How can we use technology to deliver interventions for people who experience severe mental health problems?

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List of abbreviations

AoIR- Association of Internet Researchers
APA- American Psychiatric Association
API- Application Programming Interface
BEP- Bipolar Education Programme
BPS- British Psychological Society
CBT- Cognitive Behaviour Therapy
cCBT- Computerised Cognitive Behaviour Therapy
CHIME- Connectedness, Hope, Identity, Meaning and Empowerment
CWV- Coping with Voices
DHI- Digital Health Intervention
DLA- Disabled Living Allowance
ESM- Experience Sampling Method
FAIR- Free Access to Involvement in Research
FEP- First Episode Psychosis
FI- Family Interventions
HHS- Department of Health and Human Services
HRA- Health Research Authority
IAPT- Improving Access to Psychological Interventions
NA - Negative Affect
NAO- National Audit Office
NHS- National Health Service
NICE- National Institute for Health and Care Excellence
ORBIT- Online, Recovery-focussed, Bipolar Individual Therapy
PA- Positive Affect
REC- Research Ethics Committee
SE- Standard Error
SMI- Severe Mental Health Problems
SOAR- Schizophrenia Online Access to Resources
TAU- Treatment as Usual
WHO- World Health Organisation

WPA- World Psychiatric Association
Abstract

The University of Manchester

Candidate: Natalie Berry

A thesis submitted to the University of Manchester for the degree of Doctor of Philosophy in the Faculty of Biology, Medicine and Health in 2017.

Thesis title: How can we use technology to deliver interventions for people who experience severe mental health problems?

This thesis aimed to explore the potential use of technology, namely websites and smartphone applications (‘apps’), to deliver psychological interventions for people who experience severe mental health problems (SMI). In particular, it sought to understand the views of mental health care staff and service users towards the use of digital health interventions (DHIs) for self-management, identify what service users want and need from a DHI, explore how people currently use the Internet and smartphones to self-manage their mental health and investigate the impact of specific technology use on symptoms associated with SMI. To achieve this, a multi-methods approach was taken, including reviewing evidence of the existing literature, qualitative interviews and focus groups, circulating a hashtag on the social media website Twitter, and experience sampling methodology.

Chapter 1 provides an overview of the literature and rationale for the thesis and chapter 2 describes the methodology employed. Chapter 3 (study 1) describes a systematic review of the acceptability of DHIs for the self-management of SMI. This review highlighted that acceptability should be identified prior to or without an individual receiving an intervention (hypothetical acceptability) and after intervention delivery (actual acceptability) and hypothetical acceptability tended to be lower than actual acceptability. Chapter 4 (study 2, N=18) outlines a qualitative exploration of service user views towards the hypothetical acceptability of DHIs for self-management and ideas for future developments. Five main themes were generated from thematic analysis of the data: 1) DHIs could be empowering tools that instigate shared understanding and decision-making; 2) DHIs may widen the current divides in society; 3) service users are uncertain about who may have access to data held on digital devices and how data may be used; 4) DHIs should not be used replace other support options; and 5) DHIs should be positive, fun, practical and interactive.

Chapter 5 (study 3, N=20) describes findings from focus groups with mental health care staff about the hypothetical acceptability of DHIs for SMI. Four main themes were generated from thematic analysis of the data: 1) staff hold conflicting views about the pros and cons of using DHIs; 2) DHIs could increase access to support options, but may perpetuate the digital divide; 3) DHIs impact on staff roles and responsibilities; and 4) DHIs should be used to enhance, not replace, face-to-face support. Chapter 6 (study 4, N=90) presents the findings from a novel study that circulated the hashtag #WhyWeTweetMH on the social media website Twitter. Thematic analysis of the tweets led to the creation of four main themes, which described that individuals tweeted about mental health: 1) to feel part of a community; 2) to combat stigma and raise awareness; 3) because Twitter is a safe space for expression; and 4) because it is an empowering coping mechanism. Finally, chapter 7 (N=50) presents findings from study 5, which used experience sampling methodology to explore the relationship between social media use and behaviours and mood, self-esteem and paranoia. Social media use predicted low mood, whilst posting emotional disclosures on social media websites predicted decreases in mood and increases in paranoia. The findings from the overall thesis form six main themes, which are presented in chapter 8: DHIs have the potential to empower individuals with SMI; DHIs should include strengths-based and recovery-oriented content; DHIs should include remote support options; findings support the use of the CHIME framework in DHI design; digital exclusion may prevent some people from being able to access DHIs; and staff and service users fear that DHIs will be used to replace face-to-face intervention options.
Declaration

No portion of the work referred to in the thesis has been submitted in support of an application for another degree or qualification of this or any other university or institute of learning.

Published work

This thesis is presented in journal format with five papers. Three of the five papers have been published in peer-reviewed journals (studies 1, 3 and 4) in the Journal of Medical Internet Research and JMIR Mental Health. The further two studies (studies 2 and 5) are completed and pending submission to the British Journal of Clinical Psychology and Psychological Medicine, respectively.

Authorship and collaborator contributions

The candidate's supervisors, Dr Sandra Bucci, Professor Fiona Lobban and Professor Richard Emsley, have overseen design, conduct and write up of studies 1, 4 and 5 and are, therefore, listed as co-authors on these papers. Dr Sandra Bucci and Professor Fiona Lobban also oversaw studies 2 and 3 so are also listed as co-authors on these papers. Study 4 involved mining the social media website Twitter for responses to the hashtag, which was aided by Maksim Belousov and Professor Goran Nenadic from the School of Computer Science at the University of Manchester.

Data collection, analysis and write up

The candidate collected all data reported in this thesis. The analysis of qualitative data was carried out by the candidate, under the supervision of Dr Sandra Bucci and Professor Fiona Lobban. The analysis of quantitative data was carried out by the candidate, under the supervision of Professor Richard Emsley. The candidate led the design and write up of each study and prepared drafts for supervisors and co-authors.
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Chapter 1: Introduction

This chapter begins by providing a description of the term severe mental health problems (SMI) and highlighting the prevalence, associated symptoms and available intervention options for people who experience SMI. The chapter then introduces the concept of, and rationale for, the implementation of digital health interventions (DHIs) and provides a brief overview of the literature, citing some examples of current or previous DHIs delivered for individuals with SMI. Current evidence for DHI acceptability and potential facilitators and barriers to their implementation in mental health care services are then discussed, including findings from quantitative and qualitative studies, in addition to examples of attempts to integrate technology into health care service settings. Finally, the rationale for the thesis research question and the aims of each study included are introduced.

1.1. Definition, prevalence and impact of severe mental health problems

The exact definition of what constitutes SMI is mixed. For example, some have argued that schizophrenia-spectrum, personality, bipolar, anxiety and depressive disorders are a broad range of categories that make up the construct of SMI (American Psychiatric Association, APA, 2013). However, others have argued for a need to account for the duration of symptoms and levels of functioning when using the term SMI, in addition to focussing on more specific diagnoses (Parabiaghi, Bonetto, Ruggeri, Lasalvia, & Leese, 2006; Ruggeri, Leese, Thornicroft, Bisoffi, & Tansella, 2000). The use of mental health-related diagnoses has been subject to attention amongst some academics, staff and service users alike, who argue that the use of diagnostic terms in mental health is stigmatising (Horn, Johnstone & Brooke, 2009; Romme, Escher, Dillon, Corstens, & Morris, 2009), over-medicalises experiences (Rapley, Moncrieff & Dillon, 2011) and can be meaningless and lack validity (Bentall, 2003; Timimi, 2014). However, in current research and practice, diagnostic labelling remains one of the main criteria used to determine receipt of an intervention and eligibility to participate in research studies (Cooke et al., 2016). For this reason, the current thesis utilises the umbrella term SMI to describe diagnoses of psychotic or bipolar disorders, which is in keeping with the Quality Outcomes Framework definition of SMI (National Institute for Health and Care Excellence; NICE, 2009a). The Quality Outcomes Framework was introduced in 2004 as part of the GP contract and rewards and incentivises practices based on the quality of care provided to patients with chronic conditions, including SMI (British Medical Association, 2004). Specific to SMI, quality indicators include service user reviews every 15 months, monitoring blood lithium levels, keeping a documented care plan and creating and maintain a register of people with SMI for regular follow-up (Lester, 2005).

Psychosis is a term used to refer to a group of psychotic disorders including schizophrenia, schizoaffective disorder and delusional disorder, which are characterised by a significant alteration in individuals’ thoughts, perceptions, behaviour and mood (NICE, 2014a). Criteria for receiving a diagnosis pertaining to psychosis include the presence of positive symptoms
such as hallucinations, delusions and disorganised speech and negative symptoms such as blunted affect and avolition (World Health Organisation, WHO, 1992). Hallucinations can be defined as the perception of an object or event without the presence of an external stimulus (Teeple, Caplan, & Stern, 2009). The majority of hallucinations reported in individuals with psychosis are auditory, followed by visual, whilst tactile, olfactory and gustatory are reported less frequently (Mueser, Bellack, & Brady, 1990) The DSM-V describes delusions as “fixed beliefs that are not amendable to change in light of conflicting evidence… delusions are deemed bizarre if they are clearly implausible and not understandable to same-culture peers and do not derive from ordinary life experiences” (APA, 2013).

Bipolar disorders are also considered to be SMIs and are characterised by repeated episodes where an individual’s activity levels and mood significantly elevate (mania or hypomania) or lower (depression) (WHO, 1992). Bipolar disorders are classified based on the longitudinal course and the occurrence of subthreshold symptoms. Specifically, the three most common diagnoses people will receive is bipolar I disorder (presence of at least one manic episode), bipolar II disorder (at least one hypomanic episode and one episode of major depression) and cyclothymia (periods of depression and hypomania that do not fit the criteria for major depression or hypomania for at least two years) (APA, 2013). Some people with bipolar disorder may also experience mood-incongruent psychotic symptoms such as hallucinations and delusions (Goodwin & Jamison, 1990).

It has been estimated that around 1% of the UK population will experience psychosis during their lifetime (NICE, 2014a), with similar prevalence rates also estimated for the occurrence of bipolar disorder (NICE, 2015). The age at onset of a first episode of psychosis typically occurs before the age of 35, with more males than females making their first contact with mental health services before this age (76% and 63%, respectively; Kirkbride et al., 2006). Similarly, the mean age of first contact with a mental health care professional for bipolar disorder was reported by Kennedy and colleagues (2005) as 29 years for males and 33 years for females. However, these findings are likely to underestimate the average age at onset, given the delays in presentation to services and misdiagnoses that can occur (Kirkbride et al., 2006).

Experiences often associated with psychosis and bipolar disorder can also occur in individuals within the general population. For example, a review of the literature has highlighted that the self-reported prevalence of hearing voices in the general population varies from 0.6% to 84% between-studies (Beavan, Read & Cartwright, 2011). Additionally, the experience of paranoid thoughts has been reported as occurring in almost a third of the general population (Bebbington et al., 2013; Freeman et al., 2005). Unusual beliefs and delusions of similar severity to individuals with psychosis have also been reported in 1% to 3% of the general population, whilst a further 5% to 6% report delusions to a lesser severity (Freeman, 2006). Therefore, many have suggested that experiences associated with SMI lie on a continuum and can only be classified as symptoms of an illness if they cause distress.
and a disruption to functioning (Strip & Letourneau, 2009). Therefore, there has been a movement towards supporting individuals with SMI in their self-management of symptoms in order to alleviate the distress and disruption caused, rather than with the sole aim of eradicating experiences entirely (Lonergan, 2017).

A report by the Schizophrenia Commission (2012) highlighted that schizophrenia and psychosis cost the UK around £11.8 billion a year (equating to £60,000 per individual). Additionally, a report for the King’s Fund predicted a rise in service costs in England to £3.7 billion for schizophrenia-spectrum disorders and £2.6 billion for bipolar disorders by 2026 (McCrone, Dhanasiri, Patel., Knapp, & Lawton-Smith, 2008). Importantly, the costs of SMI to the individual themselves and family members are also significant. For example, one report suggests that 87% of individuals report experiencing stigma or discrimination as a result of their mental health (McCrone et al., 2008). Additionally, unemployment rates of up to 95% have been reported in people with schizophrenia; individuals describe experiencing disruptions and difficulties in returning to education and family members often have to work as unpaid carers (Mueser, Salyers, & Mueser, 2001; The Schizophrenia Commission, 2012). Recent research has also highlighted a significant widening in the mortality gap between individuals with SMI and the general population (Hayes, Marston, Walters, King, & Osborn, 2017).

1.2. Current interventions for severe mental health problems

Given the significant impact that SMI has on the individual, their family and society more widely, efforts must be made to develop and deliver cost-efficient, but also evidence-based and effective, support options for this population. Recent reports have argued that a shift in mental health funding is needed in order to provide a more cost-efficient and effective UK National Health Service (NHS). For example, a report by the UK organisation Rethink Mental Illness in conjunction with the London School of Economics and Political Science stated that currently 54% of secondary care mental health spending is on inpatient care (Knapp et al., 2014). The report highlighted the need to redistribute the funding to community services, including improvements in the provision of psychological therapies, in order to intervene earlier to prevent hospitalisation.

In psychiatry, individuals with SMI typically receive pharmacological interventions (NICE, 2014a; 2014b). These interventions have been reported as being effective for psychosis (Karson, Duffy, Eramo, Nylander, & Offord, 2016) and bipolar disorder (Muneer, 2015; Vieta et al., 2011). However, the potential benefits of these approaches are argued to not entirely outweigh the costs associated with their long-term use. Specifically, medications prescribed for SMI are associated with distressing side-effects such as weight-gain (Bak, Fransen, Janssen, van Os, & Drukker, 2014; Rummel-Kluge et al., 2010), lethargy (Cascade, Kalali, Mehr, & Meyer, 2010), movement disorders such as dyskinesia and dystonia (Divac, Prostran, Jakovcevski, & Cerovac, 2013; Kim, MacMaster, & Schwartz, 2014) and a range of
physical illnesses including diabetes, cardiovascular, gastrointestinal, renal and respiratory tract diseases (Correll, Detraux, De Lepeleire, & De Hert, 2015). Additionally, there is some evidence for an overall increased mortality in people receiving pharmacological treatment due to the physical health problems associated with these interventions (Weinmann, Read, & Aderhold, 2009). Adherence to medication is also often poor due to factors such as beliefs about diagnosis, concerns about side effects, personal stigma towards taking medication and difficulties in remembering to take medication; although, this can be improved through psychological interventions (Levin, Krivenko, Howland, Schlachet, & Sajatovic, 2016; Perkins, 2002). Therefore, it is recommended that prescribed medications should be continually reviewed by clinicians and that service users should remain involved in the decision-making process behind the medications that they receive (NICE, 2014a; 2014b).

The National Institute for Health and Care Excellence also recommends that individuals with SMI are offered psychological interventions in addition to medication (NICE, 2014a; 2014b). For example, family interventions (FI) for SMI seek to focus on the behaviours of family members to improve relationships, social functioning and, in turn, reduce the likelihood of relapse (Barrowclough & Tarrier, 1992; Falloon, Boyd, & McGill, 1984; Kavanagh, 1992). FI’s have shown some efficacy in preventing relapse in individuals SMI (Bird et al., 2010; Pitschel-Walz, Leucht, Bäuml, Kissling, & Engel, 2015); although, it has been highlighted that not all families will need FI’s and it may be harmful to those who already maintain strong relationships (Onwumere, Bebbington, & Kuipers, 2011).

Cognitive behavioural therapy (CBT) is also recommended in clinical guidelines for individuals who experience SMI (NICE, 2014a; 2014b). CBT aims to reduce the behavioural disturbance and distress caused by SMI by helping individuals normalise and make sense of their experiences. There are a multitude of research studies reporting that CBT for SMI can be effective in reducing symptoms and relapse (Bird et al., 2010; Chiang et al., 2017; Thase, Kingdon & Turkington, 2014; Wykes, Steel, Everitt, & Tarrier, 2008), preventative for individuals with an at risk mental state (van der Gaag, van den Berg, & Ising, 2017) and acceptable to service users (Wood, Burke, & Morrison, 2015). Whilst some reviews have highlighted that the effect of CBT on symptoms is small and subject to study bias (Jauhar et al., 2014), it has been argued that the aim of CBT is not necessarily to reduce symptoms associated with SMI, but instead allow individuals to understand and cope with their experiences (Brockman & Murrell, 2015).

1.3. Barriers associated with current approaches to intervention delivery.

Despite a growing evidence-base for the efficacy of psychological interventions for SMI, implementation of these is often poor (Berry & Haddock, 2008; Bucci, Berry, Barrowclough, & Haddock, 2016; Haddock et al., 2014; Ince, Tai, & Haddock, 2016). Additionally, a report by the UK charity Mind highlighted that less than 30% of individuals with SMI referred to receive a psychological intervention were able to receive access within three months of...
referral and one in five individuals had to wait over a year before receiving access (Mind, 2013). Moreover, only around 10% of individuals who experience SMI report being able to access CBT, despite NICE guidelines recommending specifically the provision of CBT for SMI (The Schizophrenia Commission, 2012). Referrals to evidence-based psychological interventions were shown to be even lower in an audit of 187 service users in the North West of England, with only 6.9% offered individual CBT and 1.6% offered FI (Haddock et al., 2014). Barriers in timely access to psychological interventions include both individual and service-related factors such as the perceived stigma of receiving psychological therapy (Clement et al., 2015; Gronholm, Thornicroft, Laurens, & Evans-Lacko, 2017), geographical accessibility to mental health service settings (Kvig et al., 2017), cost and staffing pressures (Berry & Haddock, 2008) and concerns regarding the clinical effectiveness of psychological interventions (Morriss, 2008).

NICE (2014a; 2014b) guidelines also state that service users should be fully involved in the decision-making process behind both pharmacological and psychological treatment options. However, service users sometimes describe feeling disempowered due to a lack of choice and involvement in the treatment decision-making process (Stovell, Weardon, Morrison, & Hutton, 2016; Velligan, Roberts, Sierra, Fredrick, & Roach, 2016). Recent qualitative studies have identified several perceptions from mental health care staff about barriers to shared decision-making in SMI and include: societal preconceptions about taking medication; difficulties in engaging service users in the decision-making process due to the impact of symptoms; service users’ lack of insight about their mental health; family attitudes towards particular treatments; poor rapport or paternalistic attitudes towards service users; time-limited appointments; and the affordability of different treatment options (Fisher, Manicavasagar, Sharpe, Laidsaar-Powell, & Juraskova, 2017; Shepherd, Shorthouse, & Gask, 2014).

Although psychological interventions have been shown to be effective and acceptable for people with SMI, problems relating to access and choice mean that some people are not able to receive the intervention options that they want, or indeed, need. Therefore, it is important to start developing delivery options to psychological interventions that negate some of the barriers surrounding traditional face-to-face intervention access.

1.4. The potential role of digital health interventions for severe mental health problems

One potential solution to increasing psychological intervention access and choice is the delivery of these approaches via digital devices. The use of technology in the UK is increasing rapidly, as reported by a recent survey highlighting that the percentage of UK households with Internet access increased from 57% in 2006 to 90% in 2017 (Office for National Statistics, 2017). Moreover, smartphone adoption amongst UK adults has reportedly risen from 52% to 85% in the past five years alone (Deloitte, 2017). Additionally,
recent research has indicated a narrowing gap in smartphone ownership in individuals with SMI and the general population (Firth et al., 2016). This growing rate of technology access and ownership offers the unprecedented opportunity to harness these delivery options to revolutionise the future of mental health care.

There are a number of ways psychological interventions can be delivered via technology. For example, researchers have been exploring the use of virtual reality technologies to assess symptoms associated with SMI and to deliver social skills training, cognitive rehabilitation and psychological therapies (Freeman et al., 2017; Rus-Calafell, Garety, Sason, & Craig, 2017). Additionally, psychological assessments and interventions for SMI have been implemented via telephones and videoconferencing services (Mulligan et al., 2014; Sharp, Kobak & Osman, 2011). However, these approaches still require the direct input of a trained mental health care professional so are limited with regards to the staffing and cost pressures also associated with traditional face-to-face delivery methods. Therefore, the focus of this thesis is the provision of psychological interventions that involve the self-directed use of websites or smartphone applications (“apps”) for the self-management of SMI.

Websites and smartphones have been used to deliver interventions to promote and guide healthy behaviours such as smoking cessation (Graham et al., 2016; Whittaker et al., 2012), healthy eating (McCarroll, Eyles, & Mhurchu, 2017; Vandelanotte et al., 2016) and physical activity (Direito, Carraça, Rawstorn, Whittaker, & Maddison, 2017) and are widely available on app stores (Haskins, Lesperance, Gibbons, & Boudreaux, 2017; Middelweerd, Mollee, van der Wal, Brug, & te Velde, 2014). Additionally, a range of apps and websites have demonstrated some evidence of being effective in helping people self-manage the psychological impact, treatment adherence and knowledge of a range of physical health problems including diabetes (Cotter, Durant, Agne, & Cherrington, 2014; Garabedian, Ross-Degnan, & Wharam, 2015) cancer (Slev et al., 2016), inflammatory bowel disease (Jackson, Gray, Knowles, & De Cruz, 2016) and coronary heart disease (Palacios et al., 2017; Pfaffli Dale, Dobson, Whittaker, & Maddison, 2016).

In recent years, there has been an influx in research examining the potential uses of DHIs to deliver psychological interventions for people who experience mental health problems. A recent Lancet Psychiatry commission by the World Psychiatric Association (WPA) devoted a significant proportion of the report to the potential role of digital innovations in future psychiatric practice (Bhugra et al., 2017). DHIs have a growing evidence-base for the feasibility, acceptability and effectiveness for depression (Firth et al., 2017; Richards & Richardson, 2012), anxiety (Ebert et al., 2015; Firth et al., 2017), eating disorders (Schlegl et al., 2015) and substance use disorders (Marsch et al., 2014). Moreover, the delivery of computerised CBT (cCBT) is now recommended as part of the stepped care model by NICE for individuals with depression and anxiety (NICE, 2013). More recently, the potential value of DHIs has been recognised for individuals with SMI and although the evidence-base with
regards to efficacy is still in its infancy, researchers are increasingly seeking to examine the role DHIs could play in the provision of self-management options for this population.

Psychoeducation is one of the most common interventions incorporated within DHIs for people who experience SMI. Psychoeducation aims to provide service users with accessible, systematic, structured and interactive information that can enable individuals to normalise, cope with and understand their experiences (Brenner, 2000). Recent examples of psychoeducation successfully incorporated into DHIs include Beating Bipolar, which aims to improve quality of life, general functioning and symptoms of mania and depression (Barnes et al., 2011; Smith et al., 2011). Beating Bipolar was found to be feasible and acceptable to participants (Poole, Simpson, & Smith, 2012) and showed small improvements in the psychological quality of life relative to participants who received treatment as usual (TAU) (Smith et al., 2011). The Bipolar Education programme (BEP) also implements psychoeducation for bipolar disorder. Significant improvements in anxiety, depression, perceived stigma and control were observed in all conditions, regardless of whether participants had received the BEP, the BEP plus online peer support or TAU, although a modest clinical difference between the supported and unsupported groups was found in functional impairment and depression at follow-up (Proudfoot et al., 2012).

Psychoeducation has also been delivered via DHIs for individuals experiencing psychosis. For example, the Schizophrenia Online Access to Resources website (SOAR) can be used by both service users and supporters such as close family members or friends, and incorporates news articles about mental health problems, accessible information about schizophrenia, coping skills and an interactive question and answer page (Rotondi et al., 2005; 2010). SOAR resulted in significant reductions in positive symptoms in comparison with TAU and improvements in knowledge about schizophrenia (Rotondi et al., 2010). Additionally, the FOCUS system uses psychoeducation via an app to facilitate self-management in individuals with psychosis to aid sleep, mood regulation, adherence to medication and coping with symptoms (Ben-Zeev, Davis, Kaiser, Krzsos, & Drake, 2013a; Ben-Zeev et al., 2013b; Ben-Zeev et al., 2014). FOCUS use was found to lead to significant reductions in symptoms of psychosis and depression (Ben-Zeev et al., 2014).

CBT is another common psychological intervention that has been incorporated within DHIs for SMI to help individuals explore links between thoughts, feelings and behaviours in order to set goals and develop coping strategies. For example, Coping with Voices (CWV) is an interactive web-based programme that aims to reduce the severity of auditory hallucinations by promoting the use of self-assessments and coping strategies (Gottlieb, Romeo, Penn, Mueser, & Chiko, 2013; Gottlieb et al., 2017). Participants receiving CWV treatment showed similar decreases in the severity of auditory hallucinations as those who had received TAU; however, they did show greater improvements in social functioning than the TAU condition (Gottlieb et al., 2017). The online programme HelpID is an intervention for depression based on the theoretical framework of CBT. The intervention delivers 12 weekly sessions that
include exercises, guidance for relaxation, graphs and videos and audios about depression and has been found to be effective for individuals experiencing depression (Beiwinkel, Eiβing, Telle, Siegmund-Schultze, & Rössler, 2017). Recently, HelpID has also been provided for individuals experiencing schizophrenia, where it was found to significantly reduce depressive symptoms at a medium effect size (Moritz et al., 2016). Additionally, the MoodSwings-Plus online programme combines CBT and psychoeducation with a moderated forum, motivational interviewing techniques, medication monitoring and cognitive strategies to improve functioning, quality of life, medication adherence, depression and mania (Lauder et al., 2015; 2017). MoodSwings-Plus resulted in greater improvements in mania scores at 12 months in comparison to the basic version of MoodSwings (without the addition of CBT) (Lauder et al., 2015).

A further self-management option researchers are now integrating within DHIs is mindfulness. Murray and colleagues (2015) have developed ORBIT (online, recovery-focused, bipolar individual therapy), which aims to improve stress, depression and the quality of life of individuals with bipolar disorder by delivering mindfulness-based strategies. ORBIT was associated with improvements in quality of life for individuals who had completed the programme. The commercially available mindfulness app Headspace was also recently delivered to individuals receiving acute psychiatric inpatient care and was found to be acceptable and perceived by service users as helpful for promoting sleep and reducing anxiety and boredom (Mistler, Ben-Zeev, Carpenter-Song, Brunette, & Friedman, 2017).

The delivery of ecological momentary assessments (EMA)/the experience sampling method (ESM) to monitor symptoms of SMI via digital devices is also increasingly popular. ESM involves the repeated assessments of specific variables micro-longitudinally to identify how these variables relate to each other over time (Palmier-Claus et al., 2011). Individuals are prompted by an electronic device to complete assessments at pseudo-random time-points, multiple times a day over a pre-specified time-period (Shiffman, Stone, & Hufford, 2008). In addition to being used for research purposes, ESM has the potential for use in clinical assessments. Specifically, ESM assessments could facilitate outcome monitoring of intervention effects, aid diagnosis through the collection of ecologically valid symptom information and be used as an adjunct to psychological interventions by prompting the use of strategies developed in therapy (Palmier-Claus, 2011). The use of symptom monitoring via digital devices has been shown to be feasible and acceptable for individuals experiencing psychosis (e.g. ClinTouch, Palmier-Claus et al., 2012; Whelan et al., 2015) and bipolar disorder (MONARCA, Faurholt-Jepsen et al., 2015; True Colours, Micklowitz et al., 2012).

Several reviews published prior to and during the development of this thesis have collated the available evidence to understand the feasibility, acceptability and efficacy of DHIs for SMI. Feasibility studies are often the first point of call for researchers developing
interventions in order to produce findings that can determine whether a particular intervention should then be tested for efficacy (Bowen et al., 2009). This ensures that the potential feasibility of interventions has been identified before embarking on a costly and resource-heavy efficacy study. Previous trials investigating the feasibility of DHIs for SMI have identified feasibility through uptake, attrition rates and usage (e.g. Ben-Zeev et al., 2014; Bucci et al., 2015; Lobban et al., 2017). The acceptability of an intervention is often investigated when delivering DHIs during both feasibility and efficacy studies and is a term commonly used by researchers, but poorly operationalised. Therefore, Sekhon and colleagues (2017) developed the theoretical framework of acceptability, where they define acceptability as a multi-faceted construct that is reflective of stakeholder cognitive and emotional responses to an intervention. Recent studies which have explored the acceptability of DHIs for SMI, have identified acceptability through module or task completion rates, intervention satisfaction ratings and participant views collected via qualitative methods (e.g. Schlosser et al., 2016; Todd, Solis-Trapala, Jones, & Lobban, 2012). DHI efficacy can be operationalised in a number of ways depending on the intended outcome of the intervention. Like traditional face-to-face interventions, DHI efficacy is often determined by, amongst other outcomes, reductions in symptom distress and severity, medication adherence, rates of rehospitalisation, relapse or remission and improvements in quality life, general, social and psychological functioning.

Up until the start of the current PhD project (October, 2014), the development of DHIs for SMI was expanding, but still relatively new. Reviews had highlighted that there was an emerging evidence-base for the acceptability, feasibility and efficacy of DHIs for SMI, but findings were based on a limited number of small-scale studies (Alvarez-Jimenez et al., 2014). Since this time, several reviews have highlighted that DHIs for SMI are feasible, acceptable and potentially effective (Berry, Lobban, Emsley, & Bucci, 2016; Killikelly, He, Reeder, & Wykes, 2017; Firth & Torous, 2015; Naslund, Marsh, McHugo, & Bartels, 2015; van der Krieke, Wunderink, Emerencia, de Jonge, & Sytema, 2014), but further work is needed to explore service user and staff views about the use of DHIs for the self-management of SMI, how individuals currently use the Internet and smartphones to self-manage their mental health and the impact of current technology use on experiences associated with SMI.

1.5. Current use of the Internet and smartphones for self-management

It is important to understand how and why individuals currently use the Internet and smartphones to support and self-manage their mental health in order to identify popular or beneficial strategies. In turn, components facilitating these strategies can be incorporated into DHIs for SMI. A common strategy some individuals with SMI use to self-manage their mental health is using electronic or digital devices to access information about mental health problems on the Internet. This use has been highlighted in a survey of 457 individuals with schizophrenia, with 38% of respondents reporting using the Internet to retrieve mental
health-related information (Gay, Torous, Joseph, Pandya, & Duckworth, 2016), and a survey of 1171 individuals with bipolar disorder, which revealed that 78% of Internet users with bipolar disorder searched online for information about mental health (Bauer et al., 2016). Additionally, qualitative studies with individuals experiencing psychosis revealed that many described searching for information about mental health online to aid their own understanding of their experiences, to read information about medication, side effects and diagnosis and to seek information about coping skills (Aref-Adib et al., 2016; Lal, Nguyen, & Theriault, 2016).

