been carried out on e-mental health mobile applications that do not use the mindfulness paradigm. There are substantial overlaps between many of these applications and the Headspace app, so they may provide insights for this study. Knowles et al. (2014) conducted a meta-analysis of eight qualitative studies of e-health applications for treating depression and anxiety in clinical settings. A main theme that emerged was the importance of a user centred and flexible design. The authors conclude that e-health interventions should be flexible enough to structure a treatment program to meet the needs of each individual user. Another qualitative study of three e-health interventions by Hawkins et al. (2010) reported that e-health interventions that were rich in interactivity and presence were more likely to be effective. Interactivity and
presence are concepts that refer to how engaging and immersive the user experience is. The authors found that when users perceive person-like qualities in e-health systems they may seek further interactions and feel emotional support.

The quantitative research described above demonstrates that mobile e-health can be an effective way to deliver mental wellbeing interventions. Research also suggests that when people practice mindfulness with regularity and commitment, they can enjoy improvements to their wellbeing. It is therefore crucial to design compelling applications that can engage users and facilitate their journeys towards mindfulness. The discipline of Human Factors proposes that good design develops from an understanding of users, the tasks they are carrying out and the context of use (Pheasant & Haslegrave, 2006). There is therefore a pressing need to conduct a qualitative study of a mindfulness based mobile e-health application to understand user behaviour and the user experience of these technologies in greater depth.

Understanding Mobile E-Heath Behaviours and Experiences

How, then, should we seek to understand mobile e-health interventions in general and mindfulness applications in particular? A quasi-experimental controlled study may be suitable for a clinical trial that seeks to discover whether an intervention delivers measurable clinical outcomes. However, this approach reduces the evaluation of a technology to a single dimension. It fails to explore substantial aspects of the user behaviour and the user experience, in particular the qualities of subjective experience. Klasnja et al. (2011) argue that while clinical trials are necessary for understanding health interventions, there are limitations in their usefulness for understanding users.

In the past ten years there has been a turn towards phenomenological approaches to understanding users. These approaches include the Embodied Interaction model developed by Dourish (2004) and the Technology as Experience framework developed by McCarthy and Wright (2004). These frameworks provide new ways of conceptualizing our relationship with technology by drawing on philosophical reflections of human action found in phenomenological philosophers such as Dewey and Heidegger. McCarthy and Wright (2004) argue that researchers must seek to understand the full range of technology experience, including what they describe as the four threads of experience: the sensual, the emotional, the spatio-temporal and the compositional. Experience is an interleaving of immediate sensations, thoughts, interpretations and reflections.
These phenomenological models provide new descriptive capabilities to enhance our discourses about human–computer interactions and inspire new forms of research. However, their weakness lies in the fact that they lack predictive and explanatory power, which is valuable for understanding health and wellbeing related technologies. HCI has begun to draw upon macro theories of behaviour developed within the mainstream psychology community to understand the use of technology over extended periods of time. This is an emerging trend within the field of persuasive systems design (Fogg, 2002), and health intervention technologies. Heckler et al. (2013) argue that these theories can provide useful conceptual frameworks to guide the evaluation of these technologies. For instance, Grimes & Grinter (2007) used the stages of change theory from the Transtheoretical Model (Prochaska & Velicer, 1997) to structure their analysis of interview data when assessing a diet change game. In a similar way, Hsu and Blandford (2014) drew from the cost – reward construct of Decision Theory to analyse interviews of people trying to loose weight. Other macro theories of behaviour include the health belief model (Rosenstock, 1974), self-determination theory (Ryan & Deci, 2000) and the Reasoned Action Approach (Fishbein & Azjen, 2011).

The Reasoned Action Approach

The Reasoned Action Approach (RAA) is a family of theories of human behaviour developed by Martin Fishbein and Icek Ajzen. Earlier versions of this approach include the Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975) and the Theory of Planned Behaviour (TPB) (Ajzen, 1991). The TPB has been used in health psychology to understand a variety of health – related behaviours occurring over an extended period of time including smoking cessation (Norman et al., 1999), dietary change (Povey et al., 2000) and physical activity (Armitage, 2005). When applied to health-related behaviours, meta-studies have found this theory is powerful at predicting both intention to act and actual behaviour. A meta-analytic study of health behaviour change interventions carried out by Godin and Kok (1996) found TPB accounted for 41% of the variance in intentions and 34% of the variance in behavioural outcomes.

The theory states that beliefs about behaviour, subjective norms and perceived behavioural control combine together to shape intentions and behaviours. Attitude is here defined as belief that behaviour will have an outcome, and belief that the outcome is of value to the person. Subjective norms are the subjective interpretations and reflections upon social attitudes. This can include norms inherited from significant others as well as the wider culture. Perceived behaviour control, or self-efficacy, is the extent to which a person believes that they can carry
out a required behaviour.

The latest version of this model of behaviour is the ‘Reasoned Action Approach’ developed by Fishbein & Azjen (2011). This model slightly expands The Theory of Planned Behaviour in two ways. Firstly, it draws attention to ‘background factors’ that influence the formation of behavioural, normative and control beliefs. Secondly, it introduces the construct of ‘actual control’. This describes how environmental factors and skills and abilities affect the likelihood of intentions becoming actions. Fig 4. below shows a diagram of the RAA as presented in Fishbein (2008).

![Diagram of the RAA model](image)

Fig 4. The Reasoned Action Model (Fishbein, 2008)

RAA is both a predictive model and a descriptive model of planned behaviours. As a descriptive model of behaviour, it provides a series of empirically verified constructs with which behaviour can be analysed. This can be especially useful in a qualitative study of health and technology behaviour where the goal of a technology is to facilitate both behaviour and cognitive processes that will benefit the user. Applied in this way, the theory directs the researcher to reflect upon the attitude of
participants about the behaviour under investigation and the role of social norms and self-efficacy in the patterns of use. The theory can attune the researcher to look for ways in which a technology affects attitudes, norms, self-efficacy and intention to act. These insights assist the researcher to understand the strengths and weaknesses in the design of a technology.

In order to explore these constructs, it is necessary to use research methods that provide deep insight into subjective experience. Autoethnography can enhance a researcher’s empathy with users. Semi-structured interviews provide an opportunity to gain deep insights into subjective experience, while giving the researcher some control over the topics discussed. Therefore, in the current study, an autoethnography and a semi-structured interview method were used to gain insight into both the patterns of use and the subjective experience of the mindfulness meditation app Headspace. These insights were subsequently considered in light of the Reasoned Action Approach and will be discussed in greater depth in the discussion that follows.
CHAPTER 3. SEMI-STRUCTURED INTERVIEW STUDY

3.1 Method

Overview

A semi-structured interview study was carried out to explore the user experience of the mindfulness application Headspace among city-dwelling professionals between the ages of 25 and 38. Sixteen participants downloaded the application onto their smartphones and signed up for a free three-month period of use. Participants were asked to use the application in a self-directed way. Semi-structured interviews were conducted prior to the trial period to explore expectations and intentions. An exit interview was conducted thirty to forty days after initial download to assess and explore the user experience. The design of the study was initially influenced by an autoethnography carried out by the author. This led to the formation of initial areas of enquiry.

The early stages of the exit interview process were conducted with an attitude of theoretical agnosticism. Participants were encouraged to speak about their experience without interruption or influence from any theoretical model. These narratives were initially analysed using an inductive process closely related to data analysis methods recommended in Grounded Theory. As themes began to emerge, the Reasoned Action Approach was used as a framework to inform reflections about the patterns of use and the wider user experience.

Autoethnography

For thirty days before the start of the main study, the author carried out an autoethnographic study of the Headspace application. Autoethnography is a research method used in the discipline of Human-Computer Interaction during which the researcher becomes a participant in order to enter into an empathic relationship with users. The purpose of this autoethnography was to inform the design of the main study and to provide early insights to be explored during subsequent interviews.

Wright & McCarthy (2008) call for HCI researchers and designers to come to a deeper knowledge of the subjective states of users. They suggest that the greatest
tool for achieving this is the human capacity for empathy. Autoethnography is one such method for gaining empathy with users. For instance, O’Kane et al. (2013) conducted an autoethnography of a wrist blood pressure monitor over a three month period. O’Kane made a number of insights into the user experience of the device that may not have been discovered without this in vitro method. However, Krizek (2003) argues that researchers must recognise that ethnography provides a limited, subjective insight into the user experience. As a consequence, the findings may not be able to be generalised to any other person or context. It is therefore imperative that the researcher is vigilant in how they use their findings. One appropriate use of an autoethnography is to consider it as part of an on-going reflective process to generate hypotheses, which can be explored with other users.

The author used the Headspace application for a thirty-day period during which he carried out eighteen daily meditations. Throughout the autoethnography a process of note taking and reflection was undertaken. This allowed the author to build up a compositional picture of his experience of use, including the sensations, emotions and interpretative reflections of the experience of use. The author had initially set out to use the app on a daily basis. However, as the study continued, actual patterns of use became irregular and were characterised by periods of consecutive daily use followed by a number of days without use. A number of questions emerged at this stage including, ‘Why does use my the app follow this particular pattern? What is the difference between days when I have used it and days when I have not used it?’ This generated a series of observations about the role played by certain factors in how the app was used. These factors included beliefs about effects of use, the role of the study itself, the disruptive effects of busy routines and the quality of emotional experiences both before use, during use and after using the app. These reflections influenced the generation of an initial interview schedule for the main study exit interviews (see Appendix 1).