Although using the Internet to access information about mental health can be beneficial, concerns regarding the abundance of unregulated material have been highlighted. For example, participants with first episode psychosis (FEP) expressed concerns about symptom exacerbation after accessing mental health-related information online and uncertainty regarding the relevancy and accuracy of online information (Lal et al., 2016). Indeed, an analysis of the video sharing platform YouTube revealed that only 34% of the videos observed accurately described schizophrenia (Nour, Nour, Tsatalou, & Barrera, 2017), whilst a meta-analysis of mental health websites reported that those affiliated with a pharmaceutical company showed a bias towards the medical model of mental health problems and pharmacological treatments (Read & Cain, 2013). Additionally, Schrank and colleagues (2010) interviewed 26 people with a diagnosis of schizophrenia about their Internet use and some expressed a reluctance to use the Internet to access information about mental health due to concerns such as being overwhelmed with information, difficulties in concentration and the perceived need to avoid being reminded about their experiences of SMI.

Some people with SMI also report using forums and social media websites in order to self-manage and improve their mental health. For example, a case report described a service user with bipolar disorder who demonstrated stark improvements in social functioning coinciding with active engagement with the social media website Facebook (Veretilo & Billick, 2012). Additionally, a recent review of studies exploring the use of the Internet by individuals with SMI reported that the Internet facilitated connections with others and peer support (Villani & Kovess-Masfety, 2017). Social media hashtags are now common features on social media websites and allow users to place a hashtag sign before a word or phrase to describe a specific topic so that others can then search and find interesting posts. The use of mental health-related hashtags on Twitter to connect individuals is widespread and, for this reason, Twitter has been described by the UK mental health charity Mind (2015) as one of the most important places on the Internet for dialogues about mental health. Recent examples of mental health-related hashtags include #MyDepressionLooksLike (Lachmar, Wittenborn, Bogen, & McCauley, 2017), #DearMentalHealthProfessionals (Shepherd et al., 2015) and #mentalpatient (Betton et al., 2016).
However, concerns have been raised that social media use may be harmful for individuals’ mental health. Specifically, depression has been linked with increased use of social media websites (Lin et al., 2016); although, this finding is not consistent across all reviews (Jelenchick, Eickhoff, & Moreno, 2013). Additionally, a recent survey with participants experiencing bipolar disorder revealed that they had both positive and negative experiences and views about using social media, with benefits including the ability to connect with others and make friends, but significant drawbacks including excessive posting and message sending and obsessive social media checking when experiencing mania (Matthews et al., 2017).

Whilst studies have started to explore the ways in which individuals use the Internet and smartphones to self-manage their mental health, the area is still in its infancy. Additionally, the impact of this current use is often explored either using retrospective questionnaires or qualitative interviews, which may be subject to incorrect recall or bias. Therefore, there is a need to understand how individuals currently use technology to self-manage their mental health to inform future content and design features within DHIs and explore the impact of such use in individuals with SMI to identify whether the incorporation of such features is likely to be beneficial or harmful.

1.6. Facilitators and barriers to the implementation of DHIs for severe mental health problems

There are likely to be many individual- and service-related factors that influence the implementation of DHIs for SMI that must be identified to improve the likelihood of successful implementation and uptake. For example, concerns have been raised about the digital divide, which may prevent some people from being able to access DHIs for SMI. A survey involving individuals with a diagnosis of psychosis or depression in London, UK, revealed that digital exclusion had reduced from 30% in 2011 to 18% in 2016 (Robotham, Satkunanathan, Doughty, & Wykes, 2016). However, the authors concluded that some individuals remain digitally excluded and suggested the need for a digital inclusion strategy within the NHS that is evidence-based to provide every individual with the opportunity to access the Internet and digital devices.

Interviews and surveys with mental health care staff have revealed lower levels of confidence towards the use of DHIs for individuals with severe and complex mental health problems in comparison to those with mild to moderate symptoms. Staff have raised concerns about barriers to DHI’s including: service users having the motivation, reliable Internet access and computer and literacy skills required; a lack of staff training; a perceived loss of the therapeutic relationship; the inability to identify risk issues; and the potential for disengagement with services if offered a DHI (Sinclair, Holloway, Riley, & Auret, 2013; Stallard, Richardson, & Velleman, 2010; Vigerland et al., 2014). However, potential facilitators of DHIs have also been noted by mental health care staff including the potential
to establish an avenue for future contact if an individual is disengaging from traditional services, allowing individuals in rural communities the opportunity to access evidence-based interventions they ordinarily may have difficulties in accessing and the ability to make interventions more fun and engaging (Sinclair et al., 2013; Stallard et al., 2010; Vigerland et al., 2014). Additionally, recent focus groups with family members of young people experiencing FEP identified a range of facilitators to DHIs for SMI including the provision of accurate information, ability to communicate with service providers, and opportunity to receive peer support (Lal, Daniel, & Rivard, 2017). However, they also identified several barriers such as the removal of face-to-face human contact and the potential to exacerbate, rather than reduce, symptoms of psychosis due to the virtual nature of communication (Lal, Daniel, & Rivard, 2017).

Whilst several facilitators and barriers to DHI implementation and uptake have been highlighted through surveys and interviews with a range of stakeholders, some of these findings are limited. Specifically, studies exploring mental health care staff views have focussed on the delivery of computerised psychological interventions for mental health problems more generally, rather than DHIs for SMI specifically. Moreover, the majority of studies were not conducted within the UK so may not be generalisable to the NHS mental health care services. Additionally, little is known about the views of service users themselves towards the implementation of DHIs for SMI. Therefore, further research is warranted to explore both staff and service user views towards the implementation of DHIs for SMI in order to identify potential facilitators and barriers to implementation.

1.7. Historical context of technology within health care services

Research has highlighted a number of potential facilitators and barriers to the delivery of DHIs for SMI. However, the historical context of technology use within NHS health care settings must be addressed in order to further understand the issues that individuals may face when attempting to implement DHIs for SMI. The NHS has a long-standing history of attempting to adopt technology within health care services; however, there have been notable issues with these attempts. The most publicised example is the National Programme for Information Technology (NPfIT), which was launched in 2002 with the aim that every patient would have access to an electronic care record, but this was subsequently shut down in 2011 (Department of Health, 2016). A report by the National Audit Office (NAO, 2012) outlined that the £2.7 billion pounds spent did not represent value for money and that the scale of the programme was significantly underestimated by the NHS.

In addition to IT implementation issues, in May 2017 the NHS faced widespread criticism for their responsibility in the WannaCry ransomware attack, which left parts of the NHS running on an emergency-only basis affecting around 34% of trusts in England (NHS Digital, 2017). A subsequent report by the NAO (2017a) highlighted that some trusts were running the Microsoft XP operating system, which left them vulnerable to attack. Indeed, in a press
release about the report, the Head of the NAO stated that “the NHS need to get their act together to ensure the NHS is better protected against future attacks” (NAO, 2017b).

The WannaCry ransomware attack comes at a time when the NHS is attempting to use information and technology to revolutionise patient care (Health and Social Care Information Centre, 2015). However, the attack suggests that some trusts may not have the provisions in place to guard against potential threats. This is concerning for the potential implementation of DHIs for SMI for two reasons. First, DHIs may involve the automatic transfer of service user data obtained via symptom monitoring to electronic patient records. The WannaCry attack exposed vulnerabilities in the capability for NHS IT systems to protect against malware. Ultimately, this could lead to sensitive service user information being obtained by unauthorised individuals who may then sell or make public sensitive patient data. Second, the report by the NAO (2017a) highlighted that some trusts were still using the Microsoft XP operating system. In addition, different commercial ICT platforms are used in secondary care mental health services. If NHS trusts are using different, and sometimes outdated, versions of operating systems and ICT platforms, this may pose a barrier to the implementation of DHIs in mental health care settings. Specifically, developers must ensure that staff are able to access data from a range of operating platforms and devices otherwise there is the risk that DHIs may be developed that are then unusable in mental health care services.

Failings in the use of technology to address health care needs are not just limited to the NHS and there are a number of digital initiatives developed by private and charitable organisations that have been withdrawn from the public domain. One such example is the Samaritans Radar, which was an online app released by the UK charity Samaritans, which worked on the social media website Twitter to alert individual’s followers’ if an algorithm picked up key phrases in Twitter posts ‘(tweets)’ that indicated someone was struggling to cope (Samaritans, 2014a). However, the charity faced a significant backlash with Twitter users highlighting concerns surrounding data protection and privacy issues associated with alerting individuals to content posted (Samaritans, 2014b). A perspective article outlined how the basis of the idea was credible, but the charity misjudged the Twitter community and the way in which the platform is used and suggested that, in the future, testing groups are more representative of the wider population of interest (Lee, 2014).

The examples noted highlight the potential barriers to DHI implementation and the need to explore the service settings where implementation is planned to identify IT infrastructures and associated considerations. The historical failings also mean that services may be wary about new technological innovations, which could be a significant barrier to adoption. Research is needed to explore whether previous experiences of technology failures contribute towards service and staff views of the acceptability of this approach. Finally, the need for continued and improved service user involvement in the development and delivery of technological innovations is needed to explore whether approaches are acceptable to the users themselves. Therefore, further research is warranted to explore the views of staff and
service users towards the implementation of DHIs for SMI to ensure that products are not being developed with public money that end up being unusable or unwanted.

1.8. The National Health Service digital agenda

Despite historical issues with technology adoption, the NHS is still actively pursuing digital innovation and the digital agenda forms a vital part of the NHS Five Year Forward View, which outlines the changes needed to ensure an effective and cost-efficient NHS over the next five years (NHS England, 2014). Digital innovation is also central to the Five Year Forward View Mental Health, which describes the pivotal role of the use of digital technologies to facilitate convenient access to services; greater choice over treatments; opportunities for peer support; blended therapy through the combination of face-to-face and digital initiatives; improvements in outcomes through low-costs; and secure data sharing between providers (NHS England, 2016).

The potential benefits of DHIs highlighted in the Five Year Forward View reports are significant. Additionally, the WPA commission by the Lancet Psychiatry details the real potential to improve access to care and support options through embracing digital technologies in mental health services (Bhugra et al., 2017). However, a commentary on the WPA commission raised the question of whether this is what service users actually want and need (Carr, 2017). Therefore, service users need to be asked whether they actually want to receive DHIs for the self-management of SMI and what they want and need from a DHI in order to inform future developments in the field.

1.9. Summary of the literature and thesis rationale

The literature demonstrates the high prevalence rates and burden associated with SMI and the need for the improved implementation of psychological interventions to help minimise the distress and disruption caused to individuals. Despite national guidelines recommending the provision of psychological interventions for SMI and evidence for their effectiveness, access is limited due to a range of barriers including the perceived stigma of receiving psychological interventions, associated costs, staffing pressures and concerns about their clinical effectiveness. Moreover, service users sometimes describe feeling uninvolved in the decision-making process behind the care that they receive and wish to take more active control in determining the responses to their own health care needs. Therefore, researchers have been exploring a range of methods to deliver evidence-based psychological interventions to ensure those who want and need this access are able to receive it.

DHIs are one possible way of extending intervention choice and access to individuals with SMI. Interventions delivered online and via smartphones have been used successfully to promote healthy behaviours and to self-manage a range of both physical and mental health problems. Now, the potential role of DHIs in transforming intervention access for people with SMI is beginning to be recognised with a wide range of websites and apps being developed.
to deliver evidence-based self-management interventions and strategies such as psychoeducation, CBT, mindfulness and symptom monitoring. However, researchers have identified a range of barriers which may affect the likelihood of implementation into mental health care services. Additionally, little is known about the views of service users towards the use of DHIs for SMI. Although the NHS has prioritised a digital agenda across health care services, the NHS has been widely criticised for previous failings and cost-wasting associated with attempts of integrating technology into the NHS. Additionally, the failures of projects such as the Samaritans Radar designed to aid individuals with mental health problems, highlight the need to involve service users early on in the development of technological solutions to mental health care needs.

Despite the fast-paced rate of research in the field and the national and global interest in the implementation of DHIs for SMI, there is a shortage of evidence regarding whether service users actually want to receive DHIs in the first place. Additionally, staff views and experiences regarding current technology use and the implementation of DHIs for SMI have yet to be fully explored. Finally, at the beginning of this PhD project, there was a concerning lack of continued service user and staff involvement from the early stages of the design process and throughout the duration of projects, with the tendency for consultation rather than collaboration. Although this has improved over time, it remains important to identify what individuals with SMI want and need from DHIs in order to improve the likelihood of service implementation and clinician and service user uptake.

1.10. Thesis aims and objectives

The overall aim of this thesis is to understand how technology, namely websites and smartphone apps, can be used to deliver psychological interventions for people who experience SMI. This broad aim encompasses a contribution to the literature concerning the acceptability of DHIs for SMI, the identification of the way that current technologies could be used to leverage psychological interventions, and understanding relevant stakeholder wants and needs from DHIs for SMI. Five main aims were developed in order to identify how technology can be used in the delivery of psychological interventions for SMI.

1. The first aim is to investigate the views of individuals with SMI towards the acceptability of the use of DHIs for self-management.
2. The second aim of this thesis is to identify what service users want from a DHI for the self-management of SMI.
3. The third aim is to explore mental health care staff perspectives about the acceptability of DHIs for the self-management of SMI. This will include the secondary aim of identifying the experiences and views of staff towards the current ways service users engage with technology to support their mental health.
4. The fourth aim is to understand how service users currently use the Internet and smartphones to self-manage their mental health.
5. The fifth and final aim is to explore the impact of Internet and smartphone use on symptoms associated with SMI.

Due to the broad, wide-reaching and differing ways that individuals may want to use the Internet and smartphones to self-manage their mental health, the findings generated from aims 2 and 3 will be used to inform the self-management behaviour that will be explored in aims four and five. This is to ensure that the aims are not too broad and are instead focussed to allow for an in-depth analysis of a specific self-management behaviour, rather than the broad exploration of multiple self-management options.

1.11. Overarching thesis hypothesis

It is expected that individuals with SMI and mental health care staff will find the idea of DHIs and the inclusion of social media components acceptable, but will also express concerns about potential negative consequences that may be barriers to uptake.

Chapter 2: Methodology

This chapter provides the description and rationale of the methodology applied throughout this thesis, including the epistemological and ontological stance, and a brief discussion of the strengths and limitations of the methods used. The thesis employs a mixed-methods approach, drawing on both qualitative and quantitative methods to address the aims. The five studies presented in this thesis have either been accepted for publication (studies 1, 3 and 4) or are being submitted to academic journals (studies 2 and 5). Inevitably, the details within the methods sections of these papers are concise due to adherence to journal word limits. Therefore, a methodology chapter is warranted to provide a more detailed explanation and justification for the methods employed. Similar qualitative methods are used in studies 2 and 3; therefore, these studies are presented together in this Chapter.

2.1. Summary of the studies and research aims

Study 1 addresses the first aim of the thesis, which was to investigate service user perspectives regarding the acceptability of digital health interventions (DHIs) for severe mental health problems (SMI). To address this aim, the literature regarding service user views towards the hypothetical acceptability (i.e. the acceptability of DHIs prior to or without receiving an intervention) and actual acceptability (i.e. the acceptability of DHIs once an intervention has been delivered) of DHIs for SMI were systematically reviewed.

Study 2 also addresses the first aim of the thesis (service user perspectives regarding the acceptability of DHIs for the self-management of SMI), in addition to the second aim (identifying what service users want from a DHI for SMI). To address these aims, individuals
with SMI were interviewed to explore their views and attitudes towards receiving DHIs to self-manage their mental health.

Study 3 focuses on the third aim of the thesis, which was to explore mental health care staff perspectives regarding the acceptability of DHIs for the self-management of SMI. To address this aim, focus groups involving mental health care staff were conducted to explore their views and experiences of service users’ current use of the Internet and smartphones to self-manage their mental health and views about the acceptability of implementing DHIs for SMI.

Study 4 focuses on the fourth aim of the thesis (understanding how individuals use the Internet and smartphones to self-manage their mental health). To address this aim, the hashtag #WhyWeTweetMH was circulated on the social media website Twitter to enable users to respond and detail the reasons why they used Twitter to discuss mental health problems.

Study 5 addresses the fifth aim of the thesis (exploring the impact of Internet and smartphone use on symptoms associated with SMI). Experience sampling methodology (ESM) was used to address this aim, which involved participants receiving text-message alerts at six pseudo-random times a day for a six-day period to answer assessments on a smartphone about their social media use and mood, self-esteem and paranoia.

2.2. Overview of study designs

To address the aims of the thesis, a variety of methods were employed. When deciding which research designs, methods, procedures, measures and analyses to use, researchers should take a pragmatic approach and, rather than focus on the methods, place emphasis on the research question (Creswell, 2014). To answer the overall research question, a mixed methods approach was taken, which included studies using quantitative and qualitative methods separately for data collection. The inclusion of qualitative designs allowed the collection of rich and in-depth data regarding participant views and subjective experiences, whilst the inclusion of a quantitative study provided data that allowed more generalisable inferences to be made through statistical analyses. Further descriptions regarding the research designs used in the five studies that make up this thesis can be found in the study sections in this chapter. Table 1 provides an overview of each study included in the thesis and the methods that were used.

Table 1 Summary of methodology of included studies

<table>
<thead>
<tr>
<th>Paper Title</th>
<th>Methods used</th>
</tr>
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<tbody>
<tr>
<td>Study 1 Acceptability of interventions delivered online and through mobile phones for people who experience severe mental health problems: A systematic review.</td>
<td>Systematic review</td>
</tr>
</tbody>
</table>
### Study 2
A qualitative exploration of consumer views, needs and ideas for using digital health interventions for self-management in severe mental health problems. Qualitative: One-to-one interviews

### Study 3
"I think it’s coming for us isn’t it and I think we need to embrace it": Opportunities and challenges identified by mental health care staff working with people experiencing severe mental health problems in an era of technological innovation. Qualitative: Focus groups

### Study 4
#WhyWeTweetMH: Understanding why people use Twitter to discuss mental health problems. Qualitative: Twitter analysis

### Study 5
Social media use and its relationship with mood, self-esteem and paranoia in severe mental health problems: An experience sampling study. Quantitative: Prospective experience sampling

### 2.3. Determining an epistemological position

This thesis implemented a mixed-methods approach to understand the potential for DHIs to deliver psychological interventions for people with SMI. Identifying an epistemological stance can be a challenge due to the diverse research methods employed and the need to consider whether to adopt one epistemological position throughout or multiple reflecting the differences in the different aims under consideration (Cameron, 2011). The author considered the aims and topic of the thesis and the proposed methods and determined that a social constructivist approach was the appropriate position for the thesis. The social constructivist position assumes that individuals develop subjective meanings of their experiences through seeking to understand the world in which they live and that views are formed through interactions with others and the wider context, but that some constructs are still observable and measurable (Creswell, 1998). Indeed, this fitted with the overall aim of identifying potential technology-enabled self-management strategies that were popular amongst service users qualitatively and then using quantitative methods to measure the impact of this use.

### 2.4. Study 1: Acceptability of interventions delivered online and through mobile phones for people who experience severe mental health problems: a systematic review.

#### 2.4.1. Idea development

A key aim of this thesis was to understand the views and attitudes of individuals with SMI towards the acceptability of DHIs for self-management. An initial review of the literature
surrounding DHIs for SMI was conducted in January 2015 using two scientific databases (PubMed and Web of Science), which identified recent review papers investigating the feasibility and effectiveness of DHIs for SMI (Alvarez-Jimenez et al., 2014; van der Krieke et al., 2014). However, there were no reviews investigating the views and attitudes towards DHIs by people with SMI. It was noted during this initial search that DHI acceptability was often reported as a secondary outcome in trials. Therefore, it was decided that a systematic review should be conducted to present current findings regarding acceptability, which have previously been overlooked in favour of reporting intervention efficacy/effectiveness.

2.4.2. Rationale for a systematic review

The purpose of a systematic review is to identify, collate, synthesise and appraise evidence about a specific topic to effectively disseminate research in an accessible format for healthcare staff, academics, policy makers, consumers and the general public (Uman, 2011). As shown in Figure 1, the publication of studies investigating the acceptability of DHIs for SMI had risen substantially from 2005 to 2015 (the time of the review) and since the review, a further 40 studies eligible for review inclusion have been published. Of these, 6 explored participants’ views towards the provision of DHIs for SMI prior to or without receiving an intervention (hypothetical acceptability), whilst the remaining 34 explored acceptability during or after a DHI had been received (actual acceptability). Given the fast-paced rate of publication in the field, an updated review of acceptability will be required in the near future. Therefore, a systematic review ensures a replicable method, which can be updated in the coming years to account for new research findings.
Figure 1. Histogram highlighting the number of studies meeting the review inclusion criteria since 2005.

2.4.3. Pre-study set up and selection criteria

Outputs from the initial search described in Section 2.4.1 were reviewed to identify: 1) common words and phrases used by authors to describe DHIs; 2) measurements of acceptability used in studies; and 3) key researchers in the field who may have unpublished material. During the initial review of the literature, it became apparent that the acceptability of DHIs could be considered in two different ways. First, some papers reported studies exploring individuals’ views about DHIs for SMI prior to or without directly receiving an intervention, whilst others investigated views about DHIs during or after intervention delivery. Therefore, the terms hypothetical acceptability and actual acceptability were coined for the current review to aid the conceptual understanding of acceptability in the context of DHIs.

The initial literature search also identified the current methods researchers have used to measure acceptability: 1) completion rates; 2) intervention use; and 3) participant views in the form of questionnaires and interviews. As such, it was decided that quantitative, qualitative and mixed-methods studies would be included in the review.

To ensure transparency and replicability, the methods used in the systematic review were reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA; Moher, Liberati, Tetzlaff, & Altman, 2009). PRISMA recommends the design, aims and search terms of systematic reviews are informed by the Participant Intervention Comparator and Outcome framework (PICO; Moher et al., 2015). The PICO framework specifies the four study components that must be considered by researchers when designing review studies: 1) participant group; 2) intervention type; 3) comparison group; and 4) research outcomes. The use of the PICO in the current review is outlined below:

The Participant group was defined as people who experience SMI. The definition of what constitutes SMI varies between countries; however, for this review, the UK-based Improving Access to Psychological Therapies (IAPT) definition was used. This definition includes schizophrenia-spectrum disorders, bipolar disorder and personality disorders (IAPT, 2015). The IAPT explanation was chosen due to the relevance of the initiative in using DHIs to improve access to psychological interventions.
The *intervention type* was defined as the delivery of any psychological intervention that aimed to modify an individual's wellbeing or behaviour via a mobile phone or a website. Eligible studies could investigate acceptability without or before participants receiving a DHI (hypothetical acceptability) or during or after participants had received a DHI (actual acceptability).

There was no *comparison group* stipulated because it was not necessary to include a comparator for this review. If there was a comparison group in studies screened, there were no restrictions associated with what the comparator was.

The *research outcomes* were identified through the initial search of the literature. Specifically, studies were eligible for inclusion in the review if they reported participant views about DHIs, module completion rates or values relating to intervention use.

### 2.4.4. Search strategy

Search terms for study identification were developed through the initial review of the current literature, with the first set of search terms focussing on participants (individuals experiencing SMI) and the second set focussing on delivery methods for DHIs (websites and mobile phones). Due to the secondary outcome nature of acceptability, search terms specifically relating to acceptability were not included in the systematic search. The associated terms were searched on title and abstract level using the databases PubMed, Embase, CINAHL, PsycINFO and Web of Science in April 2015. Only studies from 2005-present were considered due to the early nature of research in the field. The combination of psychological and medical databases allowed the identification of studies published in both psychological and psychiatric journals. The electronic searches were augmented by contacting key authors identified in the initial search for unpublished material, using the cited-by function on Google Scholar and traditional hand searches of reference lists of included studies and journals. This method is known as citation-chaining, whereby the literature is searched backwards and forwards to identify other potentially relevant papers (Ellis, 1993). Electronic and hand searches produced a total of 4746 studies for review (excluding duplicates). Citations for these studies were transferred to an excel file for organisation and to maintain a clear record of reasons for exclusion.

A full description of the systematic review process can be found in Chapter 3.

### 2.4.5. Main strengths and limitations

The main strength of this systematic review was the inclusion of studies employing qualitative, quantitative and mixed-methods approaches for acceptability assessments and measurements. The combination of these approaches generated a thorough systematic review, which benefited from the in-depth and rich data gleaned from qualitative studies and the extensive data than can be gathered quantitatively to provide a broad analysis of the
current research in the field. Additionally, systematic reviews can identify gaps in the evidence-base, which can guide the development of important future research questions (Mulrow, 1994). For example, one of the key findings in this systematic review was the limited research investigating the hypothetical acceptability of DHIs for SMI; therefore, providing a rationale for further exploration of this area. The list of search terms for database searches was comprehensive and the grey literature (conference abstracts, reference lists, and cited-by function on Google Scholar) was searched. Section 2.4.2 highlighted the substantial rise in publication of studies meeting eligibility criteria since the systematic review search date. The transparent and efficient reporting of the methodology of a systematic review allows the current review to be updated using the exact methods that were previously used. Importantly, systematic reviews allow the dissemination of a clear and information summary of up-to-date knowledge within a particular field. This means that clinicians and service users and policy makers are able to remain informed about research findings through accurate summaries without having to engage in the time-consuming effort of searching all of the relevant literature themselves (Murlow, 1994).

Whilst comprehensive search strategies were employed to identify the literature, some relevant findings may have been missed due to the nature of the systematic review inclusion criteria. Specifically, it is often the case in systematic reviews that studies written in a language other than English are excluded due to limited resources being unavailable for translation. Therefore, relevant findings that were not published in English may have been missed. There is often a significant publishing bias towards studies with positive or statistically significant outcomes (Chan, Hróbjartsson, Haahr, Gøtzsche, & Altman, 2004); therefore, studies indicating negative views towards the acceptability of DHIs for SMI may have not been published and included in this review, which could have led to overall elevated levels of acceptability reported. Finally, it is often the case that systematic reviews can be subject to a lengthy journal review process, which can lead to the most recent findings in the field not being included (Elliot et al., 2014).

2.5. Study 2: A qualitative exploration of service user views, needs and ideas for using digital health interventions for self-management in severe mental health problems.

Study 3: Use of the Internet and mobile phones for self-management of severe mental health problems: qualitative study of staff views.

2.5.1. Idea development

One of the key findings from the systematic review investigating the acceptability of DHIs for SMI was the paucity of research exploring the hypothetical acceptability of DHIs (Berry et al., 2016). It is crucial to identify the views of individuals who will use these delivery methods to determine and resolve potential facilitators and barriers to engagement and to tailor DHIs to
incorporate the content and components that people with SMI will find helpful. Currently, researchers employing qualitative studies exploring service users’ views and ideas for DHIs have shown a tendency towards consulting service users about DHIs that have already been created, rather than identifying whether people actually want to receive DHIs and collaborating to develop them from the ground up. Therefore, study 2 aimed to understand the hypothetical acceptability of DHIs for people who experience SMI and summarise what individuals want from a DHI to self-manage their mental health. It is hoped that the findings from this collaboration with service users can be used by other researchers to inform the design of future DHIs to improve acceptability and provide individuals with the tools that they want, rather than the tools we think they should receive.

During the systematic review screening process (described in Section 2.4.3), many studies were identified by the search criteria and screened out at abstract level due to exploring the views of mental health care staff, rather than service users. However, it was noted that all studies screened out for exploring staff views were surveys about mental health problems more generally, rather than SMI specifically. It is important to explore mental health care staff views about DHIs due to the role that staff will play in referring service users to receive DHIs. Therefore, study 3 aimed to investigate mental health care staff experiences and views of service users engaging with the Internet and smartphones to self-manage their mental health. The study also aimed to identify potential facilitators and barriers to DHI adoption by exploring staff views towards the hypothetical acceptability of DHIs for SMI.

2.5.2. Recruitment and participants

Convenience sampling was used to recruit participants from secondary care services in two mental health trusts in the North West of England. Recruitment from NHS trusts was facilitated by the author attending team business meetings of secondary care services supporting service users with SMI. Staff attending the team meetings were asked to pass the participant information sheet (Appendix 1) and study flyer (Appendix 2) to any individual who they believed would be potentially eligible. Posters advertising the study (Appendix 3) were also placed in Trust premises accessible to both service users and staff. Some additional participants were recruited through sending the study information to people who had consented to having their details on a research opportunity mailing list. Eligibility criteria were purposefully broad to ensure a wide-range of views was obtained. Specifically, individuals were eligible to participate if they: 1) were 18-65 years of age; 2) had received a diagnosis of schizophrenia-spectrum disorder or bipolar disorder; 3) had ownership or access to a mobile phone and Internet service; 4) had the capacity to provide informed consent to participate; and 5) had sufficient English language proficiency to take part in interviews. In recognition of the time commitments associated with taking part in the interviews, participants were provided with £20 as compensation.
Convenience sampling was also used to recruit mental health care staff working in secondary care mental health services in four mental health trusts in the North West of England. Recruitment from NHS trusts was instigated by the author emailing service leads of secondary care services enquiring as to whether they would be willing to present staff in their team with the opportunity to participate in focus groups about DHIs for SMI. The author liaised with the service leads who agreed to circulate the participant information sheet (Appendix 4), study flyer (Appendix 5) and study poster (Appendix 6) to staff who expressed an interest in participating and arrange a mutually convenient time and location for focus groups. Individuals were eligible to participate if they: 1) were 18 years of age or over; 2) worked with individuals experiencing SMI in primary or secondary care services; and 3) provided informed consent to participate and have focus groups recorded. Staff did not receive any financial or professional incentives for participation.

Typically, qualitative studies tend to recruit lower numbers of participants in comparison to quantitative studies, but important considerations still need to be made regarding the final sample size (Sandelowski, 1995). Specifically, the final number of participants must be sufficient to allow for theoretical saturation, whereby no new themes emerge from the data (Schensul & LeCompte, 2010), whilst ensuring a small enough sample to allow the in-depth exploration of experiences required for qualitative analysis (Sandelowski, 1995). As such, the interviews and focus groups were reviewed throughout the studies and recruitment was stopped when the research team were in agreement that data were sufficient for analysis. In total, 18 individuals with SMI participated in interviews and 20 staff participated in focus groups with the author.

2.5.3. Qualitative inquiry

2.5.3.1. Service user interviews

Studies examining hypothetical acceptability are often limited to survey-based designs quantitatively exploring the acceptability of specific DHIs (Berry et al., 2016). Although these findings can be informative in the development and delivery of DHIs, participants are generally limited to providing quantitative responses to questions about researchers own views and ideas, rather than being given the opportunity to provide their own views and ideas for DHIs more generally. The study aims were not driven by hypotheses and were exploratory in nature so qualitative interviews were deemed the most appropriate method to examine the subjective experiences and views of individuals with SMI towards the use of DHIs for self-management.

Participants were interviewed one-to-one either via telephone (n = 8), in their own homes (n = 5) or in a service setting (n = 5), depending on their preference. The option of telephone interviews extended access to participation for those who may have been unable or felt uncomfortable attending face-to-face interviews (Opdenakker, 2006). Although concerns
have been raised that telephone interviews may be inferior to face-to-face approaches due to being unable to identify and respond to non-verbal cues (Creswell, 1998), it has been suggested that participants may feel more comfortable in being open and honest about sensitive topics via telephone due to the perceived anonymity (Trier-Bieniek, 2012). In the current study, the research team reviewed the transcripts and noted that the richness of the data obtained did not appear to differ between telephone and face-to-face interviews. Additionally, the option for participants to communicate with the author and to give their views in a place, setting and situation where they felt most comfortable was in line with the ethos of the thesis; therefore, the methodology mirrored the overall thesis aims.

All interviews were conducted by the author, which were audio-recorded and transcribed verbatim. In addition to the study-specific questions, participants were also asked how they found taking part in the interviews and any additional topics they felt should be covered. This allowed the author to probe further about aspects of technology use that participants had not previously disclosed during the interviews. The research team reviewed several audio-recordings and transcripts to provide feedback on interview style, the question phrasing and the use of prompts and probes.

2.5.3.2. Mental health care staff focus groups

Qualitative methodology was deemed to be appropriate for the current study due to the rich and in-depth data that can be gathered through qualitative inquiry. A limitation of current studies exploring the views of mental health care staff is that they have almost exclusively used survey-based designs, which limits the recognition of novel views that have yet to be identified. Additionally, few studies are UK-based, which means that findings from other studies may not be applicable to individuals working in NHS mental health trusts. Service leads working in mental health trusts were consulted about the best way to explore staff views qualitatively. Respondents advised that due to time pressures and staffing levels, focus groups would be preferable over one-to-one interviews so they could be conducted before or after team meetings or training. Therefore, focus groups were administered to minimise the burden associated with participation. Additionally, the use of focus groups rather than interviews facilitated group discussions that led to the development and expansion of novel ideas that may have not previously been raised (Stewart, Shamdasani & Rook, 2014).

Focus groups were conducted by the author in the NHS service settings where staff worked. Typically, participants in focus groups are strangers to maintain anonymity and prevent any pre-existing hierarchical structures; this encourages the disclosure of sensitive topics and information (Morgan, 1988; Powell & Single, 1996). However, others have argued that studying pre-existing groups allows the exploration of topics that participants are likely to naturally discuss with each other, which allows for greater ease of conversation (Kitzinger, 1994; 1995). To minimise the potential issues with group dynamics and ensure that
everyone had a chance to express their views, the author tried to manage focus groups by keeping groups small, reading body language to identify whether an individual wanted to speak and take individual comments back to the group to see if others had similar or different views and experiences. Additionally, field notes were made during focus groups and a reflective journal was completed to review group dynamics and communication between members.

All focus groups were conducted by the author, which were audio-recorded and transcribed verbatim. After the focus groups, participants were asked about how they found taking part and any additional topics they felt should be covered. This allowed the author to probe further about views towards DHIs and technology use that not been previously discussed, but had been viewed as important during groups.

2.5.4. Measures

Separate, but similar, topic guides were developed by the author for interviews with service users (Appendix 7) and focus groups with staff (Appendix 8). Initial drafts of the topic guide were reviewed by the research team and the content and structure were discussed in meetings until a final version of the topic guide was agreed upon. The questions in the topic guides focussed on: 1) how individuals currently use the Internet and smartphones to self-manage their mental health and 2) views towards using DHIs for self-management. The service user topic guide also asked participants for ideas about any specific content or components they would like to see included in future DHIs. Questions were broad and open-ended in nature to facilitate rich and in-depth qualitative inquiry, but were also supplemented with prompts to help participants provide more detailed responses. Additional probes were also used to enable participants to expand on their initial answers. The topic guide was flexible to allow for revisions during the study to include additional discussion points raised by participants during interviews.

To characterise the samples, participants were given a brief questionnaire prior to interviews (Appendix 9) and focus groups (Appendix 10) to provide demographic information and details about their comfort and use of technology.

2.5.5. Data analysis

A range of qualitative methods of analysis were considered to meet the aims of the studies. However, thematic analysis (Braun & Clarke, 2006) was deemed the most appropriate method to analyse the data. This decision was made due to the flexibility of the approach to capture peoples’ subjective experiences, whilst allowing thorough interpretations of the data without assuming a strict epistemological framework (Clarke & Braun, 2014). Instead, thematic analysis requires the researcher to make active choices about the analytic process, whilst ensuring transparency in the decision-making process. Specifically, Braun and Clarke (2006) highlight that thematic analysis must involve researchers considering: 1) what
constitutes a theme; 2) whether the analysis represents a rich account of entire data sets, or an in-depth narrative about one specific aspect; 3) whether the analysis is inductive or theoretical; 4) whether to characterise semantic or latent themes; 5) whether to assume a realist or constructivist stance; and 6) ensuring clarity about how the series of questions relate with each other.

The first question to consider is what counts as a theme. Braun and Clarke (2006) note that the number of instances a viewpoint is expressed across the data sets does not mean that one theme is more crucial than another. Additionally, they state ‘keyness’ of a theme is not necessarily reliant on quantifying views expressed, but instead on whether it represents the original research question and aims. Given the novel area of this research, a certain proportion of viewpoints did not have to be expressed by participants to qualify as a theme. Instead all relevant data to the research question were coded and combined to form themes.

The second question to consider during analysis is whether to focus on forming a rich description of entire data sets, or a detailed account of one aspect (Braun & Clarke, 2006). The original intention of the qualitative interviews was to conduct one single analysis on data relating to how service users currently use technology for self-management, the hypothetical acceptability of DHIs and ideas for future developments. However, the extensive and rich data gathered from interviews led to the realisation that a single analytic approach and one subsequent paper restricted by journal word limits would not provide a sufficient representation of the data. Therefore, it was decided that aspects of the interview data would be analysed and reported separately; the first exploring the hypothetical acceptability of DHIs and recommendations for the content of future DHIs and the second identifying the function of current use of technology for self-management. The overarching question of this thesis is ‘how can we use technology to deliver interventions for people who experience severe mental health problems?’ Therefore, the most relevant findings were the responses to the exploration of the hypothetical acceptability of DHIs and ideas for future components. Conversely, the data obtained from focus groups with staff was deemed to be sufficient for a single analysis due to the more direct and universal experiences and viewpoints expressed.

The third decision researchers must make is whether to take an inductive or deductive approach to data analysis (Frith & Gleeson, 2004). The inductive approach is data-driven, whereby researchers analyse data without attempting to align themes within a pre-existing framework or preconceptions. Alternatively, a theoretical approach is driven by pre-existing theory and the researcher’s theoretical viewpoints. Given that the current data and theory in the field is limited, an inductive approach to data analysis was taken.

Researchers also need to decide whether the themes reflect a latent or semantic level of interpretation (Braun & Clarke, 2006). A latent approach would involve interpretation that goes beyond the spoken word by exploring the underlying assumptions and ideas that led to participant views. In the studies 2 and 3, interpretations regarding service user and staff
needs and contextual situations were made when constructing themes. For example, one of
the key themes created from the data was that DHIs could be empowering because they
could allow service users to take control of when and where they have access to an
intervention (semantic level). However, it was also identified that these views seemed to
stem from participants feeling disempowered about their current choice of intervention
access (latent level).

Finally, thematic analysis can be used within realist and constructivist paradigms, so
researchers should specify their epistemological position (Braun & Clarke, 2006). A social
constructivist stance was taken, which assumes that individuals develop subjective
meanings of their experiences through seeking to understand the world in which they live
and that views are formed through interactions with others and the wider context (Creswell,
1998). A social constructivist position was adopted for studies 2 and 3 because participant
views and ideas about DHIs were influenced by both the wider social context, but also
represented individual experience. Specifically, many of the service users interviewed were
currently searching for employment or receiving disabled living allowance at the time of the
interviews. Additionally, a large proportion of the participants were currently in contact with
NHS or privately-funded services, whilst staff were all working in NHS service settings. At
the time of the interviews and focus groups, mental health trusts were facing restructuring
and well-documented changes to funding and changes to disability payments were being
implemented. It is possible that this political context, socio-economic factors and service
experiences at the time of interviews may have contributed towards participant views about
the hypothetical acceptability of DHIs. Therefore, interpretations of participants’ views and
experiences took both societal contexts and individual experiences into account.

Braun and Clarke (2006) report that should be six phases to thematic analysis: 1) data
familiarisation; 2) generating initial codes; 3) searching for themes; 4) reviewing themes; 5)
defining and naming themes; and 6) producing the report. A full description of the analytic
process is presented in the methods sections of Chapters 4 and 5. In summary, following
transcription and data familiarisation (phase 1), preliminary codes (phase 2) were assigned
to all transcripts. After the transcripts were coded in a cyclical process, candidate themes
(phase 3) were created by collapsing and combining multiple codes based on common
concepts and patterns (Braun, Clarke & Terry, 2014). Regular research team meetings were
held throughout the analysis process to review codes and revise themes (phase 4). Final
sets of themes and subthemes were produced from the data and quotations were taken from
transcripts to represent each theme and subtheme (phase 5). Finally, findings were written
up and manuscripts were submitted to journals and presented at conferences for
dissemination (phase 6).

2.5.6. Ethical considerations
The studies received sponsorship from the University of Manchester and ethical approval from NHS Cambridge South Research Ethics Committee (REC) (ref: 16/EE/0059). During the course of the study, the NHS research ethical approval process changed; therefore, an application to the Health Research Authority (HRA) needed to be submitted to adhere to revised approval process. Local approval was provided by two NHS mental health trusts in the North West of England.

Throughout the design, development, data collection, data analysis and reporting of the studies included in this thesis, the British Psychological Society (BPS) Code of Human Research Ethics (BPS, 2010) was strictly adhered to. Study posters and flyers for interviews and focus groups were placed in Trust settings where approval had been granted and handed to staff to pass to any service users who would be eligible to participate. All individuals who expressed an interest in participating were then fully informed about the study and sent the participant information sheet for interviews via post or email, depending on individual preference. Potential participants were given at least 24 hours to decide whether they would like to take part and were asked whether they had any questions to ensure that they had a full understanding about the nature of participation. Prior to interviews (Appendix 11) and focus groups (Appendix 12), participants were asked to sign two copies of the consent form, one for their own records and one for the author’s records to demonstrate that they had given valid informed consent. Participants were reminded that they could withdraw at any point during the study without penalty and without having to provide a reason to allow individuals the autonomy over decisions regarding participation. This also minimised risk if participants became distressed whilst speaking about views or experiences. One of the guiding principles in research is respect for an individual’s autonomy in deciding whether they will participate in research. However, the approach taken to recruit staff in study 3 needed careful consideration to ensure participants did not feel obligated to take part. Specifically, service leads who agreed to focus groups being conducted were asked to contact staff regarding participation, so staff may have felt pressurised to participate due to the request coming from a senior member of staff. Therefore, service leads were asked to email staff the participant information sheet, which clearly stated that individuals were under no obligation to participate in the study. Additionally, at the beginning of each focus group prior to providing consent, staff were reminded that they were free to leave the room at any time if they would not like to participate or if they changed their mind during the focus group.

The Data Protection Act requires information collected from human participants to remain confidential unless previously agreed otherwise (BPS, 2010). This means that the author was required to follow specific procedures to ensure confidentiality and maintain the anonymity of participants and their data. To this end, all paper-based study data were kept in a locked filing cabinet in a locked office at the University of Manchester and consent forms were kept in a separate locked filing cabinet to the study data. Electronic data were
encrypted and stored on a password-protected University of Manchester hard drive. Due to the qualitative nature of the study, quotes were taken from participant interviews that were representative of the themes. These were quotes that did not contain any identifiable information about participants to maintain anonymity and the participant consent form asked participants to indicate that they agreed with their quotes being used for this purpose. However, confidentiality may sometimes need to be broken if participants indicate that there is a risk of harm to themselves or another person (Department of Health, 2003). A risk disclosure protocol was developed for use in the event of risk disclosures, which detailed the procedure the researcher would undertake in the event of participants disclosing risk. This allowed the protection of both the participant and the researcher.

2.5.7. Main strengths and limitations

The main strength of studies 2 and 3 was the collection of rich and in-depth data through qualitative interviews and focus groups. Current studies in the field are often limited to survey-based designs, which may not capture viewpoints and ideas relating to DHIs that differ from the researcher’s own agenda. Therefore, the qualitative exploration of participant thoughts and ideas allowed the identification of novel views about hypothetical acceptability and recommendations for future developments. An additional strength was the exploration of participant views and ideas for DHIs generally, rather than to inform the design and content of a specific intervention. This means that the views obtained and subsequent analyses were less biased than other qualitative studies because participants will have not felt the need to give certain views to please researchers and data interpretation was less likely to have been conducted with specific interventions in mind. Previous studies have also often only recruited young people when examining the hypothetical acceptability of DHIs for SMI. The wide age range of participants in the current study (25-63) means that the views obtained may be more representative of the population.

The main limitation of studies 2 and 3 was that participants referred themselves based on study advertisements (study 2) and emails from service leads (study 3), which detailed the topic of the interviews and focus groups. Therefore, people who held particularly strong views towards DHIs may have been more inclined to participate than others, which may have led to views that were not representative. Additionally, service users were required to have mobile phone an Internet access to be eligible to participate so they could understand concepts relating to digital devices. Findings are, therefore, limited to people who would be able to easily access DHIs, so further work is needed to explore the views of people who do not have Internet or mobile phone access. A potential benefit of DHIs could be the provision of evidence-based psychological interventions for people who are ordinarily unable to receive face-to-face support options. However, the majority of participants recruited were currently accessing mental health services and had experience of receiving psychological interventions. Therefore, it was not possible to identify in this study whether individuals currently receiving limited support were particularly positive or negative about the role DHIs
could play in improving access. Specific to study 3, focus groups were conducted within service settings and members of each focus group were also members of the same team. The presence of other staff and service leads known to participants may have led to some feeling uncomfortable sharing any views that went against the group norm, the view of the service lead or NHS guidelines more generally.

The qualitative nature of both studies meant the information participants chose to share may have been biased by the presence of the author. Specifically, participants come to interviews and focus groups constructing the nature of the conversation based on who the interviewer is, the interviewer's background and what they think the interviewer wants them to say. This means that participants will construct their own reality based on the context, time and place of interviews. The author tried to minimise these potential influences through explicitly stating at the beginning of interviews and focus groups that any responses given would be interesting, valid and important. Additionally, questions were kept open and neutral to reduce the chances that participant views were not influenced by the nature of the questioning. It is possible that during qualitative analysis, researcher bias may have led to interpretations made based on the views and experiences of the research team. To minimise bias, the author kept a reflective journal to enhance the transparency and credibility of the study (Ortlipp, 2008) and the research team met regularly to discuss how experiences and views may affect analysis. Moreover, the thematic analysis of the data led to the creation of themes highlighting the similarities and differences between participants and their views. Whilst the overall societal and political context was raised by participants and drawn out throughout the analysis process, thematic analysis lacks the in-depth understanding of why an individual holds these views at a certain point of time.

2.5.8. Reflexivity

Qualitative methods require the researcher to gather, organise, interpret and report participants' versions of their views and experiences. However, decisions regarding the subject of investigation, the methods employed, the findings reported and communication of findings will be influenced by the researcher's own experiences and background (Malterud, 2001). Therefore, researcher positioning and biases that have the potential to affect the analysis of the data should be reflected and described to ensure transparency in the reporting of qualitative studies (Watt, 2007). Therefore, the author's positioning is presented in this section.

Prior to this PhD, my previous experiences of working with people with SMI were limited to voluntary positions in inpatient settings. Therefore, my understanding of the needs of individuals in the community in the context of psychological support options was limited. As such, I approached this thesis topic feeling unclear about my personal viewpoints towards the use of DHIs for people who experience SMI. Berger (2015) argued that a lack of personal experience about a specific topic can aid reflexivity through approaching the study
with a less biased and more objective viewpoint. However, studying a phenomenon as an
outsider may have left me unable to pick up on subtle themes and language that a clinician
or an individual with lived experience of SMI may have noticed (Berger, 2015). During this
PhD, I also helped conduct follow-up assessments for a trial examining the feasibility and
acceptability of a CBT-informed smartphone app for psychosis (Actissist; Bucci et al., 2015)
and a project involving the monitoring of basic symptoms and early signs of relapse via a
smartphone app (ExPRESS; http://www.hra.nhs.uk/news/research-summaries/express-2-
longitudinal-feasibility-study/). It is possible that experiences whilst working on these projects
may have influenced interpretations and analysis of the qualitative data in this PhD.

To overcome issues with reflexivity, triangulation can be used, whereby analysis is
compared between researchers with different backgrounds (Peters, 2010). Two members of
the research team (SB and FL) are academic clinical psychologists with extensive clinical
experience. Therefore, they also coded two randomly selected transcripts from the
interviews from study 2 and one focus group transcript from study 3, which were compared
with the author’s and discussed in research team meetings. The involvement of service
users in qualitative analysis can lead to the identification of complex findings that may
ordinarily be missed (Gillard, Simons, Turner, Lucock & Edwards, 2012). Unfortunately, it
was not possible to have service user involvement during the analysis stages of these
qualitative studies due to time and funding constraints. However, randomly selected
participants from studies 2 and study 3 were consulted to review the themes and
interpretations of the data.

To minimise the likelihood of work on other projects influencing data interpretation and
analysis, several considerations were made. First, the Actissist follow-up assessments only
involved the administration of psychological assessments; not qualitative interviews
exploring acceptability, so I was unaware throughout the trial about participants’ views
towards the app and blind to the participant treatment condition. Although I did collect
qualitative data about participant views of the ExPRESS app, these interviews were
conducted after the qualitative interviews had been completed for this PhD. Additionally, it
was decided that the research team would not discuss the findings from these projects with
myself until after data analysis for the PhD studies had been completed. Finally, the
research team ensured that I had not seen or used the Actissist or ExPRESS apps prior to
interviews and focus groups to try to limit any potential biases in the questions asked.

A reflective journal was completed throughout data collection and analysis to facilitate the
awareness and acknowledgment of the influence of researcher beliefs, views and
experiences on interpretation (Ortlipp, 2008). Maintaining this journal allowed me to reflect
on my own feelings and views that emerged during interviews and focus groups to ensure
that they did not affect any prompts or questions used. Regular research team meetings
were organised to discuss reflexivity and potential biases in the analysis and reporting
process in an effort to maintain reflexivity.
2.6. **Study 4: #WhyWeTweetMH: Understanding why people use Twitter to discuss mental health problems.**

2.6.1. *Idea development*

Twitter is a microblogging social media website, where individuals can post 140-character limit statuses, or tweets, about any information that they wish to share (Twitter, 2017a). Twitter also allows users to search for, and connect with others about, specific topics using hashtags (Twitter, 2017b). Twitter hashtags are increasingly being used by individuals and organisations with personal and professional interests in mental health to facilitate mental health conversations (Betton et al., 2015). Indeed, the mental health charity Mind state on their website “Twitter seems to be becoming one of the most important places online for conversations, stories and connections about mental health - especially through the creation of mental health hashtags” (Mind, 2015). Additionally, mental health care staff in the focus groups expressed concerns about service users speaking about their mental health on social media websites due to the potential for over-disclosure and cyberbullying (Berry et al., 2017a). However, little is known about the function that tweeting about mental health serves for individuals with mental health problems. Therefore, this study aimed to address the fourth aim of the thesis (understanding how people use the Internet and smartphones to self-manage their mental health) by exploring why people use Twitter to discuss mental health problems.

2.6.2. *Rationale for the use of Twitter for data collection*

A variety of potential methods were considered to explore the research question. For example, a questionnaire design could have been implemented where participants were asked the extent to which they agreed or disagreed that statements relating to reasons for discussing mental health on Twitter applied to them. However, this approach was rejected for two reasons. First, questionnaire items are usually developed after identifying views and experiences via qualitative methods, which are then tested quantitatively (Oppenheim, 2000). At the time of the study there was no research highlighting potential reasons why people use Twitter to discuss mental health; therefore, there was no evidence on which to base questionnaire items. Additionally, the views were sought from individuals who specifically used Twitter; with a questionnaire, there was no guarantee that those responding were Twitter users. Additionally, qualitative interviews were considered; however, this methodology was not deemed to be appropriate due to aim of identifying wide-reaching views from many people.

Researchers have started to collect pre-existing tweets containing mental health-related hashtags to answer research questions, for example, stigma associated with schizophrenia and depression (Joseph et al., 2015; Reavley & Pilkington, 2014) and users views towards mental health services (Shepherd et al., 2015). Therefore, it was decided that the most
appropriate method to qualitatively explore reasons for discussing mental health on Twitter would be to collect this information via the Twitter platform itself. This was the first study of its kind to circulate a study-specific hashtag on Twitter for research purposes. Therefore, a secondary aim was to explore the feasibility of implementing a hashtag on the Twitter platform to answer health-related research questions. Feasibility would be identified by the number of tweets collected including the hashtag and the ability to analyse the results.

There were no pre-existing hashtags relating to why people tweet about their mental health; therefore, a study hashtag was created and circulated on Twitter for individuals to respond to. This ensured that everyone who responded to the research question were Twitter users and was a quick, simple and easy method for people to take part in research, without needing to devote a large amount of time to participate.

2.6.3. Recruitment and participants

Twitter users were recruited via convenience sampling through circulating the hashtag #WhyWeTweetMH on Twitter. The author circulated the hashtag in a tweet asking individuals to use the hashtag to detail the reasons why they used Twitter to discuss mental health problems. The author then tweeted prominent Twitter users such as charities, mental health advocates and researchers asking them to re-tweet the hashtag. Any person who then posted a tweet using the hashtag was counted as a participant in the study.

Originally, the intention of the study had been to only ask individuals to respond who experienced SMI due to the focus of this thesis. However, it was decided that diagnostic restrictions should not be placed due to the public nature of the research, so it was important to ensure that any individual who did tweet about mental health and saw the hashtag was not prevented from taking part. Additionally, when the hashtag was circulated, a small number of responses seemed to be written from an academic perspective. Therefore, it was decided that the tweets from any individual who used the hashtag would be included in analysis.

2.6.4. Data collection

The hashtag #WhyWeTweetMH was circulated on Twitter between September and November 2015. The collection of tweets was automated by the computer scientists in the research team using the Twitter Streaming Application Programming Interface (API) and the Twitter Search API. The Twitter streaming API was used to collect tweets in real-time and was augmented by the Search API for daily data collection to allow for the possibility of network errors. Frequent attempts were made to circulate the hashtag until no new tweets including #WhyWeTweetMH were collected. Tweets were imported to a password protected Microsoft Excel file for qualitative analysis. Circulation tweets by others that did not give a reason for tweeting about mental health and re-tweets were removed; however, the number of re-tweets and ‘likes’ for specific tweets were recorded and reported in the findings.
2.6.5. Data analysis

Thematic analysis (Braun & Clarke, 2006) was deemed the most appropriate method to highlight the common reasons for tweeting about mental health across the sample. As stated in section 2.4.6, thematic analysis requires researchers to consider what constitutes a theme. All relevant data to the research question were included in themes and subthemes; however, given the large number of participant views collected in comparison to traditional interview-based qualitative inquiry, the number of times a theme and subtheme was presented in tweets was also noted in the results. Braun and Clarke (2006) also advise that researchers should consider whether analysis should provide a rich description of entire data sets or a detailed account of one aspect. The 140-character limit to tweets meant that the content of the data obtained per participant was limited; therefore, all tweets including the hashtag #WhyWeTweetMH were included in analysis.

Researchers must also decide whether to take an inductive or deductive approach to data analysis (Frith & Gleeson, 2004). The lack of research or theory concerning reasons for discussing mental health via social media meant an inductive approach to analysis was adopted. Given the 140-character limit of tweets, a semantic approach was taken in describing and interpreting the data to construct themes, because there was not enough in-depth information presented by participants, or opportunities for further questioning, to explore the underlying assumptions of participant views. Finally, researchers should specify their epistemological position (Braun & Clarke, 2006). Like studies 2 and 3, a social constructivist approach was assumed for the study because the social context of the platform is likely to influence individuals reasoning behind tweeting about mental health, in addition to individual experiences. One example of this is that some users responded that they tweeted to fight and campaign and highlighted recent cuts in mental health services.

The six phases of thematic analysis were followed during the analytic process (Braun and Clarke, 2006). A full explanation is presented in Chapter 5. To summarise, the author repeatedly read the tweets several times for data familiarisation (phase 1). The author then initially coded all tweets and discussed these codes with the primary supervisor to create a coding scheme to arrange the data (phase 2). A hierarchical structure of themes and subthemes were developed by the author and primary supervisor (phase 3), which were then independently reviewed by the second supervisor (phase 4). Final definitions and labels for themes to represent the data were created after continued discussions within the research team (phase 5). A final report detailing study findings was completed and submitted for publication and presented at conferences (phase 6).

2.6.6. Ethical considerations

The study received approval from the University of Manchester Research Ethics Committee 6 (Ref: 15347). Throughout the research process, the BPS Code of Human Research Ethics
(BPS, 2010) was followed. Additional guidelines for conducting research on the Internet were also consulted to inform the design of the study, data collection and storage and dissemination of findings; specifically, the Association of Internet Researchers (AoIR, Markham & Buchanan, 2012), BPS (BPS, 2013) and INVOLVE (INVOLVE, 2014). Meeting with the REC was particularly important in considering the additional ethical issues that are associated with conducting research on social media.

The first consideration that needs to be made when conducting research via Twitter is whether ethical approval is required. In a previously published analysis of tweets including the hashtags #depression and #schizophrenia, the authors argued that institutional ethical approval was not required due to the publicly available nature of the data (Reavley & Pilkington, 2014). Indeed, the United States Department of Health and Human Services (HHS) advises that if an individual intentionally posts information on the Internet, then it should be considered public and available for researchers to use without approval from Institutional Review Boards (HHS, 2009). However, the author consulted the University of Manchester research ethics department and it was agreed that an application would be made for ethical approval due to asking Twitter users to actively post tweets (rather than the passive collection of pre-existing tweets), insurance from University only being applicable for REC approved studies and the help that the REC could provide in addressing ethical considerations.

One of the main reasons for using Twitter for data collection was the ease of participation for individuals who may not ordinarily have the time or energy to devote to reviewing extensive participant information sheets, consent forms and subsequent questionnaires. However, it is recommended that individuals are fully informed about the nature of the research prior to participating. Therefore, a link to a brief information sheet (Appendix 14) was included in the tweet circulating the #WhyWeTweetMH hashtag and a disclaimer that the hashtag was being used for a research study. It was not possible to obtain written consent from Twitter users; therefore, the REC advised that a statement should be included in the linked information sheet that tweeting with the hashtag would be taken as consent.

Whilst data on Twitter may be considered publicly available so not reliant on the usual data protection requirements, the usual data protection policies were still adhered to. Indeed, the ethical robustness of this study was stark in comparison to other studies that have collected tweets. Tweets were transferred to a password-protected Microsoft excel file on a secure University of Manchester computer and identifiable information (Twitter usernames) was removed. Researchers are advised to include quotes when reporting findings from qualitative studies to support claims and evoke emotion (Sandelowski, 1994). However, tweets are publicly available, so if others were to perform an online search of the quoted tweet, there would be the possibility that the Twitter profile of a participant would be returned in the search results, thus breaking anonymity (Rivers & Lewis, 2014). Therefore, after analysis, all tweets were paraphrased by the author and reviewed by the primary supervisor.
to ensure that the paraphrased tweets accurately reflected the content of the original tweets. The author then entered these paraphrased tweets into online search engines to ensure Twitter users’ profiles were not identified in the search results.

One concern raised by the REC was the requirements of researchers to protect participants from harm. Specifically, in a traditional research study the researcher would be required to pass information on to a member of a participant’s care team if an individual were to disclose that there was a risk of harm to themselves or other people (Department of Health, 2003). However, there is not the option to personally identify health care contacts from profiles on Twitter and it was not deemed to be appropriate or ethical to individually contact people if they expressed risk when using the hashtag. Therefore, contact details for support options were included in the information sheet that was linked to the tweet. Finally, the REC raised the concern that participants should be 16 years of age or over to be able to consent to take part in research. Therefore, following the advice of the REC, the tweet circulating the hashtag specified that individuals should be over the age of 16 if tweeting using the hashtag.

2.6.7. **Main strengths and limitations**

The main strength of this study was that reasons for tweeting about mental health were explored in the setting where this behaviour occurred, which improved the ecological validity and guaranteed that those who tweeted using the hashtag were Twitter users. Additionally, using Twitter allowed the consultation of a large group of people who were able to provide their views without being constrained by the usual issues associated with traditional research methods such as location and time pressures. The use of Twitter also allowed the retrieval of responses from a global audience; therefore, the findings were not limited to only individuals living in the UK, but were also generalisable to individuals from other English-speaking countries. An additional strength of the study was the consideration and reporting of ethical issues. Much of the current research investigating health discussions on Twitter fail to report ethical approval and considerations. Given the relatively early stage of health-related research being conducted on Twitter, it is important to include information about the potential ethical issues and solutions to set precedence for the future conduct and reporting of studies using Twitter for this purpose. Finally, the research team consisted of psychologists and computer scientists, which ensured that the method for data collection was technologically sound, whilst the research question, analysis and clinical implications were appropriate.