Participants

Sixteen participants were recruited, five males and eleven females. The age range of participants was 25-38 with a mean age of 32.5 years. All participants had been living in London, United Kingdom for the past year. Participants were recruited from the author’s wider social circles. Recruitment was conducted by sending an email about the study through social networks and via email (See Appendix 2). This email explained that the purpose of the study was to explore the personal experiences of people using the Headspace app with the intention to uncover insights that will improve the design of similar technologies. The email asked people to use the app in an entirely self-directed way. Inclusion criteria were
The criteria required participants to be between 25 and 40 years old and in full-time work. Potential participants had to be interested in using an app to help them meditate and practice mindfulness with no prior experience of using the Headspace app. The email notified participants that the reward for taking part in the study would be a three-month subscription to the application. The author was not acquainted with nine of the participants before the study began. The study was approved by the UCL Ethics Committee. Each participant signed an informed consent form and was told that they could leave the study at any time.

Materials

The Headspace application was downloaded from the Android Play and Apple iOS Application stores onto participants’ mobile smartphones. The application was accessed on these mobile devices. Participants also had to access the Headspace website via a desktop computer or laptop to sign up for an account. Three-month download codes were kindly donated by Headspace to give participants full access to the content. The initial interview schedule for the main study can be seen in Appendix 1.

Procedure

An initial semi structured interview was conducted with participants before they began using the application. The interview sought to explore current mobile habits, prior experience of mindfulness and meditation, as well as expectations and intentions of use. Questions were designed so that they would not influence perceptions of the application. This interview lasted approximately ten to fifteen minutes.

Immediately following the initial interview, an instruction email was sent out to the participants providing directions to sign up for an account with Headspace. Instructions were included explaining how to download the application onto mobile devices. Participants were given a free download code that enabled access to all content in the application for a three-month period. The email explained that they would be contacted in approximately one month to arrange a follow-up interview to discuss their experience of the app. All participants responded to the email within twenty-four hours, alerting the author that they had received the email.

During the autoethnography, it became clear that the study itself could have an effect on how participants used and experienced the application. Therefore,
participants were asked to use the application in an entirely self-directed way. Participants were informed during recruitment that the purpose of the study was to investigate real usage. Therefore, if they tried the app and decided they didn’t want to continue using it, this by itself would provide valuable insights. Secondly, contact between the author and participants was kept to a minimum throughout the trial period in order to avoid any influence this might have on usage. The author initially considered asking participants to keep a diary of use throughout the study. However, the author had attempted to do this during the initial autoethnography and found that this affected the way the app was used, as it strongly reinforced the idea that the app was being used for a study, rather than in a self-directed way. This decision was made to ensure high levels of ecological validity.

Exit Interviews

Semi Structured Exit Interviews were conducted within thirty to forty days of initial download. These interviews lasted from fifteen to thirty minutes. Initial interviews began with a discussion of patterns of use before moving onto an exploration of the participant’s personal reflections about why they used the app in that way. Interviews were guided by the interview schedule described above (Appendix 1)

After the initial interviews were completed, it became clear that there was a large amount of variance in the user experience between participants. It became increasingly clear that each participant had his or her own experience to relay. Consequently, subsequent interviews became more open and participant directed. Only when it was clear that the participant had exhausted their agendas, were further questions raised that related to specific themes or theories that had not yet been discussed. This interview method had the benefit of allowing the participant to initially discuss their experience freely, before being engaged in discussions that were of theoretical interest to the author. An early and a late interview are included in the appendices (see Appendices 3 for example of an early interview and Appendix 4 for an example of a later interview).

Data Analysis

A key aim of the current study was to use theoretical reflection in an appropriate way to deepen insights into the phenomena under observation. Furniss et al. (2011) argue that ‘extant theory can be a source of creativity and insight’. However, the
danger in applying theory in the research process is that it can restrict data gathering and the data analysis process because the researcher selectively attends to data that confirms their theories (Hekler et al., 2013). In order to address the potential problems of using theory in qualitative research, Furniss et al. (2011) advocate an approach of ‘theoretical agnosticism’ suggested by Henwood and Pidgeon (2003). This approach avoids “overly direct ways of looking that stymies the interactive process of engagement with the empirical world being studied” (Henwood and Pidgeon, 2003, p.138). The approach developed in this research project was to initially engage with the empirical world using inductive methods. This engagement would then be enhanced through a process of theoretical reflection.

Data analysis was informed by Grounded Theory coding methods developed by Strauss and Corbin, (1990). One major divergence with Grounded Theory was that ongoing theoretical sampling proved impossible due to limitations of the sample and the fact that interviews had to be scheduled for the convenience of participants. A second difference was that theoretical reflection was used in the later stages of data analysis.

Data analysis proceeded through three stages. In stage one, data was gathered empirically, without theoretical reflection. Interviews were transcribed and analysed immediately after they were carried out using a method of open coding. This allowed for the identification of concepts from the interview transcripts. Coding was carried out using the Nvivo qualitative research software package.

In stage two, themes and concepts that had been identified during stage one were fed back into subsequent interviews to seek verification and to explore their validity. This enabled the formation of key categories. A further level of analysis investigated the properties and dimensions of each category to explore the variance between users within the main categories. At this stage, a clear core concern of users emerged from the interviews. A further process of axial coding sought to find the causal conditions, context and intervening conditions that affect the core phenomena. Towards the end of the interview process, an affinity diagram of concepts was formed to express the themes, concepts and relationships that had emerged both from the data itself and from early theoretical reflections (See Appendix 5).

In stage three, the author began to consider the emerging phenomena in the light of The Reasoned Action Approach (Fishbein & Azjen, 2011). At this stage, the data was approached with an intentionally high degree of theoretical agnosticism. Each category was considered in the context of the theory. The theory offered insights into the core concern of the users and illuminated many aspects of their narratives of
experience. However, a number of themes and narratives emerged that did not fit so comfortably with the theory.

The following section presents the results of this process. It was felt that it would be precipitative to attempt to shoehorn the results into the theoretical model at this stage as it was important to let the data speak for itself before interpretation within the model. The relevance of the findings to the Reasoned Action Approach will be explored in the discussion section below.

3.2 Results

Core Concern

Strauss and Corbin (1990) suggest that the researcher using Grounded Theory data analysis methods should attempt to conceptualise a core category that summarises all other categories and narratives. In a similar, albeit less formal way, Glaser (1998) suggests that the researcher should attempt to uncover the ‘main concern or problem’ of the participants with regards to the phenomena being investigated. In the current study, early stages of data analysis followed a Grounded Theory procedure with this goal in mind. Initially, the large variance of responses and reported behaviours presented a challenge to this goal. However, a common concern became evident around halfway through the data gathering process and was repeatedly confirmed by subsequent interviews.

Most participants began the study with the intention to use the app on a regular basis. However, for three or four participants, there was an initial question: ‘Do I want to use this app? Is it for me?’ Four users came to the conclusion within three uses of the app that they did not want to use the app. This was explored in their exit interviews and their reasons will be described in detail below. For the remaining twelve users, the core concern can be summed up with the following question; ‘with all my other priorities, to what extent and how do I fit this into my life?’

In order to apply the interview data to this core question, the results for this study will begin with an exploration of the patterns of use and the context of use, before exploring themes of concern to the users and the factors that participants reported to affect the way they used the app. All participants’ names have been changed to maintain confidentiality.
Patterns of Use

Six participants reported using the app between one and three times. Four out of these six reported that they had tried the application with an open and inquisitive mind but had decided after a couple of tries that the app would not suit them. This was based on a very definite belief that there was an incongruence between themself and the app.

“I wouldn’t want to dismiss it out of hand. I do understand it. It just doesn’t work for me.” Jon

Two other users had tried the app three times but reported that throughout the month, their motivation had not reached high enough levels to facilitate routine use. One suggested this was mainly due to her busy lifestyle and social issues.

“I haven’t had any kind of routine in my life because I’ve had visitors visiting me and I’ve been with other people and I’ve found it hard to use it.” Katie

One user had only used the app on the rare occasion when he felt stressed and needed it to help him de-stress:

“I didn’t do it much because I didn’t feel I needed it.” Jo

Six participants reported using the app between five and ten times. Of these six participants, all reported that they had struggled to fit the app into their busy lifestyles and had often turned to other activities that they regarded as competing activities. All reported an intention to use the app more than they had. Among these users, there were some reports of using the app with a run of a number of days of use followed by a run of days with no use. There were expressions of disappointment with themselves that they had not managed to develop a regular routine of use.

Two participants had used the app between eleven and twenty times. These users were almost totally naïve to meditation before the study – but both expressed a high level of motivation at the beginning of the study. They reported beneficial effects from using the app but both felt some disappointment with themselves that they had not developed a daily routine.

The final two participants had used the app between twenty and thirty times. These users were both prior (although not highly experienced) meditators who had included the app into their regular meditation practices.
Context of use part 1: Time of day

There was a wide variety of usage patterns throughout the day. Some participants reported little uniformity in their usage patterns.

“I varied the time of the day, there was almost no pattern to that.” Craig

“It’s been quite sporadic. I haven’t used it at specific times.” Robert

However, other users found that they used the app more regularly at one particular time of the day. For instance, some reported using the app first thing in the morning, as part of the morning routine;

“In the morning after I went for a run.” Mary

“I would start the day with this before making breakfast.” Julie

Others reported using the app during a working day - although these only occurred if they could get away from distractions:

“I did it at work, I can’t remember why it occurred to me to do it. I just thought I’ve got some time, I’ll go and sit in the car and do it.” Sally

“And in the office, because I have my own office, my own room, so I can use it there.” Craig

Two users reported using the app immediately after coming in from work.