Whilst Twitter was used for data collection to ensure the topic and responses were as naturally occurring as possible, a disclaimer had to be made stating that data from the hashtag would be used for research purposes. Therefore, respondents to the hashtag may have changed their responses or decided to tweet using the hashtag because they were aware of the research context. A further limitation of the study was that only positive views about using Twitter to discuss mental health problems were captured. It is likely that some
individuals may have faced negative experiences when discussing their mental health on the platform and chosen not to engage with the hashtag, or even stopped using Twitter altogether. This means that conclusions regarding the impact of Twitter for people with mental health problems will not be truly representative and future work is required to explore any negative experiences that people may have encountered when discussing mental health problems on the platform. The tweet circulating the hashtag was written in English, which may have prevented people who were not English speakers from responding and limits the generalisability of the findings. Furthermore, whilst the visibility of responses to the hashtag was beneficial for instigating dialogue between users, viewing other users’ reasons for tweeting about mental health may have influenced subsequent responses to the hashtag.

An additional limitation of the methods used in this study was that it could not be confirmed whether respondents to the hashtag actually did actively discuss mental health problems on Twitter. This limitation could have been overcome through collecting further tweets from users’ profiles who responded with the hashtag, but this was deemed to be unethical due to personally profiling individuals. Ordinarily, demographic and clinical information such as age, gender, employment and diagnosis could be collected if using traditional survey or interview methods. However, the collection of this information was not possible because it was not feasible, ethical or practical to individually contact respondents and request these details or to attempt to collect this information from their Twitter profiles. Therefore, we were unable to characterise the sample or make comparisons about tweeting motivations between different demographic or clinical groups. Additionally, the 140-character limit of tweets may have led to potential researcher bias through over-interpretation of a small number of words. For this reason, the author and primary supervisor analysed the tweets together and coding was reviewed independently by the second supervisor.

Although the tweets collected allowed for interesting interpretations to be made, the 140-character limit of tweets may have left users unable to provide in-depth and rich accounts about their experiences. Specifically, Twitter may be considered a particularly blunt instrument to capture underlying motivations for the instinctive behaviour of tweeting. In typical qualitative interviews, the interviewer would be able to prompt and probe for reasons underpinning discussing mental health on Twitter. For example, some respondents to the hashtag stated that tweeting about mental health was empowering, but it was impossible to ask them to provide the context and individual experiences that determined why it was empowering. This means that whilst a social constructivist approach was adopted, information about context and individual experiences could only be taken from tweets, rather than additional questioning. It is also often assumed that the stories and experiences that participants detail represent what they believe; however, individuals’ thoughts, feelings and behaviours are likely to be a constructed snapshot of their that they choose to share and not necessarily representative of their views at a different time. Moreover, the act of asking individuals to publicly disclose their reasons for tweeting about mental health mean that the
responses can only be attributed to what individuals choose to disclose on the platform, which may be different to explanations users may provide in a different context. Therefore, whilst Twitter can be a time-efficient approach to give individuals the opportunity to participate in research without any associated burdens, awareness of the potential limitations of the context must be highlighted and considered when making conclusions. As such, Twitter research could be considered a stepping stone in qualitative research; conducted prior to interviews or focus groups to identify the content that should be covered.


2.7.1. Idea development

Popular components participants requested during qualitative interviews with service users were online social networking opportunities and moderated forums integrated within DHIs (Berry, Lobban & Bucci, submitted, Chapter 4). Additionally, mental health care staff in focus groups described experiences of service users having received peer support via social media; however, concerns were also expressed about the potential negative impact of social media use (Berry, Bucci & Lobban, 2017a). It was identified through these qualitative methods that social media could be a popular method to help support DHIs or used as a delivery method themselves, but concerns surrounding the impact of such use require further investigation. Specifically, there may be important considerations for the inclusion of social media design features within DHIs if social media use has negative or positive consequences for individuals with SMI. As highlighted in Chapter 7 of this thesis, previous studies have indicated that social media use has the potential to be particularly detrimental for an individual’s mood and self-esteem and can lead to increases in paranoia in primarily non-clinical or adolescent samples. Therefore, this study aimed to empirically explore the relationships between social media use and mood, self-esteem and paranoia in people with SMI to address one of the overall thesis aims of understanding the impact of Internet and smartphone use on symptoms associated with SMI.

2.7.2. Rationale for using the experience sampling method

Previous studies in the field have either used qualitative interviews to explore how individuals feel social media use has affected their mental health and wellbeing or questionnaire-based designs examining retrospective accounts of social media use. The experience sampling method (ESM) is less affected by issues such as recall biases that are associated retrospective recall due to the ability to deliver assessments in the moment, or close to, the occurrence of experiences (Scollon, Kim-Prieto & Diener, 2009). Additionally, the collection of multiple data points allows repeated assessments with short intervals between, which reduces random error variance and improves the detection of change in assessment scores (Myin-Germeys et al., 2009). Therefore, ESM was used to investigate
the relationship between social media use and subsequent mood, self-esteem and paranoia. Smartphones were used to deliver assessments, rather than paper-based diaries for several reasons. First, the implementation of assessments via smartphones fits with the overall ethos of thesis with regards to using new technologies to deliver assessments and interventions. Additionally, a comparison of symptom monitoring between mobile phone and paper-based diaries revealed that symptom monitoring administered via mobile phones significantly correlated with clinician assessments, whereas those collected via paper-based diaries did not (Depp, Kim, Vergel de Dios, Wang, & Ceglowski, 2012). ESM assessments delivered via smartphones were also deemed more appropriate due to the increased privacy of smartphones in comparison with paper-based diaries and the ease of being able to complete smartphone assessments in different locations. Paper-based assessments of these variables were also taken at baseline to characterise the sample and examine any baseline differences between participants with SMI (clinical group) and without SMI (non-clinical group).

2.7.3. Recruitment and participants

Convenience sampling was used to recruit participants in the clinical and non-clinical groups. Clinical participants were recruited via secondary care services in five mental health trusts in the North West and West Midlands of England. The author attended team business meetings in the secondary care NHS mental health services and asked staff to pass the participant information sheet (Appendix 14) and study flyers (Appendix 15) to service users who may be eligible to participate. The author also placed study posters in Trust premises, which contained a brief explanation of the study and contact details for further information (Appendix 16). Recruitment was also supported by the Clinical Research Network through their Clinical Studies Officers. The study was also able to utilise the FAIR (Free Access to Involvement in Research) system used by Greater Manchester Mental Health NHS Foundation Trust. FAIR is an opt-out system, which provides mail outs about research opportunities from the research and development department (https://www.gmmh.nhs.uk/fair). Service users are then able to contact researchers for more information. Study advertisements (Appendix 17) were also placed on research websites to allow individuals to self-refer to the study. As with Study 2, the eligibility criteria were as broad as possible to allow individuals the opportunity to participate. Specifically, individuals were eligible if they: 1) had clinician-confirmed experience of first episode psychosis or diagnosis of DSM-IV schizophrenia-spectrum disorder or bipolar disorder; 2) were 18 years of age or over; 3) were able to speak and read English; 4) were able to provide informed against; 5) were available for a week-long study; 6) reported ownership of a Facebook or Twitter account; and 7) reported using social media at least three times per week.

Non-clinical participants were also recruited through a variety of methods. First, the study was advertised on both University of Manchester and community participation websites (Appendix 18). Study flyers (Appendix 19) and posters (Appendix 20) were also placed in
University buildings, which contained contact details for further information. Clinical Studies Officers also helped to identify participants for the non-clinical group. Participant information sheets were then sent to students (Appendix 21) and non-students (Appendix 22) who expressed an interest in taking part. Individuals in the non-clinical group were eligible to participate if they: 1) self-reported absence of any diagnosis or current experience of mental health problems; 2) were 18 years of age or over; 3) were able to speak and read English; 4) were able to provide informed against; 5) were available for a week-long study; 6) reported ownership of a Facebook or Twitter account; and 7) reported using social media at least three times per week.

All participants received £20 in vouchers in recognition of the time required to participate in the study. University of Manchester students had the option of participating for course credits or vouchers. Additionally, participants who did not own a smartphone were able to borrow one for the duration of the study to minimise barriers to participation. It was decided that the inclusion criteria should include self-reported social media use of at least three times a week because it would not have been possible to explore any change in assessment scores after social media use if participants had not used social media prior to at least some of the assessment time points.

It is challenging to conduct a formal power calculation to determine the sample size in ESM studies because statistical power is determined at multiple levels. However, ESM studies with similar populations have tended to recruit between 20 and 40 participants with SMI (e.g. Gruber, Kogan, Mennin & Murray, 2003; Hartley, Haddock, Vasconcelos e Sa, Emsley & Barrowclough, 2014; Myin-Germeys et al., 2003; Pavlickova, Turnbull, Myin-Germeys, & Bentall, 2015; Oorschot, Lataster, Thewissen, Wichers, & Myin-Germeys, 2012). Therefore, in the current study the aim was to recruit 40 participants in the clinical group and 40 participants in the non-clinical group. Due to a limited recruitment timeframe, a total sample of 25 participants in the clinical and 25 participants in the non-clinical groups completed the study. However, these data were still deemed sufficient for analysis due to the large number of data points completed. A non-clinical group was included in the study to check whether any conclusions drawn regarding the impact of social media use were specific to those experiencing SMI or also applicable to individuals without mental health problems.

### 2.7.4. Baseline and trait measures

Participants were given an assessment pack containing the baseline and trait measures (Appendix 23).

#### 2.7.4.1. Demographic information and self-reported social media use

Participants were given a demographics and general social media use questionnaire (Appendix 24) in order to characterise the sample and compare demographics and social media use across the non-clinical and clinical participant groups. Questions focussed on
participant age, ethnicity, gender, employment status, education level, living arrangements, marital status, social media website use, social media smartphone app use and mediums used to access social media.

2.7.4.2. The Positive and Negative Affect Schedule (PANAS)

The PANAS is a 20 item self-report measure of positive and negative affect (Watson, Clark & Tellegen, 1988). The PANAS includes a set of 10 adjectives relating to positive affect (PA) such as “excited”, “attentive” and “active” and 10 adjectives associated with negative affective (NA) such as “distressed”, “upset” and “irritable” and participants are asked to respond the extent to which they feel the adjectives apply to them on a 5-point Likert scale (1 = very slightly or not at all; 5 = extremely). Scores on each dimension of the scale can range between 10 and 50, with low scores representing lower levels of positive or negative affect and high scores representing higher levels of positive or negative affect. The PANAS has been shown to measure state positive and negative affect when individuals are presented with the adjectives with the question including “indicate to what extent you feel this way right now, that is, at the present moment” and trait positive and negative affect when the question is phrased “indicate to what extent you generally feel this way, that is, how you feel on the average” (Watson et al., 1988). Therefore, the phrasing used for trait assessments of positive and negative affect in this study was “indicate to what extent you generally feel this way”.

The decision to include mood as a variable in the current study was based on current findings in the field indicating that there is a relationship between social media use and mood. However, no published studies had explored this relationship in people who experience SMI. The PANAS has previously been used to explore the relationship between social media use and mood (e.g. Sagioglou & Greitmeyer, 2014; Vogel, Rose, Okdie, Eckles & Franz, 2015) and has shown high internal consistency reliabilities for PA ($\alpha = 0.86$ to $0.90$) and NA ($\alpha = 0.84$ to $0.87$) as well as good construct validity (Crawford & Henry, 2004; Watson et al., 1988).

2.7.4.3. The Rosenberg Self-esteem Scale (RSES)

It has often been debated whether self-esteem should be considered state-like or trait-like (Marsh & Grayson, 1994). Specifically, some have argued that self-esteem fluctuates based on social standing, whilst others view self-esteem as a static personality trait (Donnellan, Kenny, Trzesniewski, Lucas & Conger, 2012). Recent findings have indicated that the most widely used measure of self-esteem (the RSES; Rosenberg, 1979) measures both trait-like and state-like self-esteem (Donnellan, Kenny, Trzesniewski, Lucas, & Conger, 2012). Therefore, in the current study the RSES was included as a trait measure of self-esteem with the question phrased “below is a list of statements dealing with your general feelings about yourself”. The RSES consists of 10 statements and participants are asked to circle
whether they strongly agree, agree, disagree or strongly disagree whether each statement generally applied to them. Example statements include, “At times I think I am no good at all”, “I feel that I have a number of good qualities” and “I take a positive attitude towards myself”. The RSES has shown excellent internal consistency, test-retest reliability ($r = 0.85$ to $0.88$) and demonstrates concurrent, construct and predictive validity (Rosenberg, 1979).

2.7.4.4. The Paranoia Scale

The Paranoia Scale (Fenigstein & Vanable, 1992) is a 20 item self-report measure assessing paranoia on a 5-point Likert scale (1 = not at all applicable; 5 = extremely applicable). Example statements include, “Someone has it in for me”, “Someone is trying to influence my mind” and “I am bothered by people outside, in cars, in stores etc. watching me”. Scores on the scale can range between 20 and 100, with low scores representing lower levels of paranoia and high scores representing higher levels of paranoia. The Paranoia Scale has been used with both clinical and non-clinical participants and has good test-retest reliability ($r = 0.70$) and internal consistency ($\alpha = 0.84$) (Fenigstein & Venable, 1992).

2.7.4.5. The Social Comparison Scale (SCS)

A measure of perceived social rank was included in the study due to previous evidence suggesting that it may be an individual’s tendency to make negative online social comparisons when using social media that can influence mood and self-esteem. Baseline assessments of social rank were measured using the SCS (Allan & Gilbert, 1995). The SCS is a list of 11 pairs of antonyms relating to perceived social rank such as “inferior - superior”, “incompetent - competent” and “unconfident - more confident”. Participant are asked to indicate on a 10-point scale how they feel in comparison to others (e.g. 1 = inferior; 10 = superior). Scores on the scale can range between 10 and 100, with low scores indicating a lower perceived social rank and high scores indicating a higher perceived social rank in comparison to others. The SCS has demonstrated excellent internal consistency in clinical ($\alpha = 0.91$) and non-clinical ($\alpha = 0.88$) samples (Allan & Gilbert, 1995).

2.7.5. ESM measures

A full list of the ESM items is presented in Appendix 25. When completing the ESM assessments, participants were first asked to indicate whether they had used social media since the last text alert they had received by selecting ‘yes’ or ‘no’. If participants answered ‘no’, the following questions listed in this paragraph were missed. If participants selected ‘yes’, they were asked further questions about the social media websites they used, what they did whilst using social media and how they felt about themselves in comparison to others when they were using social media. Specifically, participants were given the option of selecting which social media website they used: ‘Facebook’, ‘Twitter’, ‘Instagram’ or ‘other’ and were able to select multiple websites if more than one had been used since the last text alert. Participants were then asked what they did when they were using social media and
provided with options to select from such as “posted a status/tweet about my daily goings on”, “commented on another person’s status/tweet/picture” and “looked through my Facebook/Twitter/Instagram newsfeed”. Participants could select multiple activities and the different social media behaviours were characterised under three separate categories described by Burke and colleagues (2010): 1) content posting (e.g. “posted a status/tweet about how I was feeling”), direct communication (e.g. “clicked the like button on another person’s status/tweet/picture”) and content consumption (e.g. “looked at a Facebook/Twitter/Instagram friend’s profile”). Finally, participants who stated social media use since the last text alert were asked to complete the 11-item SCS (described in section 2.7.4.5) to answer their current feelings regarding perceived social rank at the time of social media use in comparison to their connections on social media. Therefore, although the SCS was used at baseline and during ESM assessments, the context of the questions was different. Specifically, the baseline assessments asked participants “circle the number at a point which best describes the way you generally see yourself in comparison to others”, whereas the ESM assessments asked participants “indicate how you felt about yourself in comparison to others when you last used social media”.

The remaining questions in the ESM assessments were completed by all participants, regardless of social media use. A question about other forms of communication participants had engaged in since the last text alert was included to account for the possibility that communicating with others may affect mood, self-esteem and paranoia. Participants were asked to indicate whether they had used spoken with another person since the last text alert they had received by selecting ‘yes’ or ‘no’. If participants answered ‘no’, the remainder of this question was skipped. If participants selected ‘yes’, they were to indicate whether this communication was face-to-face, online, via text-message, via telephone or using a messaging smartphone application (multiple options could be selected).

The subsequent items focussed on current mood and were informed by a previous study that used ESM to measure variations in positive affect (PA) and negative affect (NA) in daily life in psychosis (Myin-Germeys, van Os, Schwartz, Stone & Delespaul, 2001). Participants were presented with nine adjectives relating to mood and asked to indicate on a 7-point Likert scale the extent to which the adjectives described their current feelings (1 = not at all; 7 - very). Scores for adjectives describing negative affect such as “down” and “lonely” were combined to give a total value of negative affect for each participant at each time point and scores for adjectives describing PA such as “happy” and “cheerful” were combined to give a total value for PA for each participant at each time point. Higher scores on each domain indicated higher levels of NA and PA and lower scores indicated lower levels of PA and NA.

To measure current feelings of self-esteem, ESM items devised by Thewissen and colleagues (2011) and adapted by Fuller-Tyskiewicz and colleagues (2015) were included in the ESM assessments. Participants were asked the extent to which they agreed with statements: 1) “I am a good person”; 2) “I am a success”; 3) “I am proud of myself”; and 4) “I
like myself” at the time of completing the assessments on a 7-point Likert scale (1 = not at all; 7 = very). Scores for each statement were combined to give a total value for self-esteem for each participant at each time point.

The final four items of the ESM assessments measured paranoia and were taken from a previous study investigating paranoia using ESM (Thewissen et al., 2011). Participants were asked the extent to which they agreed with the statements: 1) “I feel others dislike me”; 2) “I feel that others might hurt me”; 3) “I feel suspicious”; and 4) “I feel safe” at the time of completing the assessments on a 7-point Likert scale (1 = not at all; 7 = very). The final item (“I feel safe”) was reversed scored. Scores for each statement were combined to give a total value for paranoia for each participant at each time point.

2.7.6. Data collection

During the study set-up, six individuals with and without SMI reviewed the trait and ESM measures to provide feedback on the phrasing and length of assessments. Slight amendments were made to the wording used in the demographics questionnaire and ESM assessments based on this feedback. The protocol was also presented to the University of Manchester Experience Sampling Methodology Group to aid decisions regarding assessment length, sample size, participant payment and inclusion of a non-clinical group. Finally, the study was supported by the Clinical Research Network, which requires the study protocol to be peer reviewed before consideration for support. Therefore, the study protocol was reviewed by two researchers’ independent of the research team and the University of Manchester for feedback on the measures, procedure and analysis plans.

Decisions regarding the number of assessments per day and number of days of ESM assessments should be informed by the variability of the constructs of interest and the feasibility of multiple assessments, but at least 6 days are recommended to include week and weekend assessments (Kimhy, Myin-Germeys, Palmier-Claus & Swendsen, 2012). Given the ease of social media access via smartphones, it was decided that a relatively large number of assessments per day would be required to capture periods of social media use and non-social media use. Typically, the number of assessments per day in ESM studies has ranged between five and ten (Palmier-Claus et al., 2011). To minimise participant burden, but capture variability in social media use, six assessments were delivered per day. Therefore, the maximum number of ESM assessments each participant could complete over the study period was 36. As recommended by Hektner and colleagues (2007), each assessment took less than two minutes to complete to minimise participant burden.

Participants had up to 15 minutes to click the text-message link and complete the assessments after each text-message had been received. Text-message alerts were sent between the hours of 10:00 and 21:00, although this could be altered to allow for individual
differences in waking hours. After the data collection period, the researcher returned to see participants to debrief them about the study aims, answer any questions participants had, check for any reasons for missing assessments, collect any loaned smartphones and provide participants with £20 in vouchers.

2.7.7. Data analysis

Between-group differences in age, trait-level mood, self-esteem and paranoia and baseline perceived social rank were calculated using independent t-tests in SPSS Version 22 (SPSS Inc. USA). Between-group differences in demographic variables such as gender, education level and employment and in social media use were calculated using chi-square tests, also in SPSS. ESM data were judged for normality through analysis of skewness and kurtosis and visually inspecting histograms. The hierarchical structure of ESM data, whereby observations are nested within three levels (within participants, within days, within beeps), means that multilevel modelling should be used for analysis because of the violation of the assumption of observation independence. 3-level random intercept models containing in the error structure a random intercept for each participant, a random intercept for each participant-day and participant-beep error term were fitted to explore whether social media use, social media behaviours and perceived social rank predicted mood, self-esteem and paranoia. Estimation was by maximum likelihood.

To test whether the predictor variables of social media use, social media behaviours (content posting, direct communication and content consumption) and perceived social rank predicted the subsequent outcome variables of mood, self-esteem and paranoia, several multilevel linear regression analyses were estimated. ESM assessments of group (clinical and non-clinical) and socialisation (whether a participant had spoken with another person) were included as covariates in the models so that any relationships observed could be attributed to social media use, rather than SMI or other forms of communication. A further set of multilevel linear regressions were estimated by exploring the two-way interaction between group and social media use to identify whether any relationships between social media use and the outcome variables were moderated by SMI. Although specific hypotheses were not made regarding differences in social media use between the clinical and non-clinical groups, odds ratios and the corresponding 95% confidence intervals were calculated through a multiple logistic regression to compare social media use between the two groups.

2.7.8. Ethical considerations

The study received sponsorship from the University of Manchester, ethical approval from NHS North West Greater Manchester East Research Ethics Committee (ref: 16/NW/0821) and approval from the HRA. Local approval was provided by five NHS mental health trusts in the North West and West Midlands of England.
The Code of Human Research Ethics (BPS, 2010) was adhered to throughout the study. Recruitment of participants in the non-clinical group was mainly facilitated through liaising with mental health care staff working in secondary care services who were asked to pass study information to service users. Service users could either contact the author directly themselves or the staff member could provide the person’s contact details on their behalf. It is now considered good practice for staff to ask service users to sign a consent to contact form (Appendix 26) to provide written evidence that service users are happy for their contact details to be passed to the research team. Any individual who expressed an interest in participating was fully informed about the study and sent the participant information sheet via post or email, depending on individual preference. Participants were required to sign two consent forms, one for their own records and one to be kept by the research team. Due to the different limits associated with confidentiality, three separate consent forms were used depending on whether participants were in the clinical group (Appendix 27) or in the non-clinical group (Appendix 28). Participants were reminded prior to completing the trait-level and baseline questionnaires and, once again, before completing ESM assessments that participation was voluntary and they could withdraw at any point during the study without penalty and without having to provide a reason. This gave individuals autonomy over participation and also minimised risk if participants became distressed whilst engaging with ESM assessments.

All paper-based study data were kept in a locked filing cabinet in a locked office at the University of Manchester and consent forms were kept in separate locked filing cabinet to the study data. This ensured confidentiality and maintained the anonymity of participants and their data. Electronic data were encrypted and stored on a password-protected University of Manchester hard drive. The ESM assessments were delivered on a secure and password-protected survey site. Participants were informed about the limits of confidentiality and that whilst everything they said would remain confidential, sometimes the researcher would need to pass on information if participants indicated a risk of harm to themselves or another person (Department of Health, 2003). A risk disclosure protocol was developed for use in the event of risk disclosures, which detailed the procedure the researcher would undertake in the event of participants disclosing risk. This allowed the protection of both the participant and the researcher. Given the nature of the study, there was also the potential that participants could find it upsetting being repeatedly asked questions about their feelings and experiences. Therefore, the researcher telephoned participants throughout the six-day study period to give them the opportunity to ask any questions and for the researcher to enquire about how participants were finding completing the assessments.

2.7.9. **Main strengths and limitations**

The use of ESM assessments, rather than questionnaires requiring long-term retrospective recall was the main strength of this study for several reasons. First, Trull and Ebner-Priemer (2009) have argued that ESM assessments reduce the retrospective biases that can occur
during retrospective recall. This is because ESM avoids the usual pitfalls of individuals only recalling experiences that are: 1) relevant to them (personal heuristics effect); 2) most recent (recency effect); 3) akin to the individual’s current mood or feelings (mood-congruent memory effect); or 4) unique or unusual to the individual (novelty effect). Additionally, ESM assessments are more ecologically valid that retrospective reports due to the opportunity for individuals to participate in their own environment, rather than an unfamiliar setting (Schwartz & Stone, 2007). Furthermore, the use of smartphones rather than paper-based diaries allowed for the time-sensitive acquisition of data; therefore, negating the potential for individuals to back-fill paper diaries if entries had been forgotten (Shiffman & Stone, 1988; Trull & Ebner-Priemer, 2009). Additionally, in studies 2 and 3 of this thesis, both staff and service users described concerns about the privacy of symptom monitoring via paper-based diaries; therefore, individuals may have felt more comfortable in being open and honest due to the additional perceived security associated with a smartphone.

In the qualitative studies, it was identified that individuals perceived social media to have the potential to be both helpful and harmful for people with SMI. However, as described in previous sections of this chapter, the issue with qualitative methodology is the acquisition of knowledge that is constructed by participants’ versions of their own reality. Therefore, if potential underlying variables can be identified initially qualitatively, these can then be explored quantitatively to examine relationships between constructs that an individual may not be able, or want, to tell an interviewer. Therefore, the quantifiable and measurable data gathered using ESM assessments improves the confidence and generalisability of conclusions drawn. The inclusion of a non-clinical group was also a strength of the current study because it allowed the identification that the relationship between social media use and mood was not just prevalent in participants with SMI, but the sample as a whole. Trait-level mood, self-esteem and paranoia were also measured at baseline and did not predict social media use. Although exact directions for the relationship between social media and the outcome variables cannot be established, the inclusion of the trait measures improves confidence in conclusions made regarding the relationship between social media use and mood, self-esteem and paranoia.

One of the main limitations of using ESM in the context of the current study was that people may have become more aware of their social media use. Indeed, during the debriefing meetings with participants, some noted that they had realised the extent of their social media use through being involved in the study. Therefore, participants may have changed their usual social media behaviours accordingly. Additionally, the branching of ESM assessments meant that if participants indicated that they did not use social media, they had fewer items to complete than participants who indicated that they did use social media. Therefore, there may have been some points when participants indicated that they did not use social media to avoid answering the additional questions. This issue could have been solved by adding in additional ‘dummy’ questions for participants who stated that they had not used social
media. During the debrief, participants also spoke about some of the problems they encountered when completing the assessments. For example, a common issue raised was that participants sometimes did not hear the text-message alert so would not be able to complete the assessments in the 15-minute timeframe. Additionally, some participants reported running out of data to access the assessments or being in an area where they had no data or Wi-Fi connection. This will have led to some missing data and lower completion rates than perhaps would have been obtained via a different method of assessment delivery.

Participant demographics and recruitment methods may also mean that the findings have limited generalisability. Specifically, most of the participants were White British, recruitment was limited to the North West and West Midlands of England and there were stark differences between the clinical and non-clinical group with regards to employment status and education level. Therefore, findings may not be generalisable and representative of the population as a whole. Generalisability of findings may also be affected by the recruitment methods because participants either self-referred to the study or were provided with information by members of mental health care staff. This could have meant that people who were particularly interested in social media may have participated or may have been referred by staff.
Chapter 3: Acceptability of interventions delivered online and through mobile phones for people who experience severe mental health problems: a systematic review

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Acceptability of interventions delivered online and through mobile phones for people who experience severe mental health problems: a systematic review

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3.1. Abstract

**Background:** Psychological interventions are recommended for people with severe mental health problems (SMI). However, barriers exist in the provision of these services and access is limited. Therefore, researchers are beginning to develop and deliver interventions online and via mobile phones. Previous research has indicated that interventions delivered in this format are acceptable for people with SMI. However, a comprehensive systematic review is needed to investigate the acceptability of online and mobile phone-delivered interventions for SMI in depth.

**Objective:** This systematic review aimed to: 1) identify the hypothetical acceptability (acceptability prior to or without the delivery of an intervention) and actual acceptability (acceptability where an intervention was delivered) of online and mobile phone-delivered interventions for SMI; 2) investigate the impact of factors such as demographic and clinical characteristics on acceptability; and 3) identify common participant views in qualitative studies that pinpoint factors influencing acceptability.

**Methods:** We conducted a systematic search of the databases PubMed, Embase, PsycINFO, CINAHL, and Web of Science in April 2015, which yielded a total of 8017 search results, with 49 studies meeting the full inclusion criteria. Studies were included if they measured acceptability through participant views, module completion rates, or intervention use. Studies delivering interventions were included if the delivery method was online or via mobile phones.

**Results:** The hypothetical acceptability of online and mobile phone-delivered interventions for SMI was relatively low, while actual acceptability tended to be high. Hypothetical acceptability was higher for interventions delivered via text-messages than by emails. The majority of studies that assessed the impact of demographic characteristics on acceptability reported no significant relationships between the two. Additionally, actual acceptability was higher when participants were provided remote online support. Common qualitative factors relating to acceptability were safety and privacy concerns, the importance of an engaging and appealing delivery format, the inclusion of peer support, computer and mobile phone literacy, technical issues, and concerns about the impact of psychological state on intervention use.

**Conclusions:** This systematic review provides an in-depth focus on the acceptability of online and mobile phone-delivered interventions for SMI and identified the need for further research in this area. Based on the results from this review, we recommend that researchers measure both hypothetical and actual acceptability to identify whether initial perceptions of online and mobile phone-delivered interventions change after access. In addition, more focus is needed on the potential impact of demographic and clinical characteristics on acceptability. The review also identified issues with module completion rates and intervention use as measures of acceptability. We therefore advise researchers to obtain
qualitative reports of acceptability throughout each phase of intervention development and testing. Further implications and opportunities for future research are discussed.

**Keywords**: mHealth; eHealth; severe mental health; psychosis; bipolar disorder; personality disorder; severe mental health problems (SMI); acceptability

### 3.2. Introduction

The exact definition of severe mental health problems (SMI) is inconsistent in the literature. Discussions have proposed that the term should be applied to describe the duration and levels of functioning in an individual, rather than focusing on specific diagnoses (Parabiaghi et al., 2006; Ruggeri et al., 2000). However, much of the psychological research in SMI specifically uses diagnostic criteria for participant recruitment (Cooke, 2014). Due to the reliance on diagnosis for recruitment in this field of research, we used a diagnostic definition of SMI for this review. Online and mobile phone-delivered interventions have the potential to improve access to evidence-based interventions for SMI; therefore, we used the Improving Access to Psychological Therapies (IAPT) initiative definition of SMI. IAPT is a United Kingdom-based National Health Service (NHS) program, which aims to increase access and availability of evidence-based psychological therapies and includes diagnoses of psychosis, bipolar disorder, and personality disorders as SMI (IAPT, 2015). The initiative is in line with current recommendations that people experiencing SMI be provided access to evidence-based psychological interventions, in addition to prescribed medications (National Institute for Health and Care Excellence, NICE, 2009; 2014a; 2014b).

A range of barriers, including perceived stigma (Clement et al., 2015), uncertainty among practitioners about clinical effectiveness (Morriss, 2008), cost pressures, and lack of trained facilitators (Berry & Haddock, 2008), means that many people who could benefit from psychological interventions are often unable or unwilling to access them. Limited availability and access to psychological therapies for SMI was reflected in a survey by the charity Mind, which reported that 20% of respondents had waited for >1 year to access psychological therapies and <30% had received access within 3 months of referral (Mind, 2013). In addition, a recent report by the NHS’s Mental Health Taskforce highlighted that respondents’ “most important” priorities for NHS mental health service improvement were early support and intervention for people experiencing SMI and increased access to psychological therapies (NHS England, 2015). In an attempt to reduce barriers and provide increased access to helpful interventions, researchers have investigated the role that novel technologies could play in the provision of evidence-based interventions for people with SMI.

Interventions delivered online (ie, websites) and via mobile phones (ie, smartphones, text-messages, alerts, and apps) have been reported to be acceptable and show potential efficacy for the enhancement of self-care practices in individuals across a broad field, including diabetes (Cotter et al., 2014; Holtz & Lauckner, 2012), cancer (Northouse et al.,
2014), coronary heart disease (Park, Howie-Esquivel, Chung, & Dracup, 2014), and psoriasis (Bundy et al., 2013). Additionally, online and mobile phone-delivered approaches have been used to implement evidence-based interventions for the promotion of health-related behaviours such as smoking cessation (Civljak, Stead, Hartmann-Boyce, Sheikh, & Car, 2013; Whittaker et al., 2012), physical activity (Hamel, Robbins, & Wilbur, 2011), and weight reduction (Stephens & Allen, 2013). More recently, interventions have been delivered online and via mobile phones in an attempt to, among other things, reduce barriers associated with accessing mental health care (Lal & Adair, 2014) and to empower service users with greater choice and control over their health care needs (Hollis et al., 2015).

Online and mobile phone-delivered interventions have been shown to be feasible, acceptable, and effective for depression and anxiety disorders (Ebert et al., 2015; Richards & Richardson, 2012), eating disorders (Schlegl et al., 2015), and substance use (Marsch et al., 2014); these interventions have since been extended to people who experience psychosis (Alvarez-Jimenez et al., 2014; van der Krieke, 2014), bipolar disorder (Hidalgo-Mazzei, Mateu, Reinares, Matic, Vieta, & Colom, 2015) and personality disorders (Rizvi, Dimeff, Skutch, Carroll, & Linehan, 2011), or the so-called severe mental health problems (SMI).

Levels of Internet use among people with mental health problems, including SMI, are similar to that of the general population (Trefflich, Kalckreuth, Mergl, & Rummel-Kluge, 2015). In a survey of service users in a community psychiatric program, 59.3% of respondents reported using the Internet and 85.7% reported using mobile phones (Carras, Mojtabai, Furr-Holden, Eaton, & Cullen, 2014). Additionally, a survey-based study for individuals with SMI reported that 72% of participants surveyed owned a mobile phone, while some expressed an interest in receiving health care services, such as appointment and medication reminders, through mobile devices (Ben-Zeev et al., 2013a). A meta-analysis conducted in 2015 reported mobile phone ownership of around 81.4% in people with psychosis, reflecting similar ownership to that in the general population (Firth et al., 2016). This meta-analysis also reported that many of the people who were surveyed expressed favorable attitudes toward mobile phone-delivered self-management strategies, for example, symptom monitoring, appointment and medication reminders, and providing an avenue for service user-provider communication. However, a more recent study of 100 individuals experiencing SMI reported high levels of traditional mobile phone ownership (85%) but lower levels of smartphone ownership (37%) (Glick, Druss, Pina, Lally, & Conde, 2015). The comparatively lower rates of smartphone ownership suggest that some individuals with SMI might be excluded from being able to receive interventions via smartphones; however, current levels of interest and traditional mobile phone usage in this population suggest that many would have the capabilities needed to receive online and mobile phone-delivered interventions.

Previous systematic reviews of online and mobile phone-delivered interventions for people with SMI have tended to have broad focus on acceptability, feasibility, and efficacy, rather
than provide an in-depth review of one outcome. For example, a review from 2014 examined the effectiveness of online, social media, and mobile technologies for people with psychosis (Alvarez-Jimenez et al., 2014). The authors found that interventions delivered online and via mobile devices are often feasible and acceptable, and show potential efficacy among this group. Another review of e-mental health self-management for psychotic disorders found that individuals were willing to engage with online interventions and that such approaches can be effective for the promotion of self-management strategies (van der Krieke et al., 2014). More recently, a review of mobile device and eHealth interventions for people who have received a psychotic or bipolar-related diagnosis reported that interventions delivered via these modalities are both feasible and acceptable (Naslund et al., 2015). Finally, a 2015 review examined the feasibility of smartphone apps for individuals with schizophrenia (Firth & Torous, 2014). The authors highlighted that the number of studies using smartphone apps for schizophrenia are limited, but they concluded that there was evidence for high feasibility due to satisfaction reports and levels of engagement. The lack of high-quality, large-scale, definitive research prevents any conclusive statements from being made. The conclusion that online and mobile phone-delivered interventions are acceptable for people with SMI has been largely based on module completion rates, intervention use, and participants' views. However, reviews have not captured the complex nature of acceptability. Specifically, reviews have not included studies investigating participant attitudes, views, and interest in interventions delivered online and via mobile phones. Additionally, potential factors that may influence acceptability, such as demographic, clinical, and intervention characteristics, have yet to be synthesized. Finally, common qualitative themes relating to the acceptability of online and mobile phone-delivered interventions for SMI have not yet been identified in systematic reviews.

In order to more closely examine acceptability, we sought to examine both the hypothetical and actual acceptability of interventions delivered online and via mobile phones for people with SMI. We define hypothetical acceptability as the acceptability of online and mobile phone-delivered interventions prior to or without an intervention being delivered, measured by participants' interest in and willingness to engage with these interventions. We define actual acceptability as the acceptability of an intervention that participants have received online or via mobile phones, which can be measured by module completion rates, intervention use, and participant views after an intervention has been delivered.

Therefore, this systematic review aimed to: 1) explore whether interventions delivered online and via mobile phones are hypothetically or actually acceptable for people with SMI, 2) investigate whether participant and intervention-related factors influence acceptability, and 3) identify common participant views about acceptability from qualitative studies.
3.3. Methods

3.3.1. Search strategy

This review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA; Moher et al., 2009). We identified studies for inclusion through searching the electronic databases PubMed, Embase, PsycINFO, CINAHL, and Web of Science. The first set of search terms were related to SMI: “psychosis” OR “psychotic” OR “psychoses” OR “schizophr*” OR “schizoaffective” OR “bipolar disorder” OR “mood disorder” OR “personality disorder” OR “severe mental illness” OR “serious mental illness” OR “severe mental health” OR “serious mental health” OR “SMI”. The second set of search terms were related to online and mobile technologies: “computer” OR “technolog*”, OR “digital” OR “internet” OR “online” OR “website” OR “web-based” OR “mobile” OR “phone” OR “smartphone” OR “text message” OR “SMS” OR “mHealth” OR “eHealth”. These sets of search terms were linked with the Boolean operator AND.

To increase the likelihood of obtaining all of the relevant studies in the area, we took the following steps: 1) we included unpublished materials such as conference abstracts in the search; where abstracts were relevant, we contacted the lead authors for full results; 2) we used the “cited-by” function in Google Scholar to identify any eligible papers that had cited the included studies; 3) we screened references lists of included studies to gather any papers that the search terms had not identified; and 4) we contacted key authors in the area who were identified as potentially having further unpublished results.

We produced a flowchart of each stage of the database search, with the search yielding a total of 8017 papers (Figure 2).
3.3.2. **Eligibility Criteria**

We conducted full database searches in April 2015, with the inclusion and exclusion criteria identified prior to the collection period. Due to the relatively new nature of the field of the Internet and mobile phones and mental health, we considered only studies from 2005–2015. We included studies if they recruited participants with a diagnosis of psychosis, bipolar disorder, or personality disorder. Studies where these diagnoses were self-reported (not confirmed by a clinician or through an initial assessment) were still included due to Web-based recruitment strategies often used in the field. We defined interventions as a method used online or via a mobile phone with the aim of modifying a participant’s behaviour or psychological well-being. Therefore, we aimed to provide a broad range of interventions, from more simplistic interventions, such as medication and appointment reminders, to more complex interventions, such as cognitive behavioural therapy and interactive...
psychoeducation. We included studies if they involved the delivery of an intervention online or via a mobile phone or if they investigated participants’ interest in and willingness to receive interventions delivered in these formats. Supported interventions (where participants were supported by a trained facilitator or where online and mobile phone-delivered interventions were implemented in conjunction with face-to-face therapy) were also included because some of the studies offered optional support and often continued face-to-face treatment as usual. Finally, we included studies if they measured acceptability in the form of module completion rates, intervention use, or participant views. Therefore, we included qualitative, quantitative, or mixed-methods study designs.

We excluded studies if the intervention was solely focused on diagnostic assessments, mood assessments, or symptom monitoring where feedback was not provided to participants. In addition, we excluded studies involving telepsychiatry, for example, video and telephone calls. We included studies that involved a combination of caregivers and service users, but we report characteristics and outcomes only for the participants from the service user sample. Studies that involved mixed samples were excluded if ≤50% of the participants sampled had a diagnosis of psychosis, bipolar disorder, or personality disorder. For those where >50% of participants had 1 of these diagnoses, we contacted the authors of these papers for separate results for participants with a diagnosis of psychosis, bipolar disorder, and personality disorders.

A key aim of this systematic review was to determine factors (eg, demographic and clinical characteristics) that could influence the acceptability of online and mobile phone-delivered interventions for SMI. Therefore, we screened included studies for information about the analysis and findings relating to potential predictors of acceptability. We considered relationships between factors and acceptability as significant if they were below the .05 level of significance. However, due to the early nature of this research, we also report associations on the 10% level.

3.3.3. Study Selection

We excluded studies on the title level if there was no mention of online or mobile phone-delivered interventions or mental health. The first author and an independent researcher screened the 230 paper abstracts for eligibility, with a moderate level of agreement obtained (κ=.66). This moderate level of agreement was primarily due to the first author being overly inclusive while screening abstracts due to the secondary outcome nature of acceptability. The research team resolved any disagreements until a consensus was reached about study inclusion. The first author screened full texts before the research team discussed and agreed on final papers for inclusion. We identified 3 additional studies through contacting authors and reference screening. We contacted 4 authors for clarification because their studies included participants with a diagnosis of major depressive disorder, and 3 of these
authors provided additional unpublished material, which we have included in this review. The final number of included studies after screening on title, abstract, and full paper level was 49.

3.4. Results

We explored the hypothetical acceptability of online and mobile phone-delivered interventions for SMI in 7 studies (1821 participants; sample size range 51–1237). The mean age of participants in studies where mean age was reported (n=4) was 32.73 years (range 18.33–46). Studies were conducted in the United States (n=3), the United Kingdom (n=2), Canada (n=1), and India (n=1). Table 2 details the study and participant characteristics.
Table 2. Characteristics of studies that measured the hypothetical acceptability of online and mobile phone-delivered interventions for severe mental health problems.

<table>
<thead>
<tr>
<th>Author(s), year, location</th>
<th>Diagnosis</th>
<th>Proposed intervention and delivery method</th>
<th>Study design and recruitment setting</th>
<th>Sample size (n)</th>
<th>Mean (SD) age, years</th>
<th>Sex (% male)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ben-Zeev et al(^{ac}), D Ben-Zeev, PhD, written communication, May 2015(^{ac}); 2013, US</td>
<td>Clinician-confirmed schizophrenia, schizoaffective disorder, or bipolar disorder</td>
<td>Mobile and online: medication or appointment reminders; check-ins with provider; information about services</td>
<td>Survey; Thresholds (psychiatric rehabilitation agency)</td>
<td>Total: 1237; schizophrenia or schizoaffective disorder: 904; bipolar disorder: 333</td>
<td>Overall sample (including other diagnoses): 61</td>
<td>Overall sample (including other diagnoses): 46 (12)</td>
</tr>
<tr>
<td>Birnbaum et al, Rizvi, Correll, &amp; Kane (2015); A Rizvi, MA, written communication, May 2015(^{bc}); 2015, US</td>
<td>Clinician-confirmed: psychotic spectrum disorders or bipolar disorder</td>
<td>Online (social media): clinicians approaching during active symptom emergence; obtaining help/advice via social media.</td>
<td>Semi-structured interviews; Zucker Hillside Hospital (adult and adolescent inpatient units and outpatient departments)</td>
<td>Total: 51; Psychotic disorders: 40; bipolar disorder: 11</td>
<td>Psychotic disorder: 18.75</td>
<td>27.27</td>
</tr>
<tr>
<td>Bogart et al; 2014, UK</td>
<td>Clinician-confirmed: psychotic disorders</td>
<td>Mobile: medication reminders</td>
<td>Survey; Oxleas National Health Service Foundation Trust inpatient units</td>
<td>85</td>
<td>NR(^{d})</td>
<td>55</td>
</tr>
<tr>
<td>Jain, Koolwal, Kumar &amp; Gupta; 2015, India</td>
<td>Clinician-confirmed: schizophrenia, bipolar disorder, or psychosis NOS(^{e})</td>
<td>Mobile and online: medication or appointment reminders; check-ins with provider; information about services; telephonic follow-ups; helpline for crisis</td>
<td>Survey; 3 free tertiary care hospitals providing inpatient and outpatient care</td>
<td>Total: 201; schizophrenia:106; bipolar disorder: 65; psychosis NOS: 30</td>
<td>Median: 40</td>
<td>83</td>
</tr>
<tr>
<td>Lal et al; 2015, Canada</td>
<td>Clinician-confirmed: FEP(^{f})</td>
<td>Mobile and online: social media for information and support; medication or appointment reminders/scheduling; information; decision-making tools; contact with provider; coping skills</td>
<td>Survey; 2 specialised early intervention programmes for FEP</td>
<td>67</td>
<td>25.6 (5.1)</td>
<td>76.1</td>
</tr>
<tr>
<td>Miller, Stewart, Schrimsher, Peeples, &amp; Buckley 2015, US</td>
<td>Clinician-confirmed: schizophrenia or schizoaffective disorder</td>
<td>Mobile and online: medication or appointment reminders; contact with doctor</td>
<td>Survey; Georgia Regents University Inpatient Psychiatry Unit or Adult Psychiatry Outpatient Clinic</td>
<td>80</td>
<td>41 (13)</td>
<td>51</td>
</tr>
<tr>
<td>Sanghara, Kravariti, Jakobsen, &amp; Okocha (^{ab}); 2010, UK</td>
<td>Clinician-confirmed: psychotic disorders</td>
<td>Mobile: willingness to receive text-messages from the Trust</td>
<td>Survey; Oxleas National Health Service Foundation Trust inpatient units</td>
<td>100</td>
<td>NR</td>
<td>Overall sample (including other diagnoses): 59.57</td>
</tr>
</tbody>
</table>

\(^{a}\)Study also included participants with different diagnoses; results for these participants are not reported in this review.

\(^{b}\)Study included data from caregivers or clinicians, or both; results from these participants are not reported in this review.

\(^{c}\)Study results presented in multiple papers or provided through personal communication.
NR: not reported
NOS: not otherwise specified
First episode psychosis
The actual acceptability of online and mobile phone-delivered interventions for people with SMI was measured in 42 studies (2226 participants; sample size range 4–311). The mean age of participants across the studies where mean age was (n=27) was 40.61 years (range 27–48.8). The average number of intervention modules per session was 8.5 (range 4–20), while the average intervention duration was 17 weeks (range 2–78). The majority of the studies were conducted in the United States (n=15) and Australia (n=9), while the remainder were from Finland (n=6), the United Kingdom (n=5), the Netherlands (n=4), Canada (n=1), Sweden (n=1), and the Czech Republic (n=1). Table 3 details the study and participant characteristics.
Table 3. Characteristics of studies that measured the actual acceptability of online and mobile phone-delivered interventions for SMI.

<table>
<thead>
<tr>
<th>Project, location, diagnosis, and intervention</th>
<th>Author(s) &amp; year</th>
<th>Study design</th>
<th>Recruitment setting</th>
<th>Intervention duration and module/session numbers</th>
<th>Sample size (n)</th>
<th>Mean (SD) age, years</th>
<th>Sex (% male)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HORYZONS Australia</td>
<td>Alvarez-Jimenez et al 2013</td>
<td>Uncontrolled pilot study</td>
<td>Early Psychosis Prevention and Intervention Centre (EPPIC, Melbourne)</td>
<td>4 weeks 7 modules</td>
<td>20</td>
<td>20.3 (2.7)</td>
<td>50</td>
</tr>
<tr>
<td>Clinician confirmed: FEP or mood disorder with psychotic features</td>
<td>Gleeson et al 2013</td>
<td>Qualitative analysis of uncontrolled pilot study</td>
<td>Early Psychosis Prevention and Intervention Centre (EPPIC, Melbourne)</td>
<td>4 weeks 7 modules</td>
<td>20</td>
<td>20.3 (2.7)</td>
<td>50</td>
</tr>
<tr>
<td>Online interactive psychosocial interventions &amp; moderated social networking.</td>
<td>Lederman, Wadley, Gleeson, Bendall, &amp; Alvarez-Jimenez 2014</td>
<td>Qualitative analysis of uncontrolled pilot study</td>
<td>Early Psychosis Prevention and Intervention Centre (EPPIC, Melbourne)</td>
<td>4 weeks 7 modules</td>
<td>20</td>
<td>20.3 (2.7)</td>
<td>50</td>
</tr>
<tr>
<td>Mental.Net Finland</td>
<td>Kuosmanen et al 2009</td>
<td>Randomized Controlled Trial (RCT): 3 conditions: IT-based education (IT); conventional education (CE); standard care (SC)</td>
<td>9 acute inpatient wards in 2 psychiatric hospitals</td>
<td>'About' a month 5 sessions</td>
<td>Total: IT: 311 CE: 39.1 (12.6) SC: 37.9 (12.8)</td>
<td>IT: 61 CE: 61 SC: 55</td>
<td></td>
</tr>
<tr>
<td>Clinician confirmed: Schizophrenia spectrum psychosis</td>
<td>Häätönen, Suhonen, Warro, Pitkänä, &amp; Välimäki 2010</td>
<td>Qualitative analysis of RCT: 3 conditions: IT-based education; conventional education; standard care</td>
<td>9 acute inpatient wards in 2 psychiatric hospitals</td>
<td>'About' a month 5 sessions</td>
<td>Total: IT: 16 CE: 6 SC: 4</td>
<td>35.7 (11.92)</td>
<td>68.75</td>
</tr>
<tr>
<td>Online nurse-supported patient education</td>
<td>Kuosmanen, Jakobsson, Hyttinen, Koivunen, &amp; Välimäki 2010</td>
<td>Uncontrolled pilot study</td>
<td>2 local service user mental health associations</td>
<td>Not applicable (NA) (usability testing)</td>
<td>21</td>
<td>Not reported (NR)</td>
<td>48</td>
</tr>
<tr>
<td>Authors</td>
<td>Study Design</td>
<td>Number of Participants</td>
<td>Comparison Group</td>
<td>Mean (SD)</td>
<td>IT:</td>
<td>CE:</td>
<td>SC:</td>
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<tr>
<td>Pitkänen et al 2012</td>
<td>Further analysis of RCT: 3 conditions: IT-based education; conventional education; standard care</td>
<td>9 acute inpatient wards in 2 psychiatric hospitals</td>
<td>‘About’ a month 5 sessions</td>
<td>Total: 311 IT: 100 CE: 106 SC: 105</td>
<td>37.3 (12.4)</td>
<td>39.1 (12.6)</td>
<td>37.9 (12.8)</td>
</tr>
<tr>
<td>Anttila, Välimäki, Hätönen, Luukkaala, Kaila 2012</td>
<td>Further analysis of RCT: 3 conditions: IT-based education; conventional education; standard care (Reports on the IT education group)</td>
<td>9 acute inpatient wards in 2 psychiatric hospitals</td>
<td>‘About’ a month 6 sessions</td>
<td>100</td>
<td>37.2 (12.2)</td>
<td>NR</td>
<td>50</td>
</tr>
<tr>
<td>Laine, Anttila, &amp; Välimäki 2015</td>
<td>Phase 1: Qualitative needs assessment; Phase 2: Preliminary evaluation feedback</td>
<td>Psychiatric rehabilitation unit for adolescents in 1 hospital</td>
<td>N/A (felt needs and initial thoughts)</td>
<td>Phase 1: 6 Phase 2: 2</td>
<td>NR</td>
<td>NR</td>
<td></td>
</tr>
<tr>
<td>Beating Bipolar UK Clinic confirmed: Bipolar disorder Online interactive psychoeducation plus moderated discussion forum</td>
<td>Focus groups</td>
<td>Participants from another part of the study</td>
<td>N/A (focus groups)</td>
<td>8</td>
<td>NR</td>
<td>NR</td>
<td></td>
</tr>
<tr>
<td>Barnes et al 2011</td>
<td>RCT: 2 conditions: Beating Bipolar plus TAU; TAU only</td>
<td>Primary care practices &amp; community mental health teams. Case files from the Mental Health Research Network Cymru (Wales). Members of the Manic Depression Fellowship in Wales through local group coordinators</td>
<td>4 months 8 modules</td>
<td>Total: 50 Beating Bipolar: 24 TAU: 26</td>
<td>Beating Bipolar: 42.7 (11.4)</td>
<td>Beating Bipolar: 44.7 (9.9)</td>
<td>Beating Bipolar: 45.8</td>
</tr>
<tr>
<td>Poole et al. 2012</td>
<td>Qualitative analysis of RCT: 2 conditions: Beating Bipolar plus TAU; TAU only</td>
<td>Primary care practices &amp; community mental health teams. Case files from the Mental Health Research Network Cymru (Wales). Members of the Manic Depression Fellowship in Wales through local group coordinators</td>
<td>4 months 8 modules</td>
<td>Total: 20 High users: 14 Low users: 6</td>
<td>NR</td>
<td>High users: 57.14</td>
<td>Low users: 83.33</td>
</tr>
<tr>
<td>Health Steps for Bipolar Disorder Australia</td>
<td>RCT: 2 conditions:</td>
<td>Online recruitment</td>
<td>12 months 20 sessions</td>
<td>Total: 233 Health Steps: 40.9</td>
<td>Health Steps: 26.5</td>
<td></td>
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</tr>
<tr>
<td>Study ID</td>
<td>Country</td>
<td>Study Design</td>
<td>Conditions</td>
<td>Duration</td>
<td>Sample Size</td>
<td>Improvement</td>
<td>Comments</td>
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<tr>
<td><strong>FOCUS</strong></td>
<td>US</td>
<td>Pilot usability testing</td>
<td>NR</td>
<td>NR</td>
<td>12</td>
<td>45</td>
<td>67</td>
</tr>
<tr>
<td>Ben-Zeev et al. 2013</td>
<td></td>
<td>Pre-post single group field trial</td>
<td>Community based treatment programmes</td>
<td>1 month</td>
<td>3 prompts daily</td>
<td></td>
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<tr>
<td><strong>Personal control in Rehabilitation (PCR)</strong></td>
<td>The Netherlands</td>
<td>Uncontrolled pilot study</td>
<td>NR</td>
<td>NR</td>
<td>Main study: 60</td>
<td>Main study: NR</td>
<td>Focus group: 73.68</td>
</tr>
<tr>
<td>de Leeuw, van Splunteren, &amp; Boerema 2012</td>
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<tr>
<td><strong>PRISM</strong></td>
<td>US</td>
<td>Uncontrolled pilot study</td>
<td>NR</td>
<td>2 weeks</td>
<td>4 assessment prompts daily</td>
<td>10</td>
<td>41 (13.7)</td>
</tr>
<tr>
<td>Depp et al. 2015</td>
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<tr>
<td><strong>MATS</strong></td>
<td>US</td>
<td>Uncontrolled pilot study</td>
<td>NR</td>
<td>12 weeks</td>
<td>3 assessment</td>
<td>8</td>
<td>NR</td>
</tr>
<tr>
<td>Clinician confirmed:</td>
<td>Granholm, Ben-Zeev, Link, Bradshaw, &amp; Holden 2012</td>
<td>Uncontrolled pilot study</td>
<td>Outpatient residential &amp; community settings in the Veterans Affairs San Diego Health care System &amp; the San Diego County Mental Health System</td>
<td>12 weeks</td>
<td>12 messages sent each day</td>
<td>Total: 55</td>
<td>Completers: 42</td>
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<tr>
<td>Schizophrenia or schizoaffective disorder</td>
<td>Mobile symptom monitoring plus CBT techniques</td>
<td></td>
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<tr>
<td>MHEN</td>
<td>Forchuk, Donelle, Ethridge, &amp; Warner*, L Warner, MSc, written communication, June 2015; 2015</td>
<td>Secondary analysis of mixed methods delayed implementation study</td>
<td>Health care providers from 4 community mental health agencies</td>
<td>18 months</td>
<td></td>
<td>Total: 258</td>
<td>Psychotic disorder: 234 Personality disorder: 24</td>
</tr>
<tr>
<td>Canada</td>
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<tr>
<td>Clinician confirmed:</td>
<td>Mobile and online personal health records, mood monitoring, prompts and reminders, health journals, and secure messaging with mental health professionals</td>
<td></td>
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<tr>
<td>Personality disorder or psychotic disorder</td>
<td>Coping with Voices US</td>
<td>Open pilot study</td>
<td>4 community mental health clinics</td>
<td>10 sessions</td>
<td>21</td>
<td>40.1 (13.63)</td>
<td>62</td>
</tr>
<tr>
<td>Clinician confirmed:</td>
<td>Psychotic disorder</td>
<td></td>
<td></td>
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<tr>
<td>Online logs, exercises, and games based on CBT principles &amp; coping techniques</td>
<td></td>
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</tr>
<tr>
<td>Sweden</td>
<td>Holländare, Eriksson, Lövgren, Humble, &amp; Boersma 2015</td>
<td>Uncontrolled pilot study</td>
<td>Letters sent to service users on a psychiatry database held by Region Örebro County</td>
<td>6 weeks</td>
<td>6 modules</td>
<td>4</td>
<td>48.75 (14.29)</td>
</tr>
<tr>
<td>Clinician confirmed:</td>
<td>Bipolar disorder Type II</td>
<td></td>
<td></td>
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<tr>
<td>Online CBT with psychoeducation, emotion regulation, sleep quality, cognitive restructuring, long-term goals, &amp; relapse prevention</td>
<td></td>
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</tr>
<tr>
<td>Location</td>
<td>Clinician confirmed:</td>
<td>Study Type</td>
<td>Referrals &amp; advertisements at the Zucker Hillside Hospital &amp; Massachusetts Hospital</td>
<td>Duration</td>
<td>Group:</td>
<td>Symptoms</td>
<td>Referrals &amp; advertisements at the Zucker Hillside Hospital &amp; Massachusetts Hospital</td>
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<tr>
<td>DHFS</td>
<td>US</td>
<td>Pilot observation study</td>
<td>Referrals &amp; advertisements at the Zucker Hillside Hospital &amp; Massachusetts Hospital</td>
<td>4 weeks</td>
<td>28</td>
<td>Schizophrenia group: 16</td>
<td>Bipolar disorder group: 12</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>Bipolar disorder</td>
<td>Uncontrolled pilot study</td>
<td>Service users hospitalized in a psychiatric department or attending a day hospital programme</td>
<td>12 modules</td>
<td>12</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>MoodSwings (MS) &amp; MoodSwings Plus (MS-Plus)</td>
<td>Australia</td>
<td>Uncontrolled pilot study</td>
<td>Referrals from service providers &amp; online</td>
<td>5 core modules; 3 booster modules</td>
<td>12</td>
<td>41.92 (11.16)</td>
<td>16.7</td>
</tr>
<tr>
<td>Unites States</td>
<td>Bipolar disorder</td>
<td>Uncontrolled pilot study</td>
<td>Online advertisements</td>
<td>90 days</td>
<td>64</td>
<td>43 (12.5)</td>
<td>12.7</td>
</tr>
<tr>
<td>FIMM</td>
<td>US</td>
<td>Two uncontrolled pilot studies</td>
<td>Outpatient mood disorders programme of the Warneford Hospital &amp; Oxford Health</td>
<td>120 days</td>
<td>Total: 19 Pilot 1:</td>
<td>37.2 (11.7)</td>
<td>31.6</td>
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<tr>
<td><strong>Clinician confirmed:</strong></td>
<td><strong>Bipolar disorder</strong></td>
<td><strong>In-person psychoeducation followed by online or mobile mood monitoring and graphical reports</strong></td>
<td><strong>Foundation NHS Trust</strong></td>
<td><strong>14 Pilots 2:</strong></td>
<td><strong>5</strong></td>
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<tr>
<td><strong>ORBIT</strong></td>
<td><strong>Australia</strong></td>
<td><strong>Self-reported:</strong> Late stage bipolar disorder</td>
<td><strong>CREST.BD (international research &amp; knowledge exchange network) website, Facebook, &amp; Twitter pages</strong></td>
<td><strong>3 weeks</strong></td>
<td><strong>26</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Bipolar Education Programme (BEP)</strong></td>
<td><strong>Australia</strong></td>
<td><strong>Clinician confirmed:</strong> Bipolar disorder</td>
<td><strong>Black Dog Institute Mood Disorders clinic, the Black Dog Institute website, community mental health organizations, general practitioners &amp; psychiatrists, &amp; the print media</strong></td>
<td><strong>8 weeks</strong></td>
<td><strong>BEP:</strong> 16</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td><strong>Online psychoeducation, mood charts, and support from ‘informed supporters’ via email</strong></td>
<td><strong>Black Dog Institute Mood Disorders clinic, the Black Dog Institute website, community mental health organizations, general practitioners &amp; psychiatrists, &amp; the print media</strong></td>
<td><strong>8 weeks</strong></td>
<td><strong>BEP + IS:</strong> 9</td>
<td></td>
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<tr>
<td></td>
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<td><strong>Quality analysis of RCT:</strong> 3 conditions: BEP; BEP plus informed supporters (BEP + IS); Attention control (AC)**</td>
<td><strong>Black Dog Institute Mood Disorders clinic, the Black Dog Institute website, community mental health organizations, general practitioners &amp; psychiatrists, &amp; the print media</strong></td>
<td><strong>8 weeks</strong></td>
<td><strong>AC:</strong> 14</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td><strong>Proudfoot et al 2012</strong></td>
<td><strong>Black Dog Institute Mood Disorders clinic, the Black Dog Institute website, community mental health organizations, general practitioners &amp; psychiatrists, &amp; the print media</strong></td>
<td><strong>8 weeks</strong></td>
<td><strong>BEP:</strong> 139</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td><strong>Disorders clinic, the Black Dog Institute website, community mental health organizations, general practitioners &amp; psychiatrists, &amp; the print media</strong></td>
<td><strong>Black Dog Institute Mood Disorders clinic, the Black Dog Institute website, community mental health organizations, general practitioners &amp; psychiatrists, &amp; the print media</strong></td>
<td><strong>8 weeks</strong></td>
<td><strong>BEP + IS:</strong> 134</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td><strong>Pijnenborg et al 2010</strong></td>
<td><strong>Referred by psychologists, psychiatrists, or nursing staff when impaired goal-directed behaviour was observed</strong></td>
<td><strong>7 weeks</strong></td>
<td><strong>AC:</strong> 134</td>
<td></td>
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<tr>
<td></td>
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<td><strong>Controlled trial:</strong> Group 1: A-B-A design (direct intervention - DI); Group 2: A-A-B-A design (waiting list - WL)**</td>
<td><strong>Referred by psychologists, psychiatrists, or nursing staff when impaired goal-directed behaviour was observed</strong></td>
<td><strong>7 weeks</strong></td>
<td><strong>AC:</strong> 134</td>
<td></td>
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<td></td>
<td></td>
<td><strong>The Netherlands</strong></td>
<td><strong>Referred by psychologists, psychiatrists, or nursing staff when impaired goal-directed behaviour was observed</strong></td>
<td><strong>7 weeks</strong></td>
<td><strong>AC:</strong> 134</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td><strong>Clinician confirmed:</strong> Schizophrenia or axis 2 diagnosis with psychotic symptoms**</td>
<td><strong>Referred by psychologists, psychiatrists, or nursing staff when impaired goal-directed behaviour was observed</strong></td>
<td><strong>7 weeks</strong></td>
<td><strong>AC:</strong> 134</td>
<td></td>
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<td></td>
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<td><strong>In-person psychoeducation plus mobile text-message goal prompts</strong></td>
<td><strong>Referred by psychologists, psychiatrists, or nursing staff when impaired goal-directed behaviour was observed</strong></td>
<td><strong>7 weeks</strong></td>
<td><strong>AC:</strong> 134</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Programme</td>
<td>Country</td>
<td>Description</td>
<td>Methodology</td>
<td>Referral</td>
<td>Duration</td>
<td>N</td>
<td>Outcome</td>
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</tr>
<tr>
<td>DBT Coach</td>
<td>US</td>
<td>Clinician confirmed: Borderline personality disorder with comorbid substance use disorder</td>
<td>Mobile dialectical behaviour therapy</td>
<td>Rizvi et al. 2011</td>
<td>Uncontrolled pilot study</td>
<td>3 outpatient DBT programmes in the Pacific Northwest</td>
<td>10-14 days</td>
</tr>
<tr>
<td>SOAR</td>
<td>US</td>
<td>Clinician confirmed: Schizophrenia or schizoaffective disorder</td>
<td>In-person psychoeducation followed by online psychoeducation, therapy groups, and questions via email</td>
<td>Rotondi, Eack, Hanusa, Spring, &amp; Haas 2015</td>
<td>Usability testing of SOAR compared with other websites</td>
<td>6 community mental health outpatient psychiatric rehabilitation centres</td>
<td>N/A (usability testing)</td>
</tr>
<tr>
<td>MyRecoveryPlan</td>
<td>US</td>
<td>Self-reported: Bipolar disorder</td>
<td>Online psychoeducation</td>
<td>Simon et al 2010</td>
<td>Randomized controlled pilot study: 2 conditions: Programme plus peer coaching; Programme only</td>
<td>Email announcement to local Depression &amp; Bipolar Support Alliance (DBSA) chapters, DBSA website, sponsored advertisement on Google, invitations from participants to peers, &amp; cards in mental health clinics</td>
<td>Programme available for 4-9 months (depending on sign-up time)</td>
</tr>
<tr>
<td>Living with Bipolar (LWB)</td>
<td>UK</td>
<td>Confirmed by clinical questionnaire: Bipolar disorder</td>
<td>Online psychoeducation and CBT</td>
<td>Todd, Jones, &amp; Lobban 2012</td>
<td>Focus groups</td>
<td>Advertisement presented at self-help groups in the North West of England &amp; Internet discussion forums</td>
<td>N/A (focus groups)</td>
</tr>
<tr>
<td>Living with Bipolar (LWB)</td>
<td>UK</td>
<td>Confirmed by clinical questionnaire: Bipolar disorder</td>
<td>Online psychoeducation and CBT</td>
<td>Todd, Jones, Hart, &amp; Lobban. 2014</td>
<td>RCT: 2 conditions: LWB plus TAU; Waiting list control (WL)</td>
<td>Voluntary sector organizations &amp; online advertisements</td>
<td>6 months</td>
</tr>
<tr>
<td>Wegweis</td>
<td>The Netherlands</td>
<td></td>
<td>Pilot usability testing</td>
<td>van der Krieke, Emerencia, Aiello, &amp; Sytema</td>
<td></td>
<td>4 mental health care organizations referred by clinicians &amp; other study participants</td>
<td>N/A (usability testing)</td>
</tr>
<tr>
<td>Cliniician confirmed: Schizophrenia or related psychotic disorder</td>
<td>2012 van der Krieke et al</td>
<td></td>
<td></td>
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<tr>
<td>Online routine outcome monitoring and personalised advice</td>
<td>RCT:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 conditions:</td>
<td></td>
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<td></td>
<td>Wegweis;</td>
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</tr>
<tr>
<td></td>
<td>TAU</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>E2 outpatient teams for psychosis: early intervention for psychosis team &amp; a rehabilitation team</td>
<td>6 weeks</td>
<td>Total: 250</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Wegweis: 124</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>TAU: 126</td>
<td></td>
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<tr>
<td>US</td>
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<tr>
<td>Clinician confirmed: Bipolar disorder</td>
<td>2014 Wenze, Armey, &amp; Miller</td>
<td></td>
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</tr>
<tr>
<td>Mobile assessment &amp; semi-individualized automatic feedback</td>
<td>Uncontrolled pilot study</td>
<td>2 weeks</td>
<td>14</td>
<td>Wegweis: 37 (12.35)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>TAU: 40 (12.7)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Wegweis: 67</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>TAU: 36</td>
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</tr>
</tbody>
</table>