“I’m mostly using it between six and seven when I come in. Just when I feel that I have time for it. Yeah. Almost when there is nothing on the tv, when I’m not feeling hungry yet.” Rosie

“And I come home and unless I say ‘I’m going to do a meditation now, it doesn’t happen.” Samantha

Others preferred using the app last thing at night to relax.

“At night after I finished my work in my room.” Jo

“It tends to be before I go to sleep.” Jess

There were also reports by two participants of the app being used during the night to help them with sleep. Finally a number of participants reported using the app when travelling – although this could be at any time of day.
Some participants expressed a dislike for using the app at one particular point in the day. This was usually either last thing at night or first thing in the morning.

“Mornings I would find a bit more difficult. I would tend to prefer meditating just before I left the house, rather than when I was just getting up.” Jess

“At night… I really struggled staying focused and concentrating. I didn’t fall asleep but I was definitely sort of wandering off more.” Georgina

Conversely, however, other participants reported that these times were the best times to use the app, as they would not be distracted.

“In my bedroom or at night, or first thing in the morning, or occasionally at work…it’s generally that pause in the day when you can do it.” Craig

**Context of use part 2: Location and environment**

Location and environment were important themes for users. While many apps can be used in almost any environment without dramatically affecting the user experience, participants in this study reported large differences in experience when using the app in different contexts. One participant expressed this by attributing her positive experience of using the app to the environment in which she used it.

“I was like ‘wow I’m actually seeing a benefit from this’…but I think that was reflective of the fact that I was doing them on a sunny day on the grass at work by a really nice lake and feeling more in the sort of headspace to do it.” Georgina

The overwhelming majority of uses for the app occurred at home, in a place where they would not be distracted, somewhere safe, quiet and comfortable; usually in their bedroom.

“You have to find somewhere, if not peaceful, certainly somewhere private to use it.” Robert

“I’ve used it there (on a beanbag) on four of the times. The other time I used it on my bed. So all the times I used it in my room.” Sofia

Three participants found quiet places in their workplace to use the app. However, most reported a struggle to find somewhere where they could use the app.

“I guess part of the problem with Headspace is that you need to be in a quiet place where you’re not going to be disturbed. Like sometimes…I think I could sit in the
park, but I don’t want to sit in the park with my eyes closed for 10 minutes. I wouldn’t necessarily feel relaxed and comfortable in that environment.” Sally

“One of the main things that I struggle with which is maybe an example of living in London is not having the chair and a place where I can go and sit quietly and not be interrupted.” Georgina

Four participants reported using the app on public transport. This proved to be less successful than when using it in an environment with less stimulation. However, there were beneficial effects, especially on longer journeys.

“Obviously there’s a lot going on the train. So actually I was a bit distracted at first but actually I felt quite calm and refreshed by the end of it.” Jon

“I did use it one day on the overground on the way to an interview. But I generally don’t find it very relaxing doing it around other people who are going about their daily life. I would open my eyes and everyone would be like really stressed out, climbing on and off the train.” Craig

**Busy lives and Routines**

A central concern for users was how to fit their use of the app into their busy city lifestyle. Participants explained that their busy life was a significant factor in why they had not used the app to the extent that they had originally intended.

“I haven’t used it every day at all. It’s funny really how even a relatively small amount of time - 10 minutes – it’s actually quite hard to find that time and put it aside and do it.” Sally

One participant perceived that it was not simply having a busy life that stopped her using it – it was the psychological effect that this had on her that was stopping her from making those decisions.

“I think that when I feel that I have to do too many things, I feel that I cannot fit the space to do it. If it’s just 10 minutes then I feel that I can do this. But if it’s 20, then I’m thinking about it too much.” Julie

Even if they could find the time, these distractions would affect their ability to meditate, as they would not be able to concentrate.

“I think in a way there are some days when you can’t meditate for some reason although… there are too many things going on for me for example if there’re too
many things and I’m concerned about these things, I just can’t get into meditation mode, or I just couldn’t clear 10 minutes.” Mary

In order to overcome the distracting effects of their busy lives, participants spoke about having to fit the application into their current routines.

“You have to be pro-active and disciplined enough to go ‘I’m going to do this today. This is going to be part of what I do…I started doing it before bed. So it’s one of those, ‘Do your teeth, get your water, take your multivitamins and do 10 minutes of Headspace, go to bed’. But then if I’m short on time that will be the first thing that I don’t do. So it has helped a bit and I have tried to put it into that routine. But again…you know…busy girl.” Samantha

Participants expressed a belief that they could only use the app regularly if they had a routine. They considered that lack of routine directly affected their capacity to engage with the app.

“I didn’t set aside a particular time-slot, which is probably why I didn’t do it every day.” Robert

One participant had initially expressed a strong intention to use the app. However, there was a two-week period without use in the middle of the 30-day period. When asked why this was, she answered,

“Because of the fact that I haven’t had any kind of routine in my life.” Katie

There was a strong belief that once a routine was started, it would generate a momentum which would motivate the participant to use the app.

“I definitely believe that the more I do it, the more I would build momentum.” Robert

In a similar way, one participant reflected on a run of days when she used the app every day. Rather than taking personal responsibility for this pattern, she attributed it to the fact that she had ‘got into a routine’.

“I wasn’t more busy or less busy than any other time, I was just more aware that I wanted to do it and I was more motivated because I had got into a routine, I guess.” Mary

Once participants had established using Headspace as part of their regular routine, there was always a risk that this routine would be disturbed and they would find themselves a few days later having to try to re-establish this routine. One participant described this phenomenon as ‘peaks and troughs’:

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“I found it kind of went in peaks and troughs. I would get into the routine of it for several nights a few nights and I would do it every day and then I would get out of it and there would be a whole week where I wouldn’t have used it and I’d be like ‘dammit I want to use it more.” Mary

Although some participants expressed disappointment with themselves about not being able to use the app to the extent that they had intended, there was also a strong theme of the importance of self-directed use. Participants wanted to use the app when they wanted, not because it was part of their routine.

“I guess at the moment, I need to feel that I want to do it, rather than that I have to do it, cause then I would probably give up. I think there is so much in my life that I have to do that I wouldn’t want to make it scheduled, that I HAVE to do it, to fit it into all my other stuff that I HAVE to do.” Rosie

Intentions and Disappointment with self

An interesting phenomena reported by many participants was that they had not used the application as much as they had wanted to.

“But I certainly wish I had used it every day. But things in my life have been quite tumultuous, That would have of course benefit it. But on the other hand, life did distract me.” Robert

This often resulted in feelings of disappointment with self or guilt.

“So I didn’t do it during those days…I did kind of feel guilt, either to you or to me. Because I haven’t done the whole process.” Georgina

One participant expressed this as a constant battle between thinking she needed to use the app and being distracted from using it. She began to chastise herself and suggest that she lacked self-discipline. This was a clear expression of a low level of self-efficacy. She then pointed out that if there is a consequence to not using the app, a punishment, she is more likely to use it.

“I lack discipline. I let my routine slide a bit…If there is a negative consequence of not doing something like, I might loose a finger if I don’t do it, then I’m more likely to do it.” Samantha

This participant had not expressed a strong intention to use it regularly during her initial interview, so her self-disappointment had emerged during the period of use. During the initial interview she had stated her intentions, which appeared to place her in a pre-contemplative stage.
“I want to take little windows of opportunity. How much will I use it? Depends on how I find it.” Samantha

A number of other users showed a change of intention during their times of use. For instance, during the initial interviews, one participant expressed an intention to use the app every day.

“I hope that I’ll get in the habit of doing some meditation every day.” Sally

However, this participant had only used the app on five occasions throughout the trial. During the exit interview she explained that she would like to continue using the app but with very different intentions. There had clearly been a reduction in her belief that she was capable of meditating regularly.

“I don’t think I would expect to do it every day now. I think I would be a bit more realistic. But I would want to try to do it. If I could try and do it…I mean it’s only ten minutes, isn’t it? If I could do it 4 or 5 times a week, I would be happy with that.” Sally

However, two participants reported using the app more than they had initially intended. For instance, one participant began the study with little intention to use the app with any kind of regularity. She had merely expressed a vague desire to train herself to be more mindful. When asked what her intentions were with regard to using the app she answered,

“So I think it would be good to almost like train myself that if I’ve got 20 minutes spare to think, ‘Why am I on Facebook? Why am I watching some rubbish TV?’” Rosie

During this initial interview she also expressed a low self-belief in her capacity to meditate.

“I’m very bad at just being in the moment. I find it really difficult. Even if I am you know when I was trying to meditate it was like “Huh! I forgot to buy the milk.” Rosie

However, during the exit interview, she expressed surprise at the amount of meditations that she had done.

“I’ve actually done it more than I was anticipating doing it.” Rosie

She also expressed surprise that she had actually enjoyed using the app.
“I quite enjoyed it, I really felt it was kind of like, it felt good to be doing it, instead of feeling weird, of feeling it was a waste of time. I thought this is quite nice.” Rosie

Finally she expressed a strong increase in self-efficacy with regards to meditating. She attributed this change in self-efficacy to the way in which the app had taught her practically how to meditate.