a Study also included participants with different diagnoses; results for these participants are not reported in this review.

b Study included data from caregivers and/or clinicians; results from these participants are not reported in this review.
3.4.1. Hypothetical Acceptability

Table 4 presents results for the hypothetical acceptability of online and mobile phone-delivered interventions for SMI. The results reported focused on: 1) the proportion of participants who agreed that they would be interested in receiving online and mobile phone-delivered interventions; 2) the impact of demographic characteristics on hypothetical acceptability; 3) whether participant levels of interest in online and mobile phone-delivered interventions differed between email and text-message delivery; and 4) geographical differences in hypothetical acceptability.

The hypothetical acceptability of obtaining support via social media websites was relatively high (75.5%), and two-thirds of participants (64%) were willing to have clinicians contact them via social media during symptom emergence (Birmau et al., 2015; A Rizvi, MA, written communication, May 2015). However, levels of interest in receiving information and support varied between social media platforms (85% YouTube; 58% Facebook; 39% Twitter) (Lal et al., 2015). Interest in mobile phone check-ins to inform health care providers about symptoms was relatively low (14.4% to 41%) (Ben-Zeev et al., 2013a; 2013b; Jain et al., 2015; D Ben-Zeev, PhD, written communication, May 2015), while interest in receiving text-messages from health care providers was moderate to high (45% to 76%) (Miller et al., 2015; Sanghara et al., 2010). Additionally, the hypothetical acceptability of online and mobile phone-delivered appointment and medication reminders varied extensively between studies (26% to 92.5%) (Ben-Zeev et al., 2013a; 2013b; Bogart et al., 2014; Jain et al., 2015; Lal et al., 2015; Miller et al., 2015; personal communication with D Ben-Zeev, May 2015). Participant interest in mobile phone-delivered information about treatment, services, and psychoeducation was relatively low (31% to 48.1%) (Ben-Zeev et al., 2013a; 2013b; Jain et al., 2015; personal communication with D Ben-Zeev, May 2015). However, a 2015 study specifically recruiting young people with first episode psychosis reported that 90% of participants liked the idea of receiving information about physical and mental health online or via mobile phones (Lal et al., 2015).
Table 4. Results and predictors relating to the hypothetical acceptability of online and mobile phone-delivered interventions for people with SMI.

<table>
<thead>
<tr>
<th>Study reference(s)</th>
<th>Key acceptability outcomes</th>
<th>Demographic characteristics</th>
<th>Email vs text-message delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ben-Zeev et al. (2013ab), personal communication with D Ben-Zeev, May 2015</td>
<td>Bipolar disorder (n = 333): 137/333 - interested in check-ins (41%); 129/333 - interested in appointment &amp; medication reminders (39%); 103/333 - interested in psychoeducation &amp; information (31%); 119/333 - preferred text-message delivery (36%); 271/333 - preferred phone calls (81%); 70/333 - preferred email delivery (21%)</td>
<td>NR&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Higher interest in text-message delivery (36%) compared with email (21%).</td>
</tr>
<tr>
<td>Schizophrenia/ schizoaffective disorder (n = 904): 344/904 - interested in check-ins (38%); 398/904 - interested in appointment &amp; medication reminders (44%); 280/904 - interested in psychoeducation &amp; information (31%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Birnbaum et al (2015), personal communication with A Rizvi, May 2015</td>
<td>Bipolar disorder (n = 11): 7/11 - happy for clinicians to approach via social media (64%); 8/11 - liked idea of obtaining help via social media (73%). Psychotic disorder (n = 40): 26/40 - happy for clinicians to approach via social media (65%); 31/40 - liked idea of obtaining help via social media (78%).</td>
<td>NR</td>
<td>NA&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Bogart et al (2014)</td>
<td>n = 85: 50/85 - interested in text-message medication reminders after discharge (59%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jain et al (2015)</td>
<td>n = 201 54/201 - interested in medication &amp; appointment reminders (27%); 29/201 - interested in check-ins (14%); 89/201 - interested in information about services (44%); 145/201 - preferred telephone calls (73%); 17/201 - preferred text-messages (8%); 3/201 - preferred emails (1%)</td>
<td>NR</td>
<td></td>
</tr>
<tr>
<td>Lal et al. (2015)</td>
<td>Strongly agree/agree with the idea of using social media for information and/or support (n = 67): 57/67 - YouTube (85%); 39/67 - Facebook (58%); 27/67 - Skype (40%); 26/67 - Twitter (39%). Strongly agree/agree with types of services delivered online or via mobile phones (n = 67): 62/67 - appointment reminders via text (92.5%); 53/67 - appointment reminders via email (79.1%); 49/67 - appointment reminders via applications (73.1%); 45/67 - medication reminders via text (67.1%); 38/67 - medication reminders via email (56.7%); 42/67 - medication reminders via applications (62.7%); 64/67 - information about medications and associated side effects (95.5%)</td>
<td>NR</td>
<td>Reminders via text-messages (92.5%/67.1%) preferred over reminders via email (79.1%/56.7%)</td>
</tr>
<tr>
<td>Source</td>
<td>Sample Size</td>
<td>Services Requested</td>
<td>Interest in Services</td>
</tr>
<tr>
<td>-------------------------------</td>
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</tr>
<tr>
<td>Miller et al. (2015)</td>
<td>n = 45</td>
<td>62/67 - information or support for education or employment, &amp; tools to help decision making for treatment &amp; recovery (92.5%); 61/67 - information about psychosis &amp; physical health (91%); 57/67 - contacting team responsible for treatment (85.1%); 56/67 - scheduling appointments; information about coping skills &amp; events (83.6%); 44/67 - online contact between clients (65.7%); 35/67 - the provision of counselling or therapy services (52.2%)</td>
<td>No associations between interest &amp; age, gender, or race.</td>
</tr>
<tr>
<td>Sanghara et al. (2010)</td>
<td>n = 100</td>
<td>62/67 - information or support for education or employment, &amp; tools to help decision making for treatment &amp; recovery (92.5%); 61/67 - information about psychosis &amp; physical health (91%); 57/67 - contacting team responsible for treatment (85.1%); 56/67 - scheduling appointments; information about coping skills &amp; events (83.6%); 44/67 - online contact between clients (65.7%); 35/67 - the provision of counselling or therapy services (52.2%)</td>
<td>76/100 - willing to receive text-messages from mental health service provider (76%)</td>
</tr>
</tbody>
</table>


NR: Not reported.
NA: Not Applicable
3.4.1.1. Impact of Demographic Characteristics on Hypothetical Acceptability

No significant relationships were reported between interest in text-message and email-delivered interventions and age, sex, race, and employment status (Bogart et al., 2014; Miller et al., 2015). However, in 1 study, there was an association at the 10% level between age and interest in receiving medication reminders via text-messages (P=.06) (Bogart et al., 2014). The mean and median age of participants was <35 years in 2 studies (Birnbaum et al., 2015; Lal et al., 2015; personal communication with A Rizvi, May 2015) and ≥35 years in 3 studies (Ben-Zeev et al., 2013a; 2013b; Jain et al., 2015; Miller et al., 2015). Interest in online and mobile phone-delivered appointment and medication reminders was higher in studies where the average age of participants was <35 years (56.7% to 92.5%) in comparison with >35 years (26% to 58%).

3.4.1.2. Hypothetical Acceptability of Interventions Delivered via Text-Messages Versus Emails

In 2 studies, participants were asked whether they would prefer to receive appointment and medication reminders, check-ins with providers, and health-related information via telephone calls, text-messages, or emails. In both studies, participants stated a preference for receiving telephone calls (72.6% to 81%) in comparison with text-messages (8.5% to 36%) and emails (1.5% to 21%) (Ben-Zeev et al., 2013a; 2013b; Jain et al., 2015; personal communication with D Ben-Zeev, May 2015). In 2 other studies, participants also reported a preference for medication and appointment reminders delivered via text-messages (40% to 92.5%) in comparison with email (26% to 79.1%) (Lal et al., 2015; Miller et al., 2015).

3.4.1.3. Differences in Hypothetical Acceptability Geographically

A questionnaire developed for participants in the United States was adapted for use in India (Ben-Zeev et al., 2013a; Jain et al., 2015). A larger proportion of participants in the United States were interested in using the Internet and mobile phones for check-ins with providers (39.5%) and appointment and medication reminders (41.5%) compared with participants in India (check-ins: 14%; medication and appointment reminders: 27%) (Ben-Zeev et al., 2013a; 2013b; Jain et al., 2015; personal communication with D Ben-Zeev, May 2015). However, interest in mobile phone-delivered health information and psychoeducation was of more interest to participants in India (44%) than to those in the United States (31%).

3.4.2. Actual Acceptability

Table 5 presents results for the actual acceptability of online and mobile phone-delivered interventions for SMI. The results reported focused on: 1) intervention satisfaction ratings reported by participants; 2) intervention use and module completion rates; 3) the impact of demographic and clinical characteristics on actual acceptability; and 4) a comparison of the
actual acceptability between supported and unsupported online and mobile phone-delivered interventions.

Some studies measured the actual acceptability of online and mobile phone-delivered interventions for SMI through satisfaction ratings. The proportion of participants who were satisfied with the ease of use, perceived helpfulness, and perceived usefulness of the interventions, and were willing to recommend the intervention to others, was moderate to high (41% to 90.6%), although the majority of studies tended to report values of around 75%. Other studies measured actual acceptability through satisfaction ratings on Likert scales. Ratings for overall satisfaction and perceived helpfulness and usefulness were on the upper ends of the Likert scales, while moderate to high ratings were reported for ease of use.

Intervention use was also included as a measure of actual acceptability. In the HORYZONS study, 60% of participants used the intervention for the full 4 weeks and 70% used it for at least 3 weeks, as measured by the number of intervention log-ins (Alvarez-Jimenez et al., 2014). Additionally, the FOCUS system (Ben-Zeev et al., 2013b) was used by participants on 86.5% of the study days (Ben-Zeev et al., 2014), while 71% of participants in the WEGWEIS project used every feature on the website (van der Krieke et al., 2013). In the SOAR study, every person who participated was reported to have engaged with the website (used the education material on at least 4 visits and contributed to the forum on at least 13 visits) (Rotondi et al., 2005; 2010). However, rates of engagement with the MyRecoveryPlan website were relatively low after 3 weeks (program only: 9%; program plus coaching: 38%) (Simon et al., 2011). Participant response rates to assessments and prompts ranged from 65% to 93.33%.

Actual acceptability was also measured through module completion rates and session attendance. Between 45% and 81% of participants completed at least half the modules of their assigned intervention (Alvarez-Jimenez et al., 2014; Barnes et al., 2015; Gottlieb et al., 2013; Lauder et al., 2015; Proudfoot et al., 2012; Smith et al., 2011), while 81% of participants in the Mental.Net project attended at least 3 of the 5 sessions (Pitkänen et al., 2012). Additionally, the average program completion rate of participants who remained in the LWB trial was 60% (Todd et al., 2014).
Table 5. Results and predictors relating to the actual acceptability of online and mobile phone-delivered interventions for people with SMI measured by intervention use, module completion rates, and participant satisfaction.

<table>
<thead>
<tr>
<th>Study reference(s)</th>
<th>Measures of acceptability</th>
<th>Participant satisfaction</th>
<th>Demographic &amp; clinical characteristics</th>
<th>Supported vs unsupported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alvarez-Jimenez et al (2013)</td>
<td>Intervention use &amp; completion rates</td>
<td>15/20 - had a positive experience (75%); 18/20 - would recommend to others (90%); 14/20 - felt it would be a useful long-term treatment option (70%).</td>
<td>Not reported (NR)</td>
<td>Not applicable (NA)</td>
</tr>
<tr>
<td>Gleeson et al (2013)</td>
<td>As above</td>
<td>20/20 - ‘agreed’ or ‘strongly agreed’ that HORYZONS was safe &amp; confidential (100%); 18/20 - felt moderation had contributed to safety (90%).</td>
<td>NR</td>
<td>N/A</td>
</tr>
<tr>
<td>Kuosmanen &amp; Tuominen (2009)</td>
<td>NR</td>
<td>All groups (n = 311): 3.09/4 - mean satisfaction score</td>
<td>NR</td>
<td>N/A</td>
</tr>
<tr>
<td>Kuosmanen et al (2010)</td>
<td>NR</td>
<td>21/21 - agreed website contained relevant information (100%); 15/21 - agreed website provided new information (72%); 20/21 - agreed website was easy to use (95%); 16/18 - agreed website appearance was successful (90%)</td>
<td>NR</td>
<td>N/A</td>
</tr>
<tr>
<td>Pirkkala et al (2012)</td>
<td>IT education: 87/100 - attended ≥3/5 sessions (87%). Conventional education: 86/106 - attended ≥3/5 sessions (81%).</td>
<td>NR</td>
<td>NR</td>
<td>N/A</td>
</tr>
<tr>
<td>Anttila et al (2012)</td>
<td>73/93 - attended all 6 sessions (79%).</td>
<td>NR</td>
<td>No relationship between session attendance &amp;</td>
<td>N/A</td>
</tr>
<tr>
<td>Study</td>
<td>Sample Size</td>
<td>Attendance</td>
<td>Functioning</td>
<td>Age</td>
</tr>
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<td>-----------------------</td>
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<tr>
<td>Smith et al (2011)</td>
<td>13/24</td>
<td>posted ≥1 message on discussion forum.</td>
<td>16/24 (66.6%) - completed ≥75% of the programme (of total 47 subsections).</td>
<td>NR</td>
</tr>
<tr>
<td>Barnes et al (2015)</td>
<td>Study group: 85/113 - completed ‘majority’ of sessions (75%); Control group: 83/120 - completed ‘majority’ of sessions (69%).</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>Ben-Zeev et al (2013)</td>
<td>NR</td>
<td>10/12 - ‘strongly agreed’ or ‘agreed’ with ease of use (83%); 10/12 - found the system ‘helpful’ or ‘somewhat helpful’ (83%).</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>Ben-Zeev et al (2014)</td>
<td>Participants used FOCUS on 86.5% of the study days (total study duration = 1 month): Week 1: average use = 6.7/7 days Week 2: average use = 5.9/7 days</td>
<td>30/32 - satisfied with ease of use (93.7%); 29/32 - satisfied with focus (90.6%); 28/32 - would recommend to a friend (87.5%); 24/32 - would like to use FOCUS often (75%);</td>
<td>NR</td>
<td>No relationship between FOCUS use &amp;: baseline cognitive functioning, negative symptoms, &amp; persecutory ideation (all $P &gt; .05$).</td>
</tr>
<tr>
<td>Depp et al (2010)</td>
<td>78% - median percentage of completed surveys (2 week study duration; 4 daily prompts).</td>
<td>Participant ratings (n = 10): 9/10 – median satisfaction rating; 5/5 – median rating for ‘I would use this device again’; 5/5 – median rating for ‘this could be helpful to me in the future’.</td>
<td>NR</td>
<td>No relationship between compliance &amp;: Age: $P = .278$; Education: $P = .528$</td>
</tr>
<tr>
<td>Depp et al (2015)</td>
<td>65% - compliance in PRISM condition (10 week study duration; 2 daily prompts).</td>
<td>Participant ratings (n = 41): 10/10 – median satisfaction rating; 5/5 – median rating for ‘I would use this device again’; 5/5 – median rating for ‘a device like this could help me’.</td>
<td>NR</td>
<td>No relationship between compliance &amp;: Age: $P = .278$; Education: $P = .528$</td>
</tr>
<tr>
<td>Reference</td>
<td>Methodological Details</td>
<td>Results</td>
<td>Notes</td>
<td></td>
</tr>
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</tbody>
</table>
| Depp et al (2010)             | 6/8 (75%) - showed ‘consistent engagement’ with texts (3 sets of 4 texts daily; 12 week study duration). | No relationship between compliance &:  
  Montgomery Asberg Depression Rating Scale (MADRS):  
  \( P = .717 \);  
  Young Manic Rating Scale (YMRS):  
  \( P = .451 \);  
  Illness Intrusiveness Scale (IIS):  
  \( P = .636 \) | NR      |
| Granholm et al (2012)         | Mean rate of valid assessment responses (3 sets of 4 texts daily; 12 week study duration; n = 42):  
  Question 1 - medication adherence: mean = 86%;  
  Question 1 - socialisation: mean = 83%;  
  Question 1 - auditory hallucinations: mean = 86%;  
  Question 2 - medication adherence: option 1 mean = 85%; option 2 mean = 85%;  
  Question 2 - socialisation: option 1 mean = 78%; option 2 mean = 85%;  
  Question 3 - auditory hallucinations: option 1 mean = 85%; option 2 mean = 84% | Participant ratings (n = 42):  
  3.15/4 – mean helpfulness rating | NR      |
| Forchuk et al (2015), personal communication with L Warner, June 2015 | NR | Mean satisfaction scores after 12 months:  
  Smartphone – psychotic disorder (n = 234):  
  5.8/7 – ease of use;  
  6.4/7 – helpfulness;  
  5.4/7 – simplicity.  
  Smartphone – personality disorder (n = 24):  
  4.9/7 – ease of use;  
  6.3/7 – helpfulness;  
  5.1/7 – simplicity.  
  LSR – psychotic disorder (n = 234):  
  5/7 – ease of use;  
  5.5/7 – helpfulness;  
  5.1/7 – simplicity.  
  LSR – personality disorder (n = 24):  
  5/7 – ease of use;  
  5.6/7 – helpfulness;  
  3.9/7 – simplicity. | NR      |
<table>
<thead>
<tr>
<th>Study</th>
<th>Sample Size</th>
<th>Completion</th>
<th>Participant Satisfaction Ratings (n = 16)</th>
<th>NR</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gottlieb et al (2013)</td>
<td>17/21 (81%)</td>
<td>≥60%</td>
<td>82.4% - felt programme was very good/helpful; 88.2% - felt right amount of information was covered; 88.2% - felt website was useful; 76.5% - would be very willing to recommend to others; 52.9% found programme very interesting.</td>
<td>NR</td>
<td>N/A</td>
</tr>
<tr>
<td>Holländare et al (2015)</td>
<td>NR</td>
<td></td>
<td>Participant satisfaction ratings (n = 4)</td>
<td>NR</td>
<td>N/A</td>
</tr>
<tr>
<td>Kane et al (2013)</td>
<td>NR</td>
<td></td>
<td>Participant ratings (n = 27): 70% - found concept easy to understand; 78% - would like to receive mobile medication reminders; 89% - felt system could be useful.</td>
<td>NR</td>
<td>N/A</td>
</tr>
<tr>
<td>Lauder et al (2015)</td>
<td>n = 156:</td>
<td>48% - completed all 5 modules; 75.4% - completed ≥3 modules; 86.2% - completed ≥2 modules.</td>
<td>NR</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Lieberman et al (2011)</td>
<td>n = 64:</td>
<td>84/90 - mean number of days rated</td>
<td>NR</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Miklowitz et al (2012)</td>
<td>n = 19</td>
<td>Weekly text or emails sent for symptom ratings; duration 1 - 44 months: 81% - average percentage of texts or email prompts responded to.</td>
<td>NR</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Murray et al (2015)</td>
<td>NR</td>
<td>12/16 - would recommend to others (66.7%).</td>
<td>NR</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Nicholas et al (2010)</td>
<td>All conditions: 160/358 - returned all 8 workbooks (44.7%); 263/358 - returned ≥4/8 workbooks (73.5%); BEP + IS: 98/121 - returned ≥4/8 workbooks (81%); BEP: 80/120 - returned ≥4/8 workbooks (66.7%).</td>
<td>NR</td>
<td>Males completed on average 0.98 fewer workbooks than females; Participants ≥30 completed an average 1.04 more workbooks. Educational attainment did not predict workbook completion. Levels of symptomology &amp; baseline depression &amp; anxiety scores did not predict workbook completion. Adherence significantly higher in BEP + IS compared with BEP: P = .01</td>
<td></td>
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<tr>
<td>Study</td>
<td>Conditions</td>
<td>Workbooks Returned</td>
<td>Relationship</td>
<td>Number of Workbooks Returned</td>
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<tr>
<td>Proudfoot et al (2012)</td>
<td>All conditions: 301/407 returned ≥4/8 workbooks (74%); 158/407 returned 8/8 workbooks (38.8%). BEP + IS: 107/134 returned ≥4/8 workbooks (79.9%); BEP: 96/139 returned ≥4/8 workbooks (69.1%); Attentional control: 98/134 returned ≥4/8 workbooks (73.1%).</td>
<td>NR</td>
<td>Relationship between number of workbooks returned &amp;: Age: $P &lt; .001$ Gender: $P &lt; .001$. No relationship between number of workbooks returned &amp; educational attainment. Euthymia, depression scores, &amp; anxiety scores did not predict number of workbooks returned.</td>
<td>Number of workbooks returned significantly higher in BEP + IS compared with BEP: $P &lt; .05$ Number of workbooks returned not significantly different between BEP + IS &amp; attentional control or BEP &amp; attentional control: $P &gt; .05$.</td>
<td></td>
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<tr>
<td>Pijnenborg et al (2010)</td>
<td>NR</td>
<td>32/46 - gave positive evaluations (70%); 19/46 - felt text-messages were effective (41%); 22/46 - were willing to continue with text-messages after intervention finished (47%).</td>
<td>NR</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Rizvi et al (2011)</td>
<td>Study duration: 10-14 days 85% - mean compliance with daily assessments.</td>
<td>22/22 - would use tool on own initiative (100%); n = 176; DBT coach was helpful 96.8% of the time; Participant satisfaction ratings (n = 22): 4.05/5 – mean score for ‘how likely is it that you would use this in your treatment?’; 3.8/5 – mean score for overall helpfulness; 3.32/5 – mean score for enjoyment.</td>
<td>NR</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Rotondi et al (2005, 2010)</td>
<td>16/16 (100%) - ‘engaged’ with treatment (contribution in forum on ≥13 visits &amp; use of educational material on ≥4 visits).</td>
<td>11/16 - rated ‘very much’ or ‘extremely’ for ease of use (68.8%); 15/16 - rated ‘very much’ or ‘extremely’ for value of website (93.8%).</td>
<td>Significant positive relationship between severity of positive symptoms &amp; increased SOAR access: $P = .009$; increased SOAR usage: $P = .005$.</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Rotondi et al (2015)</td>
<td>NR</td>
<td>Participant ratings (n = 38) 4.01/5 – mean rating for ‘easy to use’</td>
<td>NR</td>
<td>N/A</td>
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<tr>
<td>Simon et al (2010)</td>
<td>After 21 days: Coaching group (n = 64): 24/64 - returned after signup (38%); 12/64 - started or updated any section of recovery plan (19%); 6/64 - used medication &amp; side effects self-monitoring (10%).</td>
<td>NR</td>
<td>Coaching group showed significantly higher use of website after 21 days in all but 2 components.</td>
<td>N/A</td>
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<tr>
<td>Study</td>
<td>Methodology</td>
<td>Results</td>
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<tr>
<td>Todd et al (2014)</td>
<td>Programme-only group (n = 54):</td>
<td>5/54 - returned after signup (9%); 0/54 - started or updated any section of recovery plan (0%); 0/54 - used any self-monitoring tools &amp; social networking (0%).</td>
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<td>5/64 - used goal progression self-monitoring (8%); 10/64 - used discussion groups (16%); 7/64 - used peer-to-peer messages (11%)</td>
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<td></td>
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<td>25% - completed 1-5 modules; 31% - completed 6-14 modules; 34% - completed all 15 modules.</td>
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<td>9/15 - average number of completed modules (60%)</td>
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<td></td>
<td>n = 61: 29% - completed 1-5 modules; 31% - completed 6-14 modules; 34% - completed all 15 modules.</td>
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<tr>
<td></td>
<td></td>
<td>32% - completed 1-5 modules; 31% - completed 6-14 modules; 34% - completed all 15 modules.</td>
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<thead>
<tr>
<th>Study</th>
<th>Methodology</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>van der Krieke et al (2012)</td>
<td></td>
<td>34/48 (71%) - used ‘full functionality’ of decision aid.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>n = 15: 73.6/90 - mean satisfaction score; 12/15 - agreed website provided meaningful information (80%); 9/15 - agreed they would use website in the future (60%).</td>
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<td></td>
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<td>22/29 - felt well informed (76%); 22/29 - felt the advice helped them reflect (76%); 20/28 - easy to use (71%); 12/27 - said it helped them prepare to meet with clinicians (44%).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>n = 15: 73.6/90 - mean satisfaction score; 13/15 - would recommend to others (86%); 12/15 - agreed website provided meaningful information (80%); 9/15 - agreed they would use website in the future (60%).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>22/29 - felt well informed (76%); 22/29 - felt the advice helped them reflect (76%); 20/28 - easy to use (71%); 12/27 - said it helped them prepare to meet with clinicians (44%).</td>
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<td>N/A</td>
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<tr>
<th>Study</th>
<th>Methodology</th>
<th>Results</th>
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<tbody>
<tr>
<td>Wenze et al (2014)</td>
<td></td>
<td>n = 14 25.64 /28 (91.57%) - average completion of sessions</td>
</tr>
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<td></td>
<td></td>
<td>Participant ratings (n = 14): 4.29/5 – average score for overall satisfaction; 4.25/5 – average score for helpfulness; 4.46/5 – average score for ease of use.</td>
</tr>
<tr>
<td></td>
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<td>No significant relationship between completion rates &amp; manic symptoms: $P = .77$; depressive scores: $P = .06$ (association at 10% level) No significant relationships between overall satisfaction or ease of use &amp; manic symptoms: $P &gt; .10$; depressive scores: $P &gt; .10$. No significant relationship between perceived helpfulness &amp; depressive scores: $P &gt; .10$.</td>
</tr>
</tbody>
</table>
manic symptoms:
$P = .07$ (association at 10% level).
3.4.2.1. Impact of Demographic and Clinical Characteristics on Actual Acceptability

Only 3 studies investigated whether demographic characteristics influenced actual acceptability. Of these studies, 2 reported no significant relationships between actual acceptability and age, sex, or education level (Antilla et al., 2012; Depp et al., 2015). However, 1 study reported significantly higher workbook completion rates by participants who were female and older, although this was not found for educational attainment (Nicholas et al., 2010; Proudfoot, et al., 2012).