“You know, before I started using the app I said, ‘I don’t know how to do it. You know, it just feels weird meditating…’ But it’s very simple, it’s very easy to follow, you know there wasn’t too much to… I just understood it, I guess.” Rosie

Other People 1: Distractions

Participants reported that other people influenced their use of the app. For instance, one participant reported that her housemates could be a distraction:

“I’ll start a meditation and then my housemates will come in. And I have to stop to be sociable.” Georgina

This participant had clearly internalised opinions and behaviours of her wider social circle. The opinions were of a conflicting nature: one narrative encouraged a cynical attitude towards mindfulness; the other encouraged embracing mindfulness. She had not yet made up her mind about these differing attitudes. This caused an inner tension or confusion, which she expressed throughout the interviews.

“Like I said, my friends do it and I have friends who do yoga and stuff and they manage to fit it in every day and I often struggle to find the time.” Georgina

“Yes I think half of my friends were kind of sceptical about it. Which kind of played into my scepticism thinking it’s all just... I mean if it’s not really reality then it’s a nice non-reality. They are trying to make people... they’re not evil.” Georgina

Another participant reported that she had been unsure what to make of the app but finally made up her mind after demonstrating the app to two colleagues who subsequently responded in the same way to her, reinforcing her opinion.

“I thought maybe it’s just me. But I played it to two of the girls that I sit with and they said the exact same thing.” Amanda

One participant explained that she had had a single conversation about the fact that she was using the app with a friend of hers. His response fundamentally
affected the way that she experienced and thought about the app from that moment onwards. Where many participants reported positive effects from using the app, she had only experienced frustration or bewilderment that the meditations were not having an effect. His response became for her the narrative by which she rationalized her continued use.

“I only spoke briefly about meditation with a friend of mine who does it. And he told me… I told him that I wasn’t feeling any difference… and he told me that it’s not an immediate thing and I need to train my brain to do it, but after I’ve done it for awhile I’ll find that I can even meditate when I’m doing the dishes.” Sofia

**Other people 2: Permission**

A number of users reported that other people had enabled them to use the app. One of the most prolific users attributed almost all her motivation to the fact that her partner also meditates every day.

“There's a reason why I have used it nearly every day. OK Which is that my partner meditates. When I’m with him I meditate with him. He meditates twice a day. So doing it once a day is slacking. So I have an environmental factor that affects my behaviour.” Jess

A number of users expressed this effect in terms of being given ‘permission’. The fact that they were using the app permitted them to take some time out of the day, to take a break from their routines, to switch off from constantly engaging with social media, emails, entertainment, socialising or work.

“I felt like I was being allowed to just have some time out and just think of nothing. And that was good.” Rosie

An attempt was made during the experimental design to reduce the effects of the study itself on the user experience. However during the interviews it became apparent that some users had still been affected by the fact that they were taking part in the study. It is important to consider this fact when assessing the amount that these particular users had used the app. However, it is of interest to note that this effect was reported by all users to be beneficial. Many expressed gratitude that they had been ‘allowed’ or encouraged to meditate by partaking in the study. One even jokingly asked that she be threatened to meditate more often.

“I intended to use it every day. Because I wanted the fact that I was doing the study to push me to do it every day.” Georgina
“Can you threaten me?” Samantha

Perceived consequences of using the app

A strong theme that ran through the interviews was the consequences of using the app. There was a wide variety of experiences, ranging from disappointment to visceral sensations of calm. Probably the most regularly mentioned effect was that participants emerged from using the app feeling calm and relaxed:

“Each time I did it, I felt better afterwards… I mean in the immediate aftermath, I would feel slightly more at peace. At some times, real peace, at other times, slightly less agitated.” Robert

A number of participants simply enjoyed the fact that this was a different mindset to normal life. They saw a value in simply being ‘in the moment’. Accessing this alternative mindset was in itself a reward, particularly as it allowed them to view their life from a different perspective.

“It made me feel more at peace, more chilled out, but that I think was to do with learning to look at things non-judgementally and not get too bogged down by chasing after emotions and things.” Mary

“You know it’s part of my job being a PA, I’m always looking at a calendar for December. I’m always ‘ahead’, ‘ahead’, ‘ahead’, all the time and so it was nice to feel, ‘I’m right in the moment here’. When it says ‘just listen to the sounds’, I was thinking, ‘I never just sit and listen to the seagulls above, or cars driving past.’” Rosie

Other participants reported that the positive consequence of using the app was that it was helping them develop mindfulness practices during their day-to-day life, especially the practice of ‘returning to the breath’.

“I think, the only change I can think of, now when I am overly nervous, I tell myself to focus on the breathing for 20 or 30 seconds and then it will be better.” Jo

Along similar lines, participants reported that the app had taught them skills about how to meditate and how to be mindful.

“I think I’ve learnt a bit more about thoughts and that analogy that thoughts are like clouds, they come and go, so yeah, letting them drift past.” Katie

“It actually did what I wanted it to do, which was to take me back to the basics of meditation.” Jess
However, some participants reported that they experienced little or no positive effects from use.

“Yeah, it’s interesting that other people have said that it has helped them find peace. I don’t think I’ve found that yet. It’s nice having 10 minutes to chill out. I don’t feel that anything is different after using it – but then I’ve only just started using it.”

Craig

Some of those who were unable to report clear positive benefits for using the app stopped using it altogether. Others rationalized their continued use by stating that they believed that there would be long term effects if they continued to use the app. One or two stated that they felt it was wrong to look for a reward, as mindfulness was not about seeking rewards.

“I didn’t feel particularly anything. Relaxed or stressed or anything. I want fast results. Which is not… because nothing ever has fast results. When people go to the gym they have to go for a few times before something shows.”

Sofia

Emotions

Many participants spoke about the role of emotions in their experience of using the app. There emerged a clear relationship between experiencing difficult emotions and turning to the app. Almost all users specifically reported times when they turned to the app for help with emotional situations.

“And the second time I chose it was because I had had an absolute hell of a day and I wanted to prepare myself because I knew the next day would be tough so I wanted to prep for it.”

Elisa

Others reflected on the way in which the app helped them to deal with their emotions. These sections of the interviews often revealed that the participant had internalized some of the teaching used in the app about mindfulness.

“Yes I was using it as a tool to step away from the emotions and not get too involved in it. It calmed me down and made me think and make me look at these emotions non-judgmentally.”

Mary

Many participants reported that difficult emotional feelings motivated them to use the app. However, just as many reported that difficult emotional feelings were a barrier to use. This was particularly prominent when people were highly stressed and in other agitated affective states. At these times, users reported frustration and irritation that they were unable to control their thoughts. Users frequently reported
that the app was more difficult to use when stressed. The same phenomena is clearly seen when participants reported that difficult emotional states had completely derailed their attempts to establish routines.

“If you’re feeling quite stressed or there’s tension in your body, probably using the app is going to be harder than if you’re already quite relaxed.” Craig

“Why did I stop using it? I think it came down to emotional distress maybe and having other conflicting things, I think, in my personal life. And I thought ‘I’m not going to let this affect me. I’m not going to let this affect me. It’s affecting me’… and then I’ll drop everything.” Samantha

A small proportion of users responded to these negative emotions by attempting to maintain a regular disciplined routine, regardless of how they were feeling. This was especially clear for the two experienced meditators.

“While some days you don't feel it’s particularly useful, there is a cumulative effect, so even in the days when you are resisting, letting your mind go and wander, it still has a benefit.” Jess

Participants who reported the most intense emotional experiences during the previous month explained that when they were at a certain level of emotional agitation, mindfulness was frustrating and did little for them. They believed that sitting in silence was not able to meet the emotional need that they had at the time. These users advocated other behaviours during these times, which would enable them to escape or express the emotional turbulence, rather than become more aware of them. Most of these behaviours had an active, physical or tactile quality to them, such as exercising or socialising. They were convinced that while there was a value to mindfulness practices in usual situations, at these times of heightened emotion, this was not what was needed.

“That’s when I’ll go, ‘I can’t be bothered. I’ll go and have a drink.’ I think it’s just that I’m tactile. I like to touch and smell and taste and all that. And having an online meditation seems a bit…I actually find that I need to be a bit more physical in a way.” Samantha

“Sometimes, I think that with me and meditation, its quite hard to - it’s easier to do something else. I think meditation really makes you notice what’s going on for you and that’s actually quite hard and you want, I want to distract myself with TV or the internet cos that’s much easier than sitting there for 10 minutes and noticing that I am maybe quite anxious or stressed.” Sally
App design

Most participants commented that the app was well designed and achieved what it aimed to do. It was repeatedly stated by participants that the app had helped them to meditate. Even if they felt that the app was not especially suitable for them, they were impressed with the quality of the visual design and simplicity of use. For more naïve meditators, the guided meditations had particularly been helpful to focus their meditations and learn about meditation.

“I do think that if I did not have the app I would not be able to do it at all. Because I would just completely get lost in my own thoughts and there would be nothing to bring me back.” Sofia

However, more experienced meditators responded more critically. Some were frustrated by the lack of flexibility in the linear design of the daily meditations, and the fact that they were not able to do more in-depth meditations. This was explicitly stated as a major reason why one of the participants had decided not to continue using the app.

“Maybe it’s because I have done a bit of meditation before, I kind of feel that I want to get ahead. Like I would like to do...I’d like to be able to do some of the longer ones...I’m sure they have their reasons, but it feels frustrating that I can’t jump ahead.” Sally

One participant thought deeper about designing technologies to facilitate meditation, suggesting that she might benefit from a tactile quality in meditation technology.