Several studies explored the relationship between participant psychological state and actual acceptability. The majority of these studies reported that the presence and severity of symptoms associated with SMI, for example, anxiety, depression, mania, and reduced cognitive functioning, did not predict participant satisfaction, module completion rates, and intervention use (Antilla et al., 2012; Ben-Zeev et al., 2014; Depp et al., 2015; Nicholas et al., 2010; Proudfoot et al., 2012; Wenze et al., 2014). However, in 1 study of SOAR, there was a positive association at the 10% level between completion rates and depressive symptoms (P=.06) and perceived helpfulness and baseline manic symptoms (P=.07) (Rotondi et al., 2005). Additionally, there was a significant positive relationship between participant access and use of the SOAR website and severity of positive symptoms (Rotondi et al., 2015).

3.4.2.2. Actual Acceptability of Supported Versus Unsupported Internet-Delivered Interventions

Comparisons of actual acceptability between supported and unsupported Internet-delivered interventions for SMI were explored in 2 studies. In the MyRecoveryPlan and BEP studies, participants were assigned to receive access to either the basic programs without support or the programs plus remote coaching and support via email to help participants when using the intervention (Nicholas et al., 2010; Proudfoot et al., 2012; Simon et al., 2011). Participant completion rates in the BEP study and usage of the MyRecoveryPlan website were significantly higher in the remote support conditions than in the unsupported conditions (P <.05).

3.4.3. Common Qualitative Themes

Some projects included qualitative studies to investigate participant views about the acceptability of online and mobile phone-delivered interventions for SMI and ideas for future developments to increase acceptability (Table 6). To aid conceptual understanding, we collected common participant quotes relating to acceptability by screening the papers and creating a set of key themes that emerged. The key common themes identified were: 1) concerns about the safety, privacy, and security of online and mobile phone-delivered interventions; 2) the importance of an engaging and appealing intervention delivery format; 3) participants’ desire for the inclusion of remote peer support; 4) individual differences in
computer and mobile phone literacy and technical issues as potential barriers to acceptability; and 5) the potential impact of psychological state on motivation to engage.
Table 6. Participant views and example quotes from studies that measured the acceptability of online and mobile phone-delivered interventions for people with SMI.

<table>
<thead>
<tr>
<th>Paper reference</th>
<th>Participant views</th>
<th>Example participant quotes</th>
</tr>
</thead>
</table>
| Lederman et al (2014)    | Participants felt HORYZONS:  
1. gave them a sense of belonging, which made them feel safe & secure;  
2. aided their understanding of psychosis;  
3. helped them focus on strengths & fostered positive thoughts;  
4. was visually engaging & appealing.                                                                                                                                                                                                                                                                                                                                                                                                  | “…even though it was social networking, it was quite private-you didn’t really have any information about yourself in the private profile apart from your name, and like say a photo…”  
“… it gives you more of an understanding of things and I think if you understand what is happening to you, it makes it a little bit easier”.  
“… It’s kind of like: hey, I was like that before, and hey look what I am now, and then I can help them. It makes you feel better that you can help other people too.”  
“… I like how you drag and drop the strengths. I’ve done card sorts before. So I am like hey, I’ve done this before”.                                                                                                                                                                                                                                                   |
3. the environment for IT-based education should be peaceful;
4. computers should be on the ward to help facilitate and support information seeking.

**Anttila et al (2012)**

Nurses reported that in sessions that they felt were successful:

1. patients were positive, motivated, interested, & enthusiastic;
2. patients’ mental states were good & they understood the study;
3. patients’ IT skills were good;
4. Oral patient feedback was positive.

In sessions that nurses felt were unsuccessful:

1. patients lacked interest & were more interested in different websites;
2. patients’ mental states were poor or symptoms worsened during sessions & patients denied existence of their mental health problems;
3. patients’ IT skills were poor or equipment did not function properly;
4. patients gave negative feedback – they would have liked to receive more information or could not find the answers to their questions.

**Laine et al (2015)**

**Phase 1:**

Expectations:

1. content should include information, interactive tasks, a question & answer column, & a moderated discussion forum;
2. programme and content should be reliable.
3. programme should be easy to use, professional, and not contain too many pictures or colours.

**Phase 2:**

Proposals made by participants:

1. discussion forum;
2. information about money, anxiety, & manners;
3. smartphone application.

**Barnes et al (2011)**

4 key themes:

"Well those questions which specialists answer… if there is some question wondering and then he can ask that in that site and there is that kind of specialist who gives answers to those questions”.

"I think that discussion forums should be utilized to hear what kind of symptoms and experiences others have with this illness”.

"I wouldn’t ask just anybody in the internet to be sure the information is reliable”.

"That kind of user interface that it is easy to use and that you can find everything easily and things are not messed to everywhere”.

"I think that would be ideal actually because then you could delve as deeply as you actually wanted to go”.

Not reported (NR)
| Poole et al (2012) | Key themes:  
1. content clarity & quality;  
2. dislike of actors;  
3. difficulties with the life-chart  
4. lack of forum activity;  
5. dislike of presentation of lithium;  
6. alternatives to computer-based programme;  
7. lack of social opportunities in online psychoeducation, but group psychoeducation can be unappealing.  
50% - would prefer group-based face-to-face psychoeducation;  
50% - would prefer Beating Bipolar. |
| de Leeuw et al (2012) | Before intervention:  
1. participants expected it would help communication with caregivers & other patients; |
2. some were concerned about privacy & reduced face-to-face contacts.

9-month follow-up:

Advantages of PCR:
1. accurate & reliable information about schizophrenia;
2. ability to view information about their treatment, medication, & relapse prevention.

Disadvantages of PCR:
1. privacy issues;
2. technical aspects needed improving;
3. too much information about illness & treatment;
4. needed a more personalised content.

<table>
<thead>
<tr>
<th>Depp et al (2010)</th>
<th>Interviews revealed several themes:</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>1. increased emotional awareness &amp; use of self-management behaviours;</td>
</tr>
<tr>
<td></td>
<td>2. participants requested summaries of their data for themselves &amp; practitioners;</td>
</tr>
<tr>
<td></td>
<td>3. participants requested the ability to enter text-based entries &amp; a broader selection of self-management strategies;</td>
</tr>
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<td>4. participants were concerned about what to say to others if asked what the purposed of the device was.</td>
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</table>

“At first I thought it wouldn’t be beneficial, but it did help me ‘catch’ myself when I started to feel down”.

“Helped make me think about what I am doing and whether I am using my strategies”.

<table>
<thead>
<tr>
<th>Latalova et al (2014)</th>
<th>Module feedback</th>
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<tbody>
<tr>
<td></td>
<td>Module 1 – participants happy to focus on family history; biological basis of bipolar disorder discussed with ambivalence. Some liked inclusion of famous people, while others felt inferior;</td>
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<td>Module 2 – most participants identified with the included symptoms &amp; division of symptoms into groups helped them understand bipolar disorder;</td>
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<td>Module 3 – participants interested in genetic vulnerability &amp; family history of psychiatric problems, &amp; were able to recognise stressful events prior to development of disorder;</td>
</tr>
<tr>
<td></td>
<td>Module 4 – participants mostly interested in medication side effects &amp; many could</td>
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<td></td>
<td>NR</td>
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</table>

NR
recognise at least one medication myth;
Module 5 – only half the participants said they were able to keep the changes in their life plan;
Module 6 – participants felt identifying warning signs and triggers was extremely beneficial;
Module 7 – participants found it difficult to recognise influence of thoughts on moods & practicing changing these thoughts;
Module 8 – participants found it difficult to recognise attitudes & understand the impact that these attitudes can have on their lives;
Module 9 – participants enjoyed discussing relationships between their personality traits and stress, but found the adaptive attitudes component complicated;
Module 10 – participants liked this module, which focussed on improving positive assertivity. However, they experienced problems with deciding where & when to use these skills & creating examples;
Module 11 – many participants disliked accepting criticism & criticising others;
Module 12 – many participants felt it was important to have a person available for support if they experience a relapse.

<table>
<thead>
<tr>
<th>Lauder et al (2013)</th>
<th>Participant feedback:</th>
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<tbody>
<tr>
<td></td>
<td>1. mood monitor was useful;</td>
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<tr>
<td></td>
<td>2. satisfied with the flash object used for the key points;</td>
</tr>
<tr>
<td></td>
<td>3. liked having the information delivered sequentially.</td>
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<tr>
<th>Murray et al (2015)</th>
<th>Participant feedback:</th>
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<tr>
<td></td>
<td>Participants were generally satisfied &amp; positive about the programme.</td>
</tr>
<tr>
<td></td>
<td>8 participants specified a preference for the inclusion of video media, whilst 2 preferred text;</td>
</tr>
<tr>
<td></td>
<td>8 participants felt the 3 week duration was not long enough;</td>
</tr>
<tr>
<td></td>
<td>15 reported no negative effects, but 1 was distressed by the 30 minute ‘body scan’.</td>
</tr>
<tr>
<td></td>
<td>“As I am often online anyway, this venue was both convenient and relevant”.</td>
</tr>
<tr>
<td></td>
<td>“I found the guided meditations quite helpful”.</td>
</tr>
<tr>
<td></td>
<td>“When I was supposed to be applying things, I was still trying to learn things and complete homework...”</td>
</tr>
<tr>
<td></td>
<td>“Although mindfulness was helpful in identifying distress, it was not enough to help me cope with the emotional triggers that were released”.</td>
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<thead>
<tr>
<th>Nicholas et al (2010)</th>
<th>Key themes for non-adherence:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Unable to complete modules when experiencing acute symptoms;</td>
<td>“A very short while after doing the programme I fell into another episode, a depressive episode, and pretty much stopped doing everything, the programme included”.</td>
</tr>
</tbody>
</table>
2. Did not want to think about bipolar disorder;
3. Information was to basic;
4. Some stopped using it because they felt well or had gained what they wanted from it or used the information, but chose not to complete workbooks;
5. Time-related factors

“I often go walking when having highs because I have to keep moving, so I didn’t want to sit at a computer”.

“I found it quite confronting, and reading he information made me feel uncomfortable, thinking that these issues related to me – I preferred the ostrich approach”.

“The information in the modules was too general and too limited”.

“I wanted something more about me specifically, as opposed to talking about general issues”.

“I was so self-absorbed at the time that I was only interested in the information [rather than in returning workbooks]”.

“I didn’t have the time, and with everything else, it wasn’t a priority”.

---

Todd et al (2012)

Key themes:
1. Recognising & managing mood swings;
2. There’s too much information about symptom management online & not enough about living with bipolar disorder;
3. Participants did not want to stop mood swings altogether;
4. The internet was the ‘only format’ for a self-management intervention;
5. The need for support from peers & professionals to provide motivation.

“…recognising when I am going from one level of depression or mania to another more serious level where more intervention is needed on my own behalf or from outside help”.

“… but there is so many (websites) out there they all resolve around the management of the illness… I’d like to see something that would deal with how to live your life as somebody who suffers from Bipolar”.

“I value my mood swing, I rather like it… we don’t want it absolutely flat. We don’t want it absolutely perfect. We want an interesting life …. we want to maintain our relationships, quality of life and we want to be darn useful to someone”.

“It’s the only format… the internet format allows people to freely access it rather than having to wait for interventions through the NHS…”

“Something you can interact with is much better. Reading a book for a start off, if you are manic or depressive ready is really difficult, really
It’s really hard for me to sustain being involved in something for a long time depending on where my mood changes… there have been times when I really need to do that again and I know it works but for some reason I just couldn’t motivate myself to do it…”

| van der Krieke et al (2012) | 1. some of the buttons were hard to find;  
2. some participants wanted the website to be more attractive, but others were happy with the layout;  
3. some suggested further information about symptoms & medication. | NR |
|---|---|---|
| van der Krieke et al (2013) | Participants experienced differences in how the website was presented to them by case managers.  
Most participants could not remember a treatment plan being created or routine outcome monitoring results being discussed. | NR |
3.4.3.1. Participant Safety

Participant perceptions about the safety, confidentiality, and privacy of online and mobile phone-delivered interventions were noted in several studies. Participants in the HORYZONS project felt the social networking component was safe and confidential due to its anonymous nature, restricted access, and expert moderation (Gleeson et al., 2014; Lederman et al., 2014). However, concerns about confidentiality were raised in Beating Bipolar focus groups, and 2 participants in the randomized controlled trial felt their privacy had been compromised through accessing the program on public computers (Barnes et al., 2011; Poole et al., 2012). Focus groups in the PCR project also revealed privacy and security concerns (de Leeuw et al., 2012), while some participants using Mental.Net were worried about the confidentiality of the computerized delivery method (Antilla et al., 2012). Finally, the pilot trial for PRISM revealed that some participants were concerned about what they would say if other people asked what the device was for (Depp et al., 2010).

3.4.3.2. Engaging and Appealing

Comments relating to the appearance and layout of online and mobile phone-delivered interventions for SMI were evident in the included studies. Many participants were satisfied with the clarity, layout, and appearance of the Mental.Net, Beating Bipolar, and WEGWEIS websites (Laine et al., 2016; Barnes et al., 2011; van der Krieke et al., 2012). The inclusion of interactive components was generally popular. Participants in the HORYZONS project felt the interactive modules were fun; however, some were overwhelmed by the number of components (Lederman et al., 2014). Participants valued the interactive components and video and audio features of Beating Bipolar (Barnes et al., 2011) and ORBIT (Murray et al., 2014) and recommended more interactive and video features on the Mental.Net and WEGWEIS websites (Hätönen et al., 2010; Laine et al., 2016; van der Krieke et al., 2012). The visual aids and pictures in FOCUS received positive comments (Ben-Zeev et al., 2013b), while participants liked the interactive mood monitor and flash objects on MoodSwings (Lauder et al., 2013). Finally, focus group discussions for LWB revealed that the idea of an online intervention was popular due its potential for interactive elements (Todd et al., 2013).

3.4.3.3. Peer Support

Online and mobile phone-delivered interventions for SMI sometimes include the opportunity for remote peer-to-peer communication. Participants in the HORYZONS project expressed that they liked the inclusion of social networking (Gleeson et al., 2014; Lederman et al., 2014); however, participants using Beating Bipolar were disappointed with the lack of discussion forum activity (Poole et al., 2012). In the modification stage of the Mental.Net website, participants suggested the provision of a discussion forum (Laine et al., 2016),
3.4.3.4. Computer and Mobile Phone Literacy and Technical Issues

Due to the technical nature of online and mobile phone-delivered interventions, some participants with low technology literacy may not find interventions delivered in this format acceptable. A small number of participants using Beating Bipolar reported low engagement due to poor computer literacy (Poole et al., 2012), while nurses in the Mental.Net project noted that disruptions were often related to insufficient technology skills (Antilla et al., 2012).

Issues relating to technical functioning were also raised as potentially affecting acceptability. Nurses in the Mental.Net project felt some sessions were disrupted by technical problems such as network access (Antilla et al., 2012), while participants in the modification stage reported technical issues such as inactive links (Laine et al., 2016). Some components in the PCR study did not function adequately (de Leeuw et al., 2012), while LWB focus group participants revealed a reluctance to engage with a website containing technical errors (Todd et al., 2013).

3.4.3.5. Impact of Psychological State on Engagement

Concerns were also raised about the influence of psychological state on intervention engagement. Some participants involved in the development of Beating Bipolar and LWB expressed concerns that people experiencing severe symptoms would not be able to engage with it (Barnes et al., 2011; Todd et al., 2013). In the Beating Bipolar testing phase, some participants felt their engagement was reduced by low mood, while others felt that low mood increased their engagement (Barnes et al., 2015). Participants who did not complete the BEP believed this was due to experiencing acute symptoms, which left them unable to engage (Nicholas et al., 2010).

3.5 Discussion

The aim of this review was to explore both the hypothetical and actual acceptability of interventions delivered online and via mobile phones in SMI. The results support the assertion made in previous reviews that the actual acceptability of online and mobile phone-delivered interventions for SMI is relatively high (Alvarez-Jimenez et al., 2014; van der Krieke et al., 2014; Naslund et al., 2015; Firth & Torous, 2015). However, unique to this review are the findings demonstrating the hypothetical acceptability of online and mobile phone-delivered interventions for SMI, potential predictors of acceptability, and qualitative themes relating to acceptability. This review also identified that acceptability is far more complex than just module completion rates and intervention use, suggesting the need for continued service user involvement and the inclusion of participant satisfaction ratings and qualitative interviews to measure acceptability.
The hypothetical acceptability of online and mobile phone-delivered interventions for SMI generally varied between studies. However, the relatively low levels of participant interest in online and mobile phone-delivered interventions evident in some of the studies indicate that some people with SMI may be negatively predisposed toward these delivery formats. This contrasts greatly with the relatively high levels of actual acceptability observed in the included studies.

The results from this review also indicated that hypothetical acceptability was higher for interventions delivered via mobile phones than for online formats. It is, however, important to consider these findings in the context of intervention types proposed. Specifically, studies measuring hypothetical acceptability primarily examined participant interest in using mobile phone and online resources to communicate with health care providers and receive appointment and medication reminders. Due to the transportable and immediately accessible nature of mobile phones, it is unsurprising that participants stated a preference for mobile phone delivery over online. However, the delivery preferences of more complex, time-consuming, and interactive interventions such as cognitive behavioural therapy and psychoeducation remains unknown. Many people are now able to access online content with relative ease on their mobile phones; therefore, it is questionable whether the Internet and mobile phones can be viewed as separate methods of intervention delivery.

The findings also revealed that few studies investigated whether demographic and clinical characteristics were predictors of acceptability. The studies that did investigate the influence of demographic and clinical characteristics on acceptability reported no significant relationships; however, a few studies did report a significant relationship, or an association at the 10% level. In addition, hypothetical acceptability was higher in studies where the mean age of participants was <35 years. The varied findings and limited number of studies prevent us from drawing overall conclusions, and further research is warranted to investigate whether demographic and clinical characteristics predict acceptability.

The review findings also indicated that actual acceptability was higher for participants who were offered remote online support than for those who were not supported (Nicholas et al., 2010; Proudfoot et al., 2012; Simon et al., 2011). While it is still too early to know whether acceptability is higher in supported interventions than in unsupported interventions, our findings indicate that the provision of remote support is likely to predict acceptability. While we acknowledge that one of the key advantages of online and mobile phone-delivered interventions is the potential reduction in the cost of trained clinicians, these findings suggest that remote support could be offered to help increase the acceptability of these approaches.

We were able to compare hypothetical acceptability across different geographical areas between 2 studies (Ben-Zeev et al., 2013a; 2013b; Jain et al., 2015; personal communication with D Ben-Zeev, May 2015). Participants in the United States were more interested in health care provider check-ins and appointment and medication reminders than
were participants in India. However, interest in receiving psychoeducation and service information was higher for participants in India than for those in the United States. The authors noted that differences between participant interest may reflect the increased availability of mental health information resources already available in the United States (Jain et al., 2015). Due to the notable increase in Internet and mobile phone access in developing countries and papers reporting the potential benefits of online and mobile phone-delivered interventions in these nations, research in this area will likely increase at a fast pace over the coming years (Brian & Ben-Zeev, 2014; Farrington, Aristdou, & Ruggeri, 2014; Pew Research Centre, 2015).

Key common themes identified in the qualitative studies revealed that some participants found the safety and privacy of online and mobile phone-delivered interventions for SMI acceptable (Gleeson et al., 2014; Lederman et al., 2014), while others were concerned that confidentiality may be compromised (Antilla et al., 2012; Barnes et al., 2011; de Leeuw et al., 2012; Poole et al., 2012). Many participants felt that online and mobile phone-delivered interventions needed interactive components to increase acceptability and were generally positive about the provision of online peer support (Gleeson et al., 2014; Hätonen et al., 2010; Laine et al., 2016; Lederman et al., 2014; Todd et al., 2013; van der Krieke et al., 2012). Based on participant feedback, it is advisable for researchers to incorporate interactive features and social networking components within online and mobile phone-delivered interventions for SMI. A few concerns about technology literacy and technical issues were reported; therefore, researchers should ensure that participants are comfortable with the chosen format for delivery and that the delivery method functions well (Antilla et al., 2012; Laine et al., 2016; Poole et al., 2012; de Leeuw et al., 2012). The qualitative studies also revealed participant concerns that some people with SMI may struggle to engage with online and mobile phone-delivered interventions while experiencing acute symptoms (Barnes et al., 2011; Todd et al., 2013). Researchers should be mindful about the potential influence of psychological state on acceptability across the phases of illness.

3.5.1. Strengths and Limitations

This review had several notable strengths. First, the range of databases we searched and the list of search terms we created were comprehensive, which ensured that we obtained eligible studies in the field. Second, the review included studies with quantitative, qualitative, and mixed-methods designs, thus enabling a broad and in-depth analysis of the current work in the field. Third, studies were coextracted on the abstract level by a researcher independent of the research team to ensure eligibility criteria were accurate. In addition, our extraction of the data was systematic and we contacted authors if we required any further information.

Findings from the studies in this review should be considered in the context of some limitations. Many of the studies reviewed measured actual acceptability through module
completion rates and intervention use. The sole use of these measures of acceptability is problematic due to the potential influence of other factors, for example, the number of modules available to complete, the intervention duration, financial incentives for high completion rates, technical issues with the interventions delivered, participants’ engaging in other activities while logged in, and time pressures preventing engagement. Therefore, module completion rates and intervention use are unlikely to be robust direct measures of acceptability. Across studies, module completion rates and intervention use were also reported in different ways, for example, some reported the average number of modules completed, while others reported the average duration participants spent accessing an intervention. It is impossible to determine what value constitutes an “acceptable” intervention without a universal measurement applied. Future research is needed to develop more accurate ways to assess acceptability.

The majority of the studies we reviewed that measured hypothetical acceptability asked participants about their general interest and willingness to use interventions delivered online and via mobile phones. However, participants were not asked about their interest in receiving these interventions online or via mobile phones in comparison with, or in addition to, face-to-face delivery. Had these questions been phrased differently, overall hypothetical acceptability may have been very different. The review findings also highlight the very limited amount of relevant information regarding predictors of acceptability being reported in studies. We could not draw conclusions about the influence of demographic and clinical characteristics on both hypothetical and actual acceptability.

Issues relating to the heterogeneity of approaches for participant recruitment are an important consideration for the recruitment strategies in the field. Specifically, it could be argued that online recruitment methods may bias the sample toward favorable attitudes toward online and mobile phone-delivered interventions, thus increasing levels of acceptability. However, potential bias toward the acceptability of interventions delivered via these modalities may also be prevalent in more traditional routes of recruitment (ie, through service providers and clinicians). While different recruitment strategies may attract different samples within the population, broadening intervention choice and examining acceptability remain important considerations within the samples identified, regardless of the recruitment method that is used.

There were also some limitations to the method of analysis we used. First, the review excluded papers published in a language other than English. Second, some studies included both participants with SMI and participants with other mental health problems such as depression. To combat this issue, we excluded studies if ≤50% of the total study sample had SMI, so we may have missed relevant findings for those who did experience SMI.
3.5.2. Implications and Future Research

Although this review highlights the relatively high acceptability of online and mobile phone-delivered interventions for SMI, it also demonstrates the complex nature of acceptability and the need for continued focus in this area. A recent systematic review concluded that, rather than concentrating on acceptability, researchers should instead investigate whether online and mobile phone-delivered interventions are effective (Naslund et al., 2015). While efficacy is undoubtedly important, we argue that acceptability remains equally important because, ultimately, if an intervention is not acceptable to service users and relevant stakeholders, people are unlikely to engage with the approach, thereby directly affecting efficacy. Based on the findings in this review, we recommend that research groups measure hypothetical and actual acceptability of online and mobile phone-delivered interventions, with an increased focus on the factors that could influence acceptability.

There were different reporting styles evident in studies detailing intervention usage, module completion rates, and session attendance. For example, some studies reported the overall proportion of participants who used the intervention over the whole study period, while others reported proportions over specific weeks during the study period. Therefore, it was not possible to investigate how the acceptability of online and mobile phone-delivered interventions changed over time. Future research should explore and report how intervention usage, module completion rates, and session attendance change throughout intervention delivery to determine whether acceptability of interventions delivered via these modalities changes across time points.

Module completion rates and intervention use may be indirectly related to actual acceptability; however, participant satisfaction ratings and qualitative views provide rich data about acceptability. These rich data can be used to develop and refine online and mobile phone-delivered interventions in order to improve the overall acceptability for people with SMI. The need to use qualitative analysis to inform the design and development of interventions delivered online and via mobile phones has been recognized in protocols for future studies in the field (Bucci et al., 2015; Hidalgo-Mazzei et al., 2015; Lobban et al., 2015). It is recommended that, if researchers choose to measure acceptability through module completion rates and intervention use, satisfaction ratings and qualitative interviews be conducted to obtain the rich information needed to identify intervention acceptability. In addition, the use of qualitative interviews examining what participants feel they have actually gained from an intervention may help to highlight the specific areas of their lives that they feel may have been improved by participating in the intervention.

This review also found that hypothetical acceptability tended to be low or varied, while actual acceptability tended to be high, indicating that people with SMI may be initially reluctant to engage with online and mobile phone-delivered interventions. However, hypothetical acceptability results are largely limited and not necessarily directly comparable with the
interventions being delivered. Issues with comparing hypothetical versus actual acceptability are primarily due to discrepancies in the types of interventions being explored. Specifically, studies investigating hypothetical acceptability investigated interest in using the Internet or mobile phones to facilitate health care provider contact and medication and appointment reminders, whereas studies investigating actual acceptability tended to implement more complex interventions such as cognitive behavioural therapy and psychoeducation. It is also likely that the sample of people who were asked about actual acceptability were already hypothetically open to the idea of receiving online and mobile phone-delivered interventions. We therefore suggest that researchers measure acceptability both before (hypothetical acceptability) and after (actual acceptability) an intervention is delivered. These measurements will aid the comparison of hypothetical versus actual acceptability without the limitations associated with separate samples.

Crucially, this review showed that the majority of the studies reviewed recruited participants who were already in contact with mental health services. One of the potential advantages of the Internet and mobile phones is that they could improve access to evidence-based interventions for people who are not receiving support but who need or want it. Therefore, it is important to investigate whether people who could potentially benefit the most from online and mobile phone-delivered interventions actually find these delivery formats acceptable.

Clearly, interventions delivered online and via mobile phones do have their place in the provision of self-care for people with SMI. However, research has yet to identify predictors of acceptability and whether people who are not engaged with services also find online and mobile phone-delivered approaches acceptable. The measurement of both hypothetical and actual acceptability in future studies would enable the investigation of the impact of prior expectations on acceptability and potential changes in acceptability after access. In order to obtain rich data about acceptability, we recommend the measurement of satisfaction ratings and participant views and the continued involvement of service users throughout all aspects of intervention development and delivery.

3.6. Acknowledgments

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3.7. Authors’ Contributions

All authors contributed to the development of the review. NB completed the first draft of the manuscript, with SB, FL, and RE providing critical feedback and revisions. All authors approved and contributed to the final manuscript.
3.8. Conflicts of Interest

SB and RE are investigators for a mobile-delivered intervention for early psychosis (Actissist). FL is an investigator for a Web-based program for bipolar disorder.
Chapter 4: A qualitative exploration of service user views, needs and ideas for using digital health interventions for self-management in severe mental health problems.

This paper has been prepared for submission to the British Journal of Clinical Psychology.
A qualitative exploration of service user views, needs and ideas for using digital health interventions for self-management in severe mental health problems.

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4.1. Abstract

Objectives: The development of digital health interventions (DHIs) for severe mental health problems (SMI) is fast-paced. Researchers are beginning to consult service users to inform DHIs; however, much of this involvement has been limited to feedback on specific post DHI conception. The unbiased views of service users towards DHIs in mental health care should be gathered to inform the development of future DHIs. This study had two aims: 1. explore service user views towards DHIs for SMI to identify potential facilitators and barriers to DHI adoption; and 2. make recommendations for specific design features and content within DHIs based on service user needs and suggestions.

Design: Qualitative study using one-to-one qualitative topic guided interviews.

Methods: Interviews with eighteen people with SMI focussed on three domains: 1) current technology use; 2) views about DHIs for SMI; and 3) ideas for future DHI content and design features. Interview data were analysed thematically.