“You’ve got the different learning styles for people. I think if you can incorporate that sort of thing... Not everyone is auditory, not everyone is visual, not everyone is kinaesthetic...I’m tactile. I like to touch and smell and taste and all that. And having an online meditation seems a bit... for me, it wasn’t a tactile type of thing.” Samantha

Other users with prior meditation experience questioned whether the app was suitable for them, as it did not follow their particular style of meditation practice.

“Yeah so maybe it’s because I’m very much a music person, like music is my calming thing, so on calm.com, they have like an ocean or a meadow. So I just think the silence of it put me off.” Elisa

“I do kind of guided visualization, rather than a kind of ‘empty your mind’ meditation style. I approach it in a totally different kind of way. So I found the
whole business of... listening to your breath and counting, counting to ten in
circles, I found really frustrating.” Jon

A number of participants made reference to small design features of the app that
had presented problems. These were relatively insignificant problems that users
were able to work around. However, they demonstrate that there are particular
problems that need to be overcome when delivering meditation on a mobile device.

“I like the design style and a nice tutorial video. But then when I started the session,
there was a clock saying how much time there was left and it was kind of
distracting me from the meditation because I couldn’t help but look at how much
time there was left. And also the colour is bright and orange. I couldn’t ignore it.”
Jo

“He leaves long gaps and sometimes I'm worried that I have run out of battery on
my phone.” Jess

Headspace delivers its content through spoken guided meditations and video
tutorials that are voiced by the founder of Headspace, Andy Puddicombe. During
the interviews, it became clear that users were not simply responding to abstract
information or even to a impersonal detached voice. Rather, there was a clear sense
that users were to some extent experiencing contact with a person. Users differed
widely in their response to this. The majority of users reported that they liked the
voice and saw Andy as a guru character.

“He’s got a lovely voice. You could listen to him”. Samantha

“Oh I like the voice guidance. I don’t know how that he kind of knows what I’m
thinking about…Almost as if he is talking directly to me.” Jo

However, some responses were more ambiguous.

“I can’t work out if he’s like a very clever businessman. I can’t work out whether
I’m being conned a little bit.” Georgina

“Well initially I found him a bit annoying and it's difficult…I think he does it really
well actually…He wasn't the sort of person that you would think has reached
enlightenment.” Robert

One participant reported that he did not like being told by Andy that he had to
meditate the next day and this put him off using the app. This particular participant
had reported that they were forced to meditate by their mother when they were a
child.
“I think there is a... reason why I stopped using it when I came to the second session. He said, ‘hopefully you feel good after using it and hopefully we’ll see you tomorrow’. And this made me feel uneasy because he put the duty on me that I have to use it every day. And I think that single sentence stopped me using it for like two weeks.” Jo

However, three participants reported strong negative responses. Two specifically mentioned it as the sole reason why they stopped using the app and one cited it as a significant factor.

“I didn’t feel comfortable. And I thought maybe it’s just me. I was talking to Kelly about it and she said ‘I really like the voice’. And so I realized it was like a personal preference. Maybe I’ve had nightmares about someone with a similar voice or something. I don’t know... I think it would’ve been really different if there was a different voice.” Elisa

“I’m going to be honest and tell you that I hate it. I just can’t bear Andy’s voice. Perhaps his tone has caused some sort of abreaction in me.” Sue
CHAPTER 4. DISCUSSION

Overview

The Reasoned Action Approach (RAA) predicts that a behaviour will happen under certain conditions. The three primary conditions are intention to act, ability to perform the action and suitable environmental conditions to act. Intention to act is, in turn, predicted by attitudes about the behaviour, belief in ones ability to perform the behaviour (self-efficacy), and the influence of social norms upon the actor. Any technology that aims to facilitate a behaviour must grapple with each of these predictors. The results of this study illuminate the way in which these factors affect users of the Headspace application in different ways. They also illuminate how design of this technology facilitates and prohibits mindfulness meditation practices. This section will discuss the results in the light of the RAA, before discussing some limitations of the study and some design recommendations.

General Discussion

The interviews reveal that there was a wide range of patterns of use across participants. The RAA predicts that much of the variance in these differences can be explained by different levels of intention both at the beginning and throughout the study. Some users attempted to establish a daily routine of using the app. Although a small number of users came close to achieving this, no single user succeeded in using the app every day. The majority of users who began the study with strong intentions struggled to establish a regular pattern of use, but failed to do so. Other users began the study with low intentions to use the app but went on to establish regular routines. These patterns suggest that intention to act can only provide a limited explanation of the variance in the behaviour. The following sections will discuss the role that attitudes, self-efficacy and social norms played in intention to act, before discussing environmental factors, emotions and other pre-cognitive phenomena that affected behaviour and experience.

Attitudes

The RAA suggests that attitudes predict intentions. Attitudes about using the app can be seen in beliefs about the consequences of using the app. Some users
believed that meditation would have no immediate effect and should be used for a longer period of time before beneficial effects were seen. Others expected immediate sensations of relaxation. These different beliefs fed back into their attitude about the apps as the study went on. They also affected the self-efficacy of users, some of whom asked, ‘I’m not getting anything. Maybe I can’t do meditation’.

The consequence of using the app was a major theme discussed by participants revealing different attitudes towards the behaviour. Consequences included feelings of relaxation and calm, learning to meditate and learning to be more mindful in life. These positive consequences functioned as rewards, increasing app use and positive judgments of the app use. Some users described changes in their attitude towards meditation and mindfulness. Some of these attitudes changed as a result of using the app. For instance users reported an increased belief in the efficacy of mindfulness through using the app, so they had become more predisposed towards establishing regular patterns of use. Others experienced struggles with fitting it into their routines, so initial idealistic intentions were thwarted by the realities of life. Some users reported that practising meditation had been difficult or frustrating when stressed or emotional. These negative experiences changed their attitude about mindfulness, so that some users had begun to express firm beliefs that mindfulness was not what they needed during certain occasions. Other users reported that they believed that there would be rewards if they continued using the app for longer periods. This justified their continued use.

Not every user expressed a desire to establish regular patterns of use. Some participants described wanting to use the application in a self-directed way, as a leisure activity, rather than as part of a routine. This reveals an ambiguity within the attitudes of many users. In contemporary urban culture we have a strong dichotomy between work and leisure activities. We get our ‘headspace’ by consuming media or socialising in the gaps between our routine work activities. For many users, routine daily meditations might seem like ‘work’ rather than ‘leisure’. The app tries to encourage routine daily use. However, many see leisure time as precisely the opposite to routine behaviours.

**Self-efficacy**

The RAA suggests that self-efficacy predicts intention. There is a clear relationship between the struggles with routines and emotions reported in the interviews and the levels of user self-efficacy. Some users expressed surprise and self-frustration that they were not able to establish routine patterns of use. This
reveals that their self-efficacy had been challenged between the start and finish of the study. Other users reported increased self-efficacy. For instance, some users reported that using the app had taught them that they were able to meditate. This is likely to be the reason why users reported that routines generated a momentum. If the application is used for a number of days in a row, the self-efficacy of the user increases, as the evidence convinces them that they can set aside the time to use the application. This corresponds to the predictions of the RAA, which states that as self-efficacy increases, behaviour becomes more likely.

**Social Norms**

The RAA suggests that social norms predict intention to act. The interviews demonstrate a relationship between social norms and attitudes towards the behaviour, intentions to use and actual behaviour. This is seen as being especially true when the social influence comes from those closest to the participant. However, social influence was commented upon by a minority of participants, so it may not play a strong role in mindfulness practice, which is a more isolated and personal activity for which social judgments are of little relevance to many users. Indeed, a number of users denied that other people had had any influence on their use whatsoever.

**Environment and Ability to Act**

The RAA suggests that intention to act will only be carried forward into action if the user has an ability to perform the action and environmental conditions are suitable for performance. Environmental conditions included busy routines and distracting events but also included locations and environments. If the user had a very busy day, or a lack of formal routine, this would reduce the likelihood of using the app. If the user could not find somewhere quiet, without distraction, this might decrease likelihood of using the app. Users attempted to manage these conditions by finding particular quiet spaces and quiet periods during the day when they could take some time out to use the application.

The design features of the app could be conceived as ‘environmental factors’ that inhibit or facilitate the participant to carry out meditations. This theme demonstrated that there were a number of minor issues with using the app on a mobile device that could potentially distract users during the exercises. These included receiving texts and emails during meditations. Interviews revealed that
while the app content was well designed for naïve and less experienced meditators, those with more experience often found it restrictive and inflexible. Two stopped using it because they felt it did not fit with their ideas about meditation.

Emotions and Other Pre-Cognitive Phenomena

Within the RAA model, emotion is a small factor that only plays a role through the way it influences behavioural beliefs, normative beliefs and control beliefs (see figure 4, p15). However, the interviews reveal that emotion plays a much larger role in use patterns. For some users, it is a powerful factor that can completely stop their intention to act from becoming an action. For other participants, it was a major factor in their behavioural beliefs. Many participants reported that they used the app to help them deal with difficult emotions. Participants explained that using the app would enable them to achieve a greater objectivity about the cause of their emotional state. However, it was also reported that once emotional states reached a certain threshold of agitation, meditation would become much more difficult. Some users reported that when this occurred, it would reduce the chance of using the app on future occasions. Certain users also reported that emotional states acted as a distraction from their attempt to establish a healthy balanced routine of which using the app was one factor. Those who reported the highest states of agitation reported that they turned to a more tangible or physical activity on these occasions.