Results: Participants responses were captured in five key themes: 1) DHIs could be empowering tools that instigate reflection and change; 2) society is already divided; DHIs will further increase this divide; 3) considerations must be made about who has access to DHI data and how the data may be used; 4) DHIs should not be delivered without other support options; and 5) DHIs should provide a positive, fun, practical and interactive method for self-management.

Conclusions: Participants found DHIs acceptable due to the empowering nature of self-management and ability to take ownership of their own health care needs. However, concerns included the potential for digital exclusion, privacy and confidentiality and fears about DHIs being used to replace other mental health services. Service users want tools to help them self-manage their mental health, but also provide positive and recovery-focused content that can be used in conjunction with other support options.

Keywords: mHealth; eHealth; digital health interventions; psychosis; bipolar disorder; severe mental health problems (SMI);

4.2. Introduction

Evidence-based psychological interventions are recommended for people who experience severe mental health problems (SMI) such as psychosis and bipolar disorder (NICE, 2014a; 2014b). However, due to factors including the increasing costs of face to face therapy, perceived stigma of attending therapy, staff concerns about effectiveness and client suitability, a lack of trained staff for intervention delivery and time and caseload pressures, some people are not able to receive these support options in a time-sensitive manner (Ince at al., 2016). Additionally, individuals experiencing SMI are often given little choice over the treatment options they receive (Fisher, Manicavasagar, Kiln, & Juraskova, 2016; Morrison,
Hutton, Shiers, & Turkington, 2012), despite evidence showing shared-decision making is wanted by service users (Beitinger, Kissling, & Harmann, 2014) and can be empowering (Stovell, Morrison, Panayiotou, & Hutton, 2016). Therefore, alternative and complementary delivery options utilising digital technologies are currently being developed and trialled as a cost-efficient method to increase intervention access and choice for people with SMI. For example, recent or ongoing trials have included a cognitive behaviour therapy (CBT)-informed smartphone app for people experiencing first episode psychosis (FEP) (Bucci et al., 2015), an online mindfulness-based program for bipolar disorder (Murray et al., 2015), an online relapse-prevention programme for bipolar disorder (Lobban et al., 2017), and a smartphone application delivering psychoeducation for bipolar disorder (Hidalgo-Mazzei et al., 2016). Additionally, researchers have developed smartphone apps to provide individuals with SMI a secure and accessible method to complete assessments about thoughts, feelings and experiences over time, which can be used to identify symptom triggers and patterns and inform subsequent changes in care (Bell, Lim, Rossell, & Thomas, 2017).

The development and evaluation of digital tools for mental health is a key element in the UK National Health Service (NHS) Five Year Forward View for Mental Health (NHS England, 2017). Evidence for the feasibility, acceptability and potential effectiveness of DHIs is rapidly progressing (Alvarez-Jimenez et al., 2014; Hidalgo-Mazzei et al., 2015; Naslund et al., 2015; van der Krieke et al., 2014), but comparatively few studies have explored the hypothetical acceptability (views prior to or without directly receiving an intervention) of DHIs for SMI (Berry et al., 2016). However, recent survey-based studies have revealed that many people with SMI are amenable to receiving technology-delivered support options. For example, in a survey of 67 young adults with FEP, more than 90% of participants agreed with using technology to receive online information about mental and physical health, tools to enable decision making and education about coping skills (Lal et al., 2015). Additionally, a survey of 89 young adults experiencing bipolar disorder reported that participants found the idea of using smartphone apps highly acceptable for a variety of self-management strategies including sleep management, recognising symptom patterns, triggers and early warning signs, wellness plans containing strategies for early warning sign detection and meditation and relaxation exercises (Nicholas, Boydell, & Christensen, 2017). Current studies exploring the hypothetical acceptability of DHIs have relied on survey-based designs in young adult populations so have not gathered in-depth and detailed information from a range of individuals.

Service users have also been consulted during the development of DHIs for SMI. For example, the development of the Beating Bipolar intervention was aided by focus groups with service users to advise, revise and refine the content and design of the programme (Simpson et al., 2009). Adolescents experiencing psychosis were consulted to modify the Mental.net programme, which had originally been designed for adults with schizophrenia, to make it more acceptable and usable for adolescents (Laine et al., 2016). Researchers have
also sought to understand user needs to inform intervention design features, anticipate potential facilitators and barriers to engagement and modify interventions based on user feedback (Terp, Bjørnes, Jørgensen, Mainz, & Laursen; 2017; Todd et al., 2013). However, in all current studies employing this approach, qualitative views have been sought to inform specific interventions, rather than gather service user needs and ideas for DHIs more generally.

To create DHIs that are meaningful, acceptable and likely to be adopted by service users, there is the need to qualitatively explore the hypothetical acceptability of DHIs for SMI. Hypothetical acceptability must be identified in order to understand potential facilitators and barriers to DHI adoption otherwise there is a danger of large investments of money that result in disappointing levels of uptake in real world settings. We need to better understand what users need and want from DHIs. Therefore, this study had two main aims: 1) to explore the perspectives of individuals with SMI about the hypothetical acceptability of DHIs for SMI for self-management to identify potential facilitators and barriers to DHI adoption; and 2) to make recommendations for specific design features and content within DHIs based on service user needs and suggestions.

4.3. Methods

4.3.1. Sampling and recruitment

Participants were recruited via convenience sampling from two mental health trusts in the North West of England by asking staff to pass details of the study to clients who met the eligibility criteria. Additionally, mailing lists were used to invite people who had previously stated an interest in participating in studies. Individuals were eligible to participate if they: 1) had received a diagnosis of a schizophrenia-spectrum disorder or bipolar disorder; 2) were 18-65 years of age; 3) had the capacity to provide informed consent; 4) had sufficient English language skills to take part in qualitative interviews; and 5) had Internet and mobile phone access or ownership.

4.3.2. Procedure

One-to-one interviews were conducted by the researcher (NB) either in-person (n = 10) or via telephone (n = 8) between April and October 2016. Prior to each interview, participants gave written informed consent and completed a brief demographics and technology ownership questionnaire to aid characterisation of the sample. Interviews were administered using a semi-structured topic guide (Appendix 7) and questioning largely focused on three domains: 1) how people currently use the Internet and smartphones to self-manage their mental health; and 2) views towards DHIs for self-management. Questions were open-ended in nature, but supplemented with prompts to aid discussion. Interviews lasted between 25 and 82 minutes and were audio-recorded and transcribed verbatim.
researcher kept a reflective journal throughout the study period, which was completed after each interview and used to aid interpretation during the analysis process.

4.3.3. Data analysis

Inductive thematic analysis was chosen to analyse the data due to its flexibility in exploring participants experiences and because it allowed the identification of common themes within the data across the sample (Braun & Clarke, 2006). Thematic analysis was conducted by a PhD Psychology student (NB) and two academic clinical psychologists (SB and FL) and followed the process described by Braun and Clarke (2006). First, NB read each transcript several times for data familiarisation. Each member of the research team independently reviewed two transcripts and assigned descriptive codes to data relevant to the overall study aims. The research team then met to discuss and compare the codes for reliability and consensus. NB coded the remaining transcripts electronically using QSR Nvivo (version 10), in a cyclical process, moving backwards and forwards between transcripts as new codes emerged. Once coding had been completed, NB arranged related codes into candidate themes by clustering together and collapsing codes based on similarities and differences. The research team met again to review and refine the themes, which were discussed against the coded data and the final themes and subthemes were agreed. After agreement of five main themes was reached, a thematic map was developed (Figure 3).

4.3.4. Reflexivity

NB is a PhD student investigating how DHIs can be used for people with SMI. SB and FL are both academic clinical psychologists and principal investigators for trials implementing DHIs for SMI. It is important to be aware of how the researchers’ views and experiences may affect data collection, analysis and interpretation (Peters, 2012); therefore, several considerations were made to ensure transparency in the reporting process. The researcher kept a reflective journal throughout data collection and analysis to enhance the quality and credibility of the study (Ortlipp, 2008) and questions about views towards DHIs were phrased broadly to ensure participants were not primed to give certain views. At the beginning of each interview the researcher also reassured participants that all views given were valid and important, to prevent them from feeling that they had to provide only positive views. The research team also met regularly during analysis to discuss emerging themes and how beliefs and experiences may affect data analysis and interpretation.

4.4. Results

4.4.1. Participant characteristics

A total of eighteen people participated in the study. The ages of participants ranged from 25 to 63 years ($M=37.3$, $SD=11.5$), with a larger proportion of females ($n=11; 61\%$) than males ($n=7; 39\%$). The most common diagnosis was schizophrenia ($n=7; 39\%$) and a large proportion of participants were currently unemployed ($n=12; 67\%$). Seventeen
participants were in contact with mental health services at the time of interviews and the remaining participant was receiving mental health support from a general practitioner (GP). Participants reported a high level of comfort using technology ($M = 5.4$, $SD = 0.8$, range = 4-6; 1 = extremely uncomfortable; 6 = extremely comfortable) and the majority reported ownership of a smartphone ($n = 16$; 89%). Full details about participant characteristics and technology use are presented in Table 7.

Table 7. Participant demographics and technology ownership

<table>
<thead>
<tr>
<th>Demographic Information</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>7</td>
<td>38.9</td>
</tr>
<tr>
<td>Female</td>
<td>11</td>
<td>61.1</td>
</tr>
<tr>
<td><strong>Ethnicity:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White British</td>
<td>15</td>
<td>83.3</td>
</tr>
<tr>
<td>British Asian</td>
<td>2</td>
<td>11.1</td>
</tr>
<tr>
<td>Black British</td>
<td>1</td>
<td>5.6</td>
</tr>
<tr>
<td><strong>Employment:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working full-time</td>
<td>2</td>
<td>11.1</td>
</tr>
<tr>
<td>Working part-time</td>
<td>2</td>
<td>11.1</td>
</tr>
<tr>
<td>Self-employed</td>
<td>1</td>
<td>5.6</td>
</tr>
<tr>
<td>Student</td>
<td>1</td>
<td>5.6</td>
</tr>
<tr>
<td>Unemployed</td>
<td>12</td>
<td>66.7</td>
</tr>
<tr>
<td><strong>Highest level of education:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High school</td>
<td>2</td>
<td>11.1</td>
</tr>
<tr>
<td>College/sixth form</td>
<td>7</td>
<td>38.9</td>
</tr>
<tr>
<td>Some university</td>
<td>1</td>
<td>5.6</td>
</tr>
<tr>
<td>University (degree awarded)</td>
<td>3</td>
<td>16.7</td>
</tr>
<tr>
<td>University (postgraduate degree awarded)</td>
<td>5</td>
<td>27.8</td>
</tr>
<tr>
<td><strong>Diagnosis:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schizophrenia</td>
<td>7</td>
<td>38.9</td>
</tr>
<tr>
<td>Schizoaffective disorder</td>
<td>1</td>
<td>5.6</td>
</tr>
<tr>
<td>Bipolar disorder Type I</td>
<td>5</td>
<td>27.8</td>
</tr>
<tr>
<td>Bipolar disorder Type II</td>
<td>2</td>
<td>11.1</td>
</tr>
<tr>
<td>Bipolar disorder NOS</td>
<td>3</td>
<td>16.7</td>
</tr>
<tr>
<td><strong>Previously received psychotherapy?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>17</td>
<td>94.4</td>
</tr>
<tr>
<td>No</td>
<td>1</td>
<td>5.6</td>
</tr>
<tr>
<td><strong>Currently receiving psychotherapy?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>4</td>
<td>22.2</td>
</tr>
<tr>
<td>No</td>
<td>14</td>
<td>77.8</td>
</tr>
<tr>
<td><strong>Technology Ownership</strong></td>
<td>Frequency</td>
<td>Percentage</td>
</tr>
<tr>
<td>Smartphone ownership?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>16</td>
<td>88.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>-------</td>
<td>------</td>
</tr>
<tr>
<td>Social media profile?</td>
<td>No</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>2</td>
</tr>
<tr>
<td>Tablet computer ownership?</td>
<td>No</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>12</td>
</tr>
</tbody>
</table>

*Due to rounding, percentages may not add up exactly to 100%*

4.4.2. **Thematic analysis**

Five key themes were identified through thematic analysis of the data: 1) DHIs could be empowering tools that instigate reflection, understanding and change; 2) society is already divided; DHIs will increase this divide further; 3) considerations must be made about who has access to DHI data and how the data may be used; 4) DHIs should not be delivered without other support options; and 5) DHIs should provide a positive, fun, practical and interactive method for self-management. A thematic map is presented in Figure 3.
Theme 1: DHIs could be empowering tools that instigate shared understanding and decision-making

- Focus on positives; not just negatives
- Gamification

DHIs are empowering

- DHIs will help to make sense of and self-manage experiences
- May be particularly acceptable at early stage/after relapse
- Identify triggers and patterns
- Coping strategies for self-management
- Information to understand experiences

Theme 2: Society is already divided; DHIs will increase the divide

- Technology ownership
- Technology and literacy skills
- Reduced connections with others
- Coping strategies for self-management
- Information to understand experiences

Theme 3: Who has access to data and how this data may be used?

- Different mediums so suitable for all
- Used to cut disability benefits
- Unauthorised data access
- NHS-funded or discounted
- Third party companies - advertise products
- Automatic access for early warning sign detection, prevent forgetting and appointment

- Shared-decision making and data interpretation
- Mental health care staff

Theme 4: DHIs should not replace other support

- Different mediums (e.g. video, text) - fun and interactive
- Positive role-modelling
- Include remote support

- Signposting for further support if required
- Homeware between therapy sessions
- Instant messaging/video chat

Theme 5: DHIs should be positive, fun, practical and interactive

- Include practical design features (appointment scheduling, medication reminders)
- Not just mental health-focused
- Adjunct; not replacement

- Positive role-modelling
- Different mediums (e.g. video, text) - fun and interactive
- Include remote support

- Signposting for further support if required
- Homeware between therapy sessions
- Instant messaging/video chat

Figure 3. Thematic map
Theme 1: DHIs could be empowering tools that instigate shared understanding and decision-making

Participants often described specific needs that DHIs could address that face-to-face support options were perceived to lack. For example, DHIs were viewed as a potential method to increase intervention access and control, correct the power imbalance between service user and clinician and give people the ability to contextualise experiences.

Subtheme 1: Self-management of your own health care needs could be empowering

Participants often noted that access to support from mental health care staff was limited to working hours and constrained by barriers such as transport issues, jobs, childcare provisions and anxieties about leaving the house. Additionally, two participants said they struggled with taking time off to go on holiday due to concerns about being unsupported whilst away. Therefore, feelings of being unable to control intervention and support access were described. DHIs were viewed as a method to give individuals the control to access helpful self-management options when they were needed at any time and in any location:

“… if they’re set up well and they’re used wisely, they could be very liberating. They could be on holiday… or they could be on a long train journey… it could be like having your mental health support going alongside.” (Participant 8)

Some participants also commented that DHIs could allow them to start and stop “sessions” whenever they wished, which put them in control of the time, duration and frequency of DHI access.

Situations where it had been difficult to remember and explain feelings and experiences to friends, family and health care staff were also described. It was suggested that using DHIs to record feelings and experiences could facilitate conversations by showing records on devices to others. Additionally, one participant noted that it could be difficult for close family members to understand therapy, so activities and exercises completed on devices could be viewed by others to aid understanding. This information-sharing was viewed as empowering, because it placed individuals in the expert role and allowed them to take ownership of information disclosures:

“I think just that sense of ownership and having control I guess of it; feeling like it’s your decision and you’re… more involved in managing that process…” (Participant 11)

Information about the different support options available was viewed by some as being limited, sometimes biased and over-complicated. Therefore, it was suggested that DHIs should include information about medication and side effects, treatment options and details
about local mental health contacts to give users access to trustworthy and reliable information, which would enable them to make decisions about their own mental health care needs:

“I would love to have something like a source of information that keeps updating itself with things that you can do or things that are going to help you in some way shape or form, even like talking about new drugs that are coming out… I think it’s great to have that sort of information on there”. (Participant 7)

In summary, DHIs were referred to as “liberating” because of the potential to allow users to take control of their own mental health and recovery through ease and choice of access, readdressing the power imbalance between service users and clinicians and family members and providing trustworthy information.

Subtheme 2: People want to be given the tools to help them make sense of and self-manage their experiences

The need for a clearer understanding of experiences was expressed by participants, who sometimes felt it could be difficult to understand the nature of their conditions. DHIs were viewed as a potential method to facilitate this understanding through the provision of clear and accessible information about topics such as symptoms, early warning signs and diagnostic categories. Many participants also viewed symptom monitoring via digital devices as a method that could help them to understand their symptom triggers and patterns, which could be used to elicit behaviour change:

“Just being able to track your mood… over certain periods of the day on a regular basis and just to be able to record simple things alongside those that would then help you to identify if there were any particular cycles; if they happened on any particular time frames to see if there was any regularity of patterns. It would be useful.” (Participant 11)

However, others felt they would not personally benefit from DHIs because they had years of experience in managing their symptoms so were already able to recognise triggers and patterns and regularly used coping strategies that were helpful for them. Additionally, participants living in supported accommodation believed they already received adequate support from their care team:

“I know my illnesses anyway and… see the doctors all the time and they keep an eye on me so… I wouldn't need to use it or find anything out cos I know most of what’s up with me anyway.” (Participant 2)

Whilst some participants stated they were already self-aware so would not need symptom monitoring tools or coping strategies, they believed that these tools would be useful for
people who were experiencing symptoms for the first time, recently diagnosed, had just experienced relapse or had recently been discharged from inpatient settings:

“I can imagine it would be extremely helpful for people who are newly ill or haven’t experienced something like what they’re experiencing before… I probably would use it, but I don’t think it would be particularly good for me just because I’ve been ill for so long that I’ve sort of experienced everything already so I can sort of know when I’m on a high or depressed” (Participant 10)

Therefore, there was the overall view that DHIs could help people to contextualise and understand their experiences in a way that was meaningful for them; although, the people who would benefit the most may be those experiencing symptoms for the first time.

Theme 2: Society is already divided; DHIs will increase this divide further

An almost universal concern expressed by participants was that some people would not have the technology ownership or skills to access and use DHIs:

“[DHIs would be] great for people who’ve got it, the technology, but I think that’s an equality issue… there are lot of people here who are now stuck on JSA [job seekers allowance]. They’ve had their ESA [employment and support allowance] and their DLA [disabled living allowance] taken away from them… and it would divide and there’s so much dividing of people in this country going on at the moment… and that would make the people who can’t even more isolated than they already are.” (Participant 8)

Devices and data costs were viewed as expensive and even cheaper or second-hand models often had poor battery life and storage. Indeed, one participant described being unable to download apps because of a lack of phone storage available:

“…this phone’s not that good cos all the apps have got bigger than the memory. It’s a year and a half [old] now… so it won’t let me download anything” (Participant 1)

Therefore, there was the perception that DHIs would further marginalise members of the community without access to, or the ability to use, technology, rather than increase access to psychological interventions. Participants detailed potential strategies to overcome issues associated with technology access and skills such as installing computers and tablets in community settings, funding DHIs through the NHS, providing digital devices at discounted rates for medical use and running technology skills training classes. Additionally, participants felt DHIs should be simple and user-friendly and that information and instructions should be presented clearly using different mediums. This would improve ease of use for people who may struggle to understand written information or have physical problems such as poor eyesight.
There was also the perception that people spend too much time using technology, which has contributed to divides in society and led to people not communicating with each other. Lack of face-to-face communication within DHIs was viewed as being particularly isolating for people with poor social skills or those who are unable to see others regularly:

“… these days people think it's [technology’s] the solution to everything and it isn't by a long way cos as I've said before, you need this face to face contact otherwise people can stay in their bedrooms or in their living room and never leave because they're in this internet virtual world, which is not good for anybody.” (Participant 9)

However, it was suggested that DHIs could also be used to connect people with similar experiences via the inclusion of peer support forums.

Although there were real fears that DHIs could be inaccessible and may lead to isolation, some feasible suggestions for ways to overcome these potential barriers to DHI adoption were proposed.

**Theme 3: Considerations must be made about who has access to DHI data and how it is used**

Participants described a preference for members of their care team to have access to their DHI data to help inform care; however, views towards whether staff should have automatic access to the data were mixed. Additionally, nearly all the participants interviewed expressed some fears about the privacy and confidentiality of data entered into DHIs. Whilst no one claimed this would stop them using DHIs, issues participants raised affected the acceptability of the approach.

**Subtheme 1: Access to data from DHIs by mental health care staff**

Concerns were raised that DHIs, particularly those including symptom monitoring, could lead to service users catastrophising and over-analysing feelings without the input of mental health care staff. Additionally, some participants did not feel they would have the ability to interpret the data without a member of their care team, rendering the approach meaningless. Therefore, many participants expressed the need for mental health care staff to have access to the data provided to aid diagnosis, explore further questions and facilitate shared decision-making:

“There's an outcome, somebody's bothering with it, somebody's looking at it, somebody's saying to you… how were you feeling a week ago, it looks as though you were low, what was happening in your life at that time… rather than just randomly monitoring what you're doing.” (Participant 9)

However, opinions were mixed with regards to how access should be granted. Many participants stated a strong preference towards taking the data to staff themselves during
appointments to give them ownership and control of the information that they chose to share:

“I think... you’d have to have the option of being able to choose, and not just like a one off option at the start, but like with each graph or information... just to kind of feel I might have more control over it... I could make my own decisions in response to what the graphs were telling me” (Participant 5)

However, a smaller number said they would prefer members of their care team to have automatic access for early warning sign detection, to avoid having to remember to take smartphones or website printouts with them to appointments and so staff could review their data prior to appointments to plan discussions beforehand:

“I just think it would be easier than you taking it in to them... and they’d have it there and then so they would tailor your appointment based on the information that they’ve got so they know what they’re gonna ask you...” (Participant 17)

Some participants also voiced concerns that data gathered from DHIs may be placed in their medical files without their knowledge and used as evidence for involuntary inpatient admissions. However, there was the caveat expressed by some that DHIs could prevent inpatient admission through early identification of relapse. Therefore, different user needs led to mixed views regarding how mental health care staff should gain access to their data from DHIs.

Subtheme 2: Unauthorised access to data from DHIs

Some participants felt uneasy about inputting personal information into DHIs due to concerns that individuals outside their care team might gain access to their data. For example, there were fears that the data could be acquired by the UK Department of Work and Pensions (DWP) and used to provide evidence for stopping individuals from accessing DLA:

“...people are very suspicious... the DWP will end up knowing oh this person's going through a good phase oh jolly good JSA down the job centre... we can be quite paranoid, but it's not paranoia when it really is happening.” (Participant 8)

The potential to lose these payments also raised concerns that people may feel pressurised to be dishonest when completing the assessments, which could subsequently affect the mental health care they receive. Additionally, some participants queried the possibility that data could be obtained by third party agencies; for example, pharmaceutical companies could use the data to attempt to sell medication to users of the DHI.
“… an app… might have a tracking thing at the back to see… how often you’re using it and what you’re feeling, and then they’ll try and sell you happy pills…” (Participant 9)

Potential solutions were suggested by participants to increase their comfort in disclosing sensitive information on DHIs. For example, some recommended that terms and conditions associated with data sharing and use should be clearly explained and both service users and mental health care staff should confirm that they consent to these conditions. Two participants advocated for service user involvement throughout DHI development and stated they would feel more comfortable inputting information into DHIs if they were made aware that service users had been involved. Finally, participants were more likely to trust inputting their data on devices if the DHI was developed by a trusted source such as the NHS, a well-known charity or a University:

“I mean it can be wrote by anyone can’t it. If it did have the NHS logo on then probably… I would feel more comfortable with it or… the university… you know if it was a recognised thing.” (Participant 5)

Therefore, whilst participants did express some fears regarding the use, privacy and confidentiality of their data, they would still engage with DHIs providing they were fully informed and reassured about the use of their data.

**Theme 4: DHIs should not be provided as a replacement for other support options**

Participants were not asked whether they felt DHIs should replace face-to-face psychological interventions; however, almost all assumed that this would be the main intention of the development of DHIs for SMI. This perception led to the view that DHIs should be offered as an adjunct to face-to-face interventions or support and should include remote support options for additional assistance whilst engaging with DHIs.

**Subtheme 1: DHIs may be used a cost-cutting strategy to reduce staff numbers**

Many participants feared that the development of DHIs would justify staff cuts in NHS mental health services and reduce the provision of face-to-face psychological interventions or visits from care teams:

“I think my primary concern would just be whether or not it was used to reduce access to other forms of therapy and support…” (Participant 14)

These fears seemed to stem from the perception that, at the time of the interviews, cuts were being made to NHS services. Therefore, the provision of DHIs was viewed as an attractive option to the government that would lead to reductions in costs associated with trained staff and building maintenance. However, there was one participant who noted that the NHS needed to be more cost-efficient to continue providing care for people:
“…potentially how much [money] could that save the NHS… The mental health worker that comes around to see me once a fortnight is stretched so thin… if there was an app up and running and there was no waiting time can you imagine that...”
(Participant 5)

Therefore, the political context at the time of the interviews led to real concerns regarding the intentions behind delivering interventions via digital devices.

Subtheme 2: There is no substitute to speaking with another person about your experiences

Participants believed that the most important element of a psychological intervention was being supported by another person. For this reason, they were concerned that DHIs would not be as helpful or as effective as face-to-face interventions:

“I just don't believe there's any replacement for the compassionate presence of another human being and what that can provide... I don't think technology can ever replace the soul, depth of connection and the enormous power that that can bring…”
(Participant 11)

There were also times or situations where the only appropriate delivery method for psychological interventions was in-person. Participants who had experience of receiving different therapies felt particularly strongly about the appropriateness of different approaches delivered via DHIs. For example, some participants felt psychoeducation or CBT-informed interventions could be successfully delivered via a website or smartphone app, but therapies such as person-centred, psychoanalysis or trauma-focussed CBT would not be helpful without the presence of a trained therapist. Additionally, concerns were raised that every person is different and approaches should be tailored, combined and adapted to individuals to facilitate meaningful and helpful support. It was also believed that the standardised nature of DHIs would not allow for personalisation towards individual user needs and could potentially become repetitive:

“what is very irritating is when it's standard stuff… which you had last week and the week before.” (Participant 9)

Some participants felt DHIs could be beneficial for people with low to moderate depression or anxiety, but not appropriate for those experiencing more severe and complex symptoms. These perceptions were due to the concern that DHIs could not go as in-depth as face-to-face approaches and that symptom severity may affect individuals' abilities and motivation to engage with self-management strategies:

“I guess it depends on the nature of the disorder… If there was… a lower level disorder so… brief periods of anxiety or… very mild depression, then I would say maybe that would be something that would be beneficial.” (Participant 12)
However, two participants stated a preference for DHIs, rather than receiving face-to-face support. Both these participants explained that this preference was due to years of receiving different psychological interventions and support and the perception that none of these face-to-face approaches had been helpful for them. Therefore, they were satisfied with the idea of self-managing their own mental health with little to no additional support:

“It would be like having a little person at the side of you, a little friend… some app, that would do me… maybe not eliminate everyone though, maybe just still see the shrink like once every six months just to sort of check in…” (Participant 5)

Participants also reflected on difficulties with being open about their experiences and feelings in face-to-face settings due to fears of being judged or concerns that others would find out. DHIs were viewed by some as a potential avenue to address this issue by being faceless to allow for open and honest self-expression:

“I think it would just be easier to then open up to about how you’re feeling… because sometimes when you’re with your care coordinator you want to tell them stuff but then if your parents are there you don’t want to… but when it’s between you and the application and it’s like you’re talking, but you don’t have to look at the person when you’re talking…” (Participant 17)

Therefore, there was the almost universal belief that DHIs could never substitute the warmth, empathy and human contact face-to-face support could provide, but may be useful for people who are experiencing mild to moderate symptoms or are uncomfortable openly discussing their experiences and feelings.

Subtheme 3: DHIs should be offered as an adjunct to face-to-face therapy; not as a replacement

Although participants did not view DHIs as an alternative to face-to-face support, many could see DHIs working well in conjunction with existing support options to enhance care and offer people more choices about their care. For example, some participants suggested DHIs could be provided for people if they are on a waiting list to help them understand their experiences, practice self-management strategies and identify needs and goals prior to receiving face-to-face support:

“…to be able to turn up to your first appointment with… some information about yourself or with some charts or graphs… that brings some sense of meaning to the waiting time and gives a bit more context in that initial meeting” (Participant 11)

Participants were also enthusiastic about combining digital devices with face-to-face support options. For example, the use of DHIs to deliver homework between face-to-face sessions was popular amongst those who had previously received CBT, but had struggled with the boredom of paper-based exercises or had lost or misplaced therapy materials. DHIs were
viewed as a secure, interactive and engaging method to organise and work through these materials, which could be easily accessed after therapy for reminders of coping strategies and goals.

Previous experiences of being asked to record symptoms for use in appointments were often described by participants. However, some explained needing to retrospectively complete these reports after forgetting to record symptoms or feeling uncomfortable with the privacy of writing experiences down on paper. These participants felt using devices would help towards solving the issues associated with paper-based symptom monitoring, because alerts could be programmed to remind people to complete the assessments:

“I eventually got my diagnosis after about twelve years and I think if you had the information a lot sooner than that I think you’d be more likely to get diagnosed and get help a lot sooner and because you’re getting the reminder… it’s much better than being like oh I’ve got to write down I feel a bit sad now… I guarantee I’d think oh I can’t remember how sad I was this morning… Paper-based is a bit of a faff and it’s… more secret. I was always anxious that my family would find the mood diary… whereas if it was on your phone or on an app… I could do it in private.” (Participant 10)

DHIs were also viewed as a potential method to reduce the number of sessions required during therapy or appointments with care teams. For example, instead of seeing staff once a week, appointments could be arranged every two weeks or every month to ask questions, raise any issues, review progress and set any further goals. Some participants suggested that if this meant they could receive face-to-face support less regularly, but for a longer duration with a DHI to supplement, they would prefer this to exclusively face-to-face support:

“…face to face for six weeks or online without the person there for a longer time. I think that would also come into my considerations because if I was going to get longer by it being online… then I would favour that over just the face-to-face…”

(Participant 15)

For these reasons, the overall view expressed by participants was that DHIs could allow more people access to evidence-based psychological interventions, not by replacing face-to-face support, but by using different methods of delivery together to improve care and extend choice.

**Subtheme 4: DHIs should include remote support options for additional assistance whilst engaging with DHIs.**

There were some concerns that psychological interventions can raise strong feelings, memories and questions for people. Ordinarily, these