Finally, the interviews revealed a strong consequence of having a human person at the forefront of the content delivery. Users reported that they were engaged with a person, not just a technology and there is evidence to suggest that attachment phenomena is happening here, which increases over time (Bowlby, 1979). Many participants expressed a growing connection to the person instructing the meditations. Some participants who had used the application more regularly spoke in a more personal way about him. However, conversely, three stopped using the app because they did not feel comfortable with the voice. How should we understand this? One explanation that fits with the RAA model is that users are influenced by social norms regarding accents, which are influencing their attitudes about the app. However, the force with which this reaction was expressed by some users suggests there may be a stronger emotional component. This may be an example of what psychoanalytic literature refers to as ‘transference’ (Racker, 2001). If this is the case, users are making an emotional association between the voice and a negative past experience or negative idea. A psychoanalytical model may provide some insight into this and the above mentioned attachment phenomena.
Design recommendations

The Reasoned Action Approach provides a series of higher-level guidelines for the development of technologies that attempt to facilitate mindfulness practices. These guidelines can also be applied to other electronic mental wellbeing interventions. The technology must facilitate high levels of intention. This can be achieved by managing beliefs about the outcome of mindfulness behaviours, managing and utilising the role of social norms, and increasing self-efficacy. The technology must also teach skills and facilitate environmental factors that increase the likelihood of this intention becoming an action.

Many users reported that they found it difficult to fit use of the app in with their busy schedules. In a sense, this is a skill that must be learned. It is important to teach new meditators how they can fit this practice into their busy lives and to repeatedly reinforce the benefits of meditation so that any doubt about the efficacy of mindfulness are managed. A number of those who wanted to establish regular routines reported that they would have preferred a more prominent scheduling, reminder or nudge facility. A benefit of a mobile device is that it offers the capacity to link the application with diaries, alarm clocks and other features that can assist the user to establish routines. Context aware technologies are fast improving in their capacity to sense our affective states, locations and other contexts. We can imagine a future where an application reminds us to meditate when we reach a certain affective state, or when we are in a particular location. It could be possible in the very near future to design an application that knows just when we should be meditating and what kind of meditation we need at that time.

A number of users reported that when they experienced higher levels of emotional arousal, they found it more difficult to meditate or even reported that it became a negative experience. Others decided not to meditate when they were experiencing difficult emotions. These users reported that it was easier to do something more tangible or more distracting, as sitting still and focusing on themselves simply heightened their awareness of their anxiety. It is interesting to note that yoga was used in one of the original courses of mindfulness developed by John Kabat-Zinn. Yoga enables a bodily, active articulation or expression of our internal states. This expressive capacity often functions as an expiation of internal emotional energies. It may be possible that the users who reported needing something more tangible or physical to help them deal with their difficult emotional states, could have found a solution in yoga. It may be that mindfulness meditation without yoga does not provide the full benefits that a complete mindfulness practice could offer. How this could be delivered through a mobile app, alongside the current meditations, is an interesting design problem.
A number of users reported that the study itself was an enabling factor. These users expressed gratitude that they were ‘being given permission’ to meditate. This is particularly of interest for clinical delivery of mindfulness programs and parallels findings in the previous e-health mindfulness studies reported above, such as Knowles et al. (2014). Users are enabled by an external figure, especially one to whom they may feel a sense of responsibility. This might be a clinician in clinical services. However, in consumer applications, this may be a friend. Headspace does have a ‘buddy system’ that can be used on the application, that links their account with other users. However, no participant used this feature and most seemed to be unaware of it; so there may be room for improvements with this feature, to bring it to the forefront and to alert users of the efficacy of this feature.

Feedback about the features of the app design suggest that mobile devices can disrupt a meditation. This needs to be carefully considered during the design process. For instance, it may be advantageous to automatically place the phone on ‘airplane mode’ when a meditation begins. Secondly, with the current linear design all users must complete the 30-day foundation course before they can access other content. In this way, Headspace is clearly intentionally designed to guide beginners to learn mindfulness practices. However, this linear pathway can be off-putting or frustrating for those who are more experienced meditators. This ties in closely with the theme of self-directed learning and flexibility of use found in studies reported above, such as Hawkins et al. (2010). It may be beneficial to give more experienced users the option to access content as and when they want. This may also be more attractive to those who want to use the app less regularly as an occasional leisure activity.

Hawkins et al. (2010) found that technologies with high levels of interactivity were more successful at engaging users and changing behaviour. However, the user of Headspace is placed into a passive state. For the first thirty days users are not able to choose which meditation they listen to and their interaction with the app is little more than pressing play and listening. This has created a simple and seamless user experience. However, it may be prudent to consider ways in which the application can become more interactive, in which the user plays a more active role. This may result in a more engaging experience. Thieme et al. (2013) have offered one possible solution to a more embodied style of technology aided meditation. The authors developed a meditation sphere for women in a secure psychiatric unit. This sphere changed colour in rhythm with the heart of the person who was holding the ball. The sphere was used as a meditation tool to help the user become more aware of their body.
A number of e-health technologies deliver mindfulness without any human presence in the technology. This could be a set of written instructions followed by a timed meditation. Alternatively it could be a mood reflection application that asks users to enter their mood. However, when technologies use human presence they are able to deliver a richer, more engaging experience. This is clearly the case for Headspace, as reported by users. Therefore, it is important to consider the possibility of psychotherapeutic phenomena occurring, both in terms of attachment and transference. During the study, three users stopped using the app because they did not feel comfortable with the voice, even though they liked almost everything else about the app. One possible way of designing around this problem could be that users can choose from a selection of guides, both male and female, to take them through the program, so that they can find someone they feel comfortable with.

**Limitations**

Data was gathered from participants at the beginning and end of the study. This had the benefit of not disrupting users during the study, ensuring higher levels of ecological validity. However, it also meant that experiences during the study were not sampled. Secondly, despite attempting to control for the effects of the study, it is clear from the interviews that some users were influenced by the study. Thirdly, the study only explores user experience of the first 30-40 days of using the app, so is limited to exploring the experiences of people beginning to use the app and struggling to move through the stages of change from preparation to action to maintenance. The user experience is likely to change once the user develops their own practice and moves into the maintenance stage. Fourthly, theoretical sampling was impossible in this study due to limitations in the sampling method. Consequently, this study did not specifically seek out particular people to explore emerging themes and theories. Furthermore, these limitations in sampling mean that responses may not generalize across all potential users. For instance, eleven participants were white British, so other cultures may not be well represented by this sample. In particular, user experiences may be different for people with clinical mental health issues.
CHAPTER 5. CONCLUSION

This research revealed that the primary concern of users of a mobile mindfulness application was fitting use of the application into their lives. User responses to this concern were influenced by a number of interrelating factors. These were the demands of their routines, the perceived consequences of using the application, beliefs about their ability to fit the app into their lives, the influence of other people and social norms, and quality of their mood and emotional states. The study also revealed factors that stop people from using the app from the beginning. These include issues with the design and delivery of the program, especially in terms of not being comfortable with program content or methods of delivery.

The study showed that empathic and in-depth research methods such as auto-ethnography and semi-structured interviews are useful methods to understand the user experience of electronic mental health interventions. It also demonstrated that theoretical models such as the Reasoned Action Approach can provide excellent frameworks for analysing and understanding behaviour and experience. Future research and design should explore the ways in which technologies can a) manage beliefs about behavioural outcomes, b) manage and utilise the role of social norms, c) increase the self-efficacy of users and, d) improve environmental conditions to make e-health interventions more usable and engaging.
REFERENCES


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APPENDIX 1: INTERVIEW SCHEDULE

1. What were your initial impressions when you first opened the app? And used the app?

2. Talk me through how you have used the app in recent weeks. When and where did you use it? How often? How many days? Were there breaks? What caused those breaks? What made you start again?

3. How did your intention to use the app change as you continued?

4. How did you fit the app into your life?

5. Were there ever times when you aimed to use the app but didn’t manage to?

6. What stopped you from using the app on these occasions?

7. Where there people, circumstances, events or objects that affected the way you used the app?

8. Was there ever a time when you thought ‘this app is great. I’m glad I’m using it’? Was there ever a time when you thought the app was a waste of time or too much hassle to really be worth it? Tell me about this.

9. Have you noticed any changes that have occurred in your life as a result of using this app? Routine? Relationships? Health? Etc.

10. Can you think of changes you have made in your life that you can relate to using the app?

11. What about the goals that you have in your life that are related to mindfulness? (see interview 1). What has happened with these in recent weeks?

12. Do you think using this app has had an effect on your life? If yes, what is the effect? And how did that effect happen?

13. How have emotions affected how you have used or experienced the app?
APPENDIX 2: PARTICIPANT RECRUITMENT LETTER

Mindfulness App Research Study

*Are you interested in using an app to help you meditate and learn mindfulness?*

Headspace is an app for your phone, tablet or computer that uses short videos and podcasts to get you doing ten-twenty minutes of mindfulness meditation each day.

Mindfulness meditation is a very practical tool to help improve your life. There is reasonable evidence that it is effective at reducing stress, improving sleep, dealing with addictions and mental health issues and generally increasing wellbeing.

We want to explore the personal experiences of people using the app. The intention of the study is to uncover insights that will improve the design of technologies such as Headspace.

*Each person who takes part in this study will get a free three-month subscription and download of the app.*

All we ask is that you try out the app over a period of a month. You can use it every day, or you can use it less often – whatever you feel comfortable with. If you get part way through the study and you find it’s not helpful and you don’t want to use it anymore, that is fine. I will conduct a short interview with each person before and after the study.

Requirements to take part in this study are:

- You must be between 25 and 40.
- You must be a full-time professional, living and working in London
- You must have had no prior experience of using the Headspace app.

If you would like to take part in this study please let me know as soon as possible. The study will run from the 26\(^{th}\) June, (which is the day that the new version of the app is released).

Thanks for reading.
APPENDIX 3: INTERVIEW 2 (WITH SALLY)

So, can you tell me how you have used Headspace over the last month or so?

OK, well, I’ve not used it as much as I wanted to because I had problems, because I didn’t have wi fi at home and when I down loaded them I don’t think I did it properly, so then when I wasn’t able to use the app when I didn’t have wi fi initially... so I contacted technical support and got some help and now it’s working fine, so I’ve started going through tack 10 and now my next one is no.5 so it’s been a slow start and I’m not, I haven’t used it every day at all. It’s funny really how even a relatively small amount of time - 10 minutes – it’s actually quite hard to find that time and put it aside and do it.

OK

But I’ve used it at different times, I’ve used it a couple of times in the evening, I used it one lunch break at work I went and sat in my car and did it at work, I quite liked that, it was quite nice to do that and then the other night I couldn’t sleep so about 1.30 in the morning I used it, I haven’t got into a routine yet,

OK, what other locations you’ve used it in?

I think about 3 times I’ve just been at home in my room, yeah, I’ve done 5 lots of 10 minutes in total.

OK, so you said it’s difficult to find the time. How did you find the time?

The times I’ve done it in the evening have been when I’ve just come home from work, well been to the gym and then come home from work and not had any plans and so, well I’ve probably watched a bit of TV and then thought maybe I could do Headspace.

OK

I’ve done it towards the end of the evening, cos I sometimes have problems sleeping and in the past when I’ve tried to do a bit of meditation before bed that’s helped so that’s why I’ve done Headspace at those times, towards the end of the evening. The time that I did it at work, I can’t remember why it occurred to me to do it. I just thought I’ve got some time, I’ll go and sit in the car and do it. But then I haven’t done it since then.

It just occurred to you to do it?
Yeah, I don’t think I was having a particularly stressful day, yeah, I guess it’s something at the back of my mind, it’s something that I wanted to get into the habit of doing. So when it occurs to me, I do it.

OK

And then at night, when I was trying to sleep, I was feeling quite anxious about not sleeping and thought it would be worth giving it a try.

So, OK, have there been any other times when you thought you should use it?

Yes, well like today, I went home from work early, but I haven’t ended up doing it. Sometimes, I think that me and meditation, it’s quite hard to, it’s easier to do something else. I think meditation really makes you notice what’s going on for you and that’s actually quite hard and you want, I want to distract myself with TV or the internet cos that’s much easier than sitting there for 10 minutes and noticing that I am maybe quite anxious or stressed. I wish I could get into a routine of doing it every morning or doing it every evening, but I don’t know, life just seems quite busy at the moment.

OK, so are you planning to use it again?

Definitely. I still have the intention of getting more into the habit of doing it. Definitely.

OK. And how do you intend to do that?

Just keep grabbing those 10 minutes when I can I think.

OK, even though you found doing it like that doesn’t work so well for you?

Yeah, well, I haven’t really looked at it, but I know that you can set a buzzer to remind you which might be helpful. But I guess routinely that the only time I’d be able to do it – cos presumably you set the buzzer at the same time every day – well I could do it at lunchtime when I’ve got my car. I guess part of the problem with Headspace is that you need to be in a quiet place where you’re not going to be disturbed. Like sometimes, I think when I don’t have my car I think I could sit in the park, but I don’t want to sit in the park with my eyes closed for 10 minutes. I wouldn’t necessarily feel relaxed and comfortable in that environment. Yeah, so because I’m quite busy and on the go, it’s hard to have 10 minutes in a private place

OK
Yeah, but I could either set the buzzer and try and get into the habit of doing it first thing in the morning which probably – I’m not a morning person so wouldn’t happen, or lunchtime, but then I take my lunch at different times or kind of last thing at night. Yeah maybe I’ll try that.

*OK do you have any other regular habits that you’ve brought into your life in recent years?*

Yeah, its to go to the gym, but I don’t necessarily go at the same time on the same days.

*Anything that’s daily?*

I don’t think so. I did a while ago. I started doing meditation from a CD. And I started doing that pretty much every night, last thing at night. And then I fell out of the habit of doing that. I’m not sure why.

*Have you noticed any people, circumstances or objects that have affected the way that you’ve used it?*

I don’t think so. The only circumstance would be when I’m less busy.

*So you intended to use it every day. How do think your intention has changed over time?*

I don’t think I would expect to do it every day now. I think I would be a bit more realistic. But I would want to try to do it. If I could try and do it…I mean it’s only ten minutes, isn’t it? If I could do it 4 or 5 times a week I would be happy with that.

*Any times when you’ve aimed to use but something stopped you from doing that?*

No. I don’t know. I suppose like today, I meant to but then I just ended up doing other things, chose to do other things.

*What do you mean by, ‘you meant to’?*

Well, when I left work early today, I thought one of the things I could do this afternoon was Headspace. And I still may do it later this evening. So, it’s not that anything has stopped me, it’s just that I forget about it.

*Was there a time when you thought ‘this is great. I’m really glad I’m using this’?*
Yeah, when I’ve done it in the evening and when I’ve done it at lunchtime. It seemed a good use of my time and a good thing to do. Cause work can be quite stressful.

*And what happened?*

It just felt good to have that time-out from rushing around, to just sit and be still and be quiet. It felt that was good for me. Last time I did it, I didn’t feel so positive about it. So that was when I did it at 1.30 in the morning when I couldn’t sleep. And I was aware that I was feeling very anxious then and that’s why I couldn’t sleep. And I did it and it was about. He was talking about observing thoughts and feelings and he was comparing it to traffic, like not needing to get involved. And at the time I found that really difficult to take on board because I very much wanted to get involved and get rid of the anxiety and feel better, so that I could sleep. So him telling me not to was frustrating. And that underlying anxiety probably contributed to my feelings of slight frustration. At that particular meditation. Because I was anxious, I really wanted it to work. And it did actually because not that long after I fell asleep. But at the time, there was really a desire for it to work. I can’t do what he’s saying to do, ‘in terms of not getting involved in the thoughts and feelings.

*So, how would you have got read of the anxiety normally?*

I don’t know. But he was advocating that you should just be able to sit back and be quite detached. And I just didn’t feel able to be detached from those thoughts and feelings.

*So has meditation helped you to become detached from thoughts and feelings in the past?*

Not, I don’t think so. I don’t know. It’s helped calm me down and slow me down and reduce how stressed and anxious I am feeling. But I don’t think it has.

*So why continue doing it? What reward do you get?*

Because I feel less stressed.

*So it’s a reduction of stress. Is there an addition of anything?*

Well, no, because I feel that I am already quite aware of how I am feeling. So I wouldn’t say it particular brings an awareness. Sometimes it does, I guess. Yeah, I guess it brings some awareness and increased awareness.

*So why do it?*
Because I feel calmer afterwards.

_OK_.

Also, the other thing that frustrated me last time I did it, although it’s early days, I had the initial introduction and I’ve had four, they are all quite similar, and maybe it’s because I have done a bit of meditation before, I kind of feel that I want to get ahead. Like I would like to do…I’d like to be able to do some of the longer ones. Or the ones that are on something specific, like relationships or health or whatever. And it feels frustrating that I can’t…I’m sure they have their reasons, but it feels frustrating that I can’t jump ahead.

_Do you think that using this has brought a change in your life?_

Not yet. I hope it will do. Yeah, I really hope it will do, because I really want to get into the routine of doing it. More often. But it hasn’t yet.

_What about your decisions to use it on particular days and not use it on other days?_

On a couple of days I used it, it was very much, ‘I am feeling bad therefore I’m going to try and use it to see if it changes that’. The other times have been not particular stressful days. I haven’t been particularly feeling low or stressed or anything. I’ve just made a positive decision to use it.

_And it’s made you feel a bit less stressed than you were at that particular point in time?_

Yes.

_Any bliss moments, zen nirvana moments?_

No, I have in longer periods of meditation that I have done, prior to Headspace but not in these ten minute ones, maybe when I go on to do the longer ones. Yeah, I’ve definitely felt better after doing them.

_And Andy, What are your thoughts on Andy?_

Well, it’s interesting. He’s not got the most…he’s got quite a normal, matter of fact voice. Like he’s not slowing his speech down or making it all dreamy. I don’t think I have any strong feelings for or against him really. I guess the good thing about him is that he makes it accessible. He doesn’t present it as being some super spiritual weird new age thing. It’s just a really normal thing to do. And I quite like
the idea that he was a Buddhist monk and a clinical psychologist. It kind of gives him some kudos in my eyes. But yeah, he doesn’t have the most amazing voice. But it’s ok.

*And any other thoughts on the design of the app?*

Well, initially, I really struggled to use it. I’m not very technical at all and initially I couldn’t really find my way around it. But I think partly that was because it wasn’t set up properly. But I like the animations and the way it looks.

*Do you think it has emptied your mind of clutter?*

Yes, it has. And I have applied that – when I can’t sleep. I have applied the principles of like concentrating on my breathing and getting rid of all the clutter.

*So you’ve done some meditation before. Do you think you’ve learnt anything new from this?*

Not yet, no. Although I struggled with it, I quite like his analogy and thoughts and feelings being traffic and not getting involved in it. And not going out into the traffic but observing it. But I wouldn’t say I’ve learnt anything new.
APPENDIX 4: INTERVIEW 15 (WITH CRAIG)

So, Headspace. How has it been for you?

I have been using it. I think I’ve used it 7 or 8 times in the last month. I’ve been doing the take 10 over ten days. I don’t know if that’s the first part? I don’t know if you can chose different things – but that seemed like the first thing you can do, so I just kind of did that really.

Have you explored other areas of the app?

I dunno. I think I might have had difficulty navigating it because like that was like the only thing that you could use. So I’ve just been using that really.

What was the difficulty navigating?

I don’t know. I think I just thought it said... I think unless it’s painfully explicitly obvious which it might well be, I just like start off with ‘take 10’, so I just clicked on that one. Yeah, I didn’t see any other options, to be honest.

7 or 8 times over the month. How does that spread out over the month?

Well, realistically, I probably only used… I probably only started using it two weeks ago. So, I was out of the country for a little bit.

Is that the reason you didn’t use it?

I was planning on using it at the beginning, but I got distracted by my holiday. I also had problems signing up with my free download code. They were the only reasons. As soon as I’ve downloaded it, which was about two weeks ago, I’ve been pretty much using it since. So I just kind of used it a bit later, if that makes sense… Yeah, and everything’s just really busy at the moment. I really actually liked it as an app and I think it’s definitiely something that I will continue to use.

7 times over two weeks? That’s pretty much once every two days?

Yeah, I generally used it during the week and then not used it at the weekends basically.

Why not at the weekends and why in the week?
Because my life is more regimented during the week, so I generally am more likely to have more time and space to do it. And I’m likely to be at home, so I’m likely to think. ‘Ok. I’ve got some time, I’m going to use it’. Whereas at the weekends, I’m generally out all weekend.

*So where have you used it and the time of day that you have used it.*

It’s been quite sporadic. I haven’t used it at specific times. I’ve used it a few times before going to bed. And I’ve used it once or twice before going to work. And in the office, because I have my own office. My own room at work, so I can use it there. Yeah, I think most often in my bedroom first thing in the morning, or at night, or, or occasionally at work.

*Why do you think it’s first thing in the morning and last thing at night?*

Erm, because it’s generally that pause in the day when you can do it. So actually there’s a pause in the day when you will not be distracted and you can remember, oh I can do that Headspace thing now.

*So tell me what the consequences of using it have been.*

Well, I have actually really enjoyed using it. I don’t think I have reaped the full rewards of it yet. But certainly just having ten minutes to focus on your breathing, to check in with how you are feeling is generally quite nice. I certainly feel a lot more relaxed after doing that. Erm, I think I’ve learnt a bit more about thoughts and that analogy that thoughts are like clouds, they come and go, so yeah, letting them drift past and if your mind wanders to gently bring your attention back to your breath. Yeah, just trying to be more present in the moment. Which I have actually found really hard. Hahaha

*Why?*

I don’t know. I don’t think there are many points in my life where I am encouraged to be present and thinking. I feel there is always something being demanding of me, so you are always in that doing mode – I need to do this I need to do that – It kind of goes against the grain in that it is giving that chance to be like ‘ok do nothing’ haha. More mindful I suppose.

*Have you ever found it a struggle to use?*

Yeah definitely. A few times I’ve used it and it’s not been.. but there are a few times I’ve done two days repeated in a row. So, if the last time I’ve done it I’ve found it a bit difficult to do, I’ll be like, ‘ok I’m feeling a little bit more calmer, so
maybe I’ll do it again, like straight away. so I’ll be more able to engage with it. I’ll just repeat the meditation again from the beginning.

_So over the last two weeks have there been like any runs? What about periods when you haven’t used it? Or has it been a smooth pattern?_

Probably, I’ve just used it during the weeks, so Monday to Friday and then not used it at the weekends.

_Every day during the week?_

I’m sure I’ve used it four days in a row.

_Do you remember why you haven’t used it on that fifth day?_

That was Friday.

_What was it about Friday?_

I’m more likely to go out in the evening.

_And why does that mean that you wouldn’t use it?_

I wouldn’t feel comfortable. Oh actually I did use it one day on the overground on the way to an interview. But I generally don’t find it very relaxing doing it around other people who are going about their daily life. Even though no one could hear cause I had my headphones on. I felt like I was feeling quite ‘zenned out’ and I would open my eyes and everyone would be like really stressed out, climbing on and off the train and I thought I didn’t find it relaxing.

_So you mentioned that there were some days when you found it really easy and you did a couple in a row and you mentioned there were some days when you found it less easy._

I think it’s genuinely something I would like to do every day, but at the moment I just, at the weekend I seem to be, well last weekend I was in Paris for three days, I just wasn’t going to use it then and I don’t know the weekend before that, I guess I was just out all day, so I just didn’t remember to do that. Unless I set myself a reminder on my phone, I probably won’t remember to do it at the weekends because I’m so busy.

_So tell me more about the times when you’ve used it? What’s it like when you’ve actually been doing the session?_
Er… I suppose sometimes, sitting… you know, your mind wanders and you have all these thoughts and that’s not always very pleasant.

*Why not?*

I don’t know. Kind of like you’re sitting there and your breathing and suddenly your mind goes off and thinks about all these things and you think ‘just for two seconds, I can’t even switch off’, you kind of gently bring your attention back to your breathing and then your mind does it again. So I think I just need to practice a little bit more. I don’t think I’ve done a bad job with it but it’s something I need some practice at.

*So you are frustrated that you can’t achieve it straight away?*

Yeah massively.

*How do you think your emotional state effects how you use the app or how you use and experience the app?*

I don’t know about emotions, general emotions, but I think arousal… so if you’re feeling quite stressed or there’s tension in your body, probably using the app is going to be harder than if you’re already quite relaxed. It is quite hard to use…I mean maybe it’s the time when you should be using it most cause that’s a good time to practice doing it, when you’re still quite alert from everything that has been going on. But yeah, that can be quite difficult I think to stick with that. I suppose that on reflection, I do pack a lot in my day. Like I’ll go to work, that’s like 8 hours of my life gone and then by the time you’ve got home and I like to go to the gym or see a friend or have dinner, so there’s no time. It just seems a lot. Maybe things will quieten down in the next few months, but it just seems like there’s not much free time to be like ‘ok 5o’clock. I know I’ll be free then’. That, I think is why it’s hard to instigate it at a regular time.

*So, you intend to use it in the future. Do you think you will change your pattern of use?*

To have it more fitted into my routine?

*Maybe. Or less?*

I don’t know. Generally, the evenings are generally quite a wind-down time anyway. So I don’t know if it’s better to use it at that time or in the middle of the day when you’ve got a lot of stuff going on. I suppose realistically I would use it in the evening because I’ve got more time then.
I’m also wondering…you’ve talked about the effects of using it. What you’ve got from it. Why would you want to carry on using it?

I suppose it’s just the hope that I would get better at doing it. So being able to be more like present in the moment and less pre-occupied by thoughts. That would be nice. I certainly would like that. Also, generally… I think deep down I want to be quite a calm person. So I certainly like having just 10 minutes to unwind and be calm. So that would keep me using it. I suppose another thing is that I would like to be less preoccupied by thoughts and more in the moment. That sounds really good to me.

This is slightly different from some people who have reported they use it because it gives them a feeling of peace. You seem to be saying that it is helping you to achieve a longer-term goal.

Yeah, it’s interesting that other people have said that it has helped them find peace. I don’t think I’ve found that yet.

Really. Why do you say that?

I don’t think I have. It’s nice having 10 minutes to chill out. I don’t feel that anything is different – but then I’ve only just started using it.

Are you expecting something to be different?

I would like to think it could be different. I would like to think I could be more present in the moment. Yeah, otherwise why would you use it?

What about external influences on use.

Well I would say, the last 6 weeks…a lot is going on at the moment. I’m sure that has had an effect. So it’s nice to have something opposite to that.

Have you spoken to other people about this? About mindfulness? About the study?

Er, no. No one actually.

Do you think that the study has influenced the way you have used the app in the last few weeks?

I don’t think so… Much actually.
# APPENDIX 5: AFFINITY DIAGRAM OF INTERVIEW CONCEPTS AND THEMES

## External factors that influenced use

<table>
<thead>
<tr>
<th>Emotions</th>
<th>Thoughts</th>
<th>Motivation to use</th>
<th>Cynicism</th>
<th>Physical sensations</th>
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<tbody>
<tr>
<td>Stress</td>
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<td>Numbness</td>
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## Internal factors that influenced use

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## App design factors that influenced use

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## Patterns & Context of use

<table>
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<th>External factors that influenced use</th>
<th>Social influence</th>
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<tbody>
<tr>
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<td>Environment</td>
<td>Influence on user behavior</td>
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<tr>
<td></td>
<td>Distractions</td>
<td>Impact on routine</td>
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## Change of use and intention over time

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## Consequences of use

<table>
<thead>
<tr>
<th>Immediate rewards</th>
<th>Mindful living</th>
<th>Disappointment</th>
<th>Insight into body life</th>
<th>New intention to be mindful</th>
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## Interventions to use

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## Expectations

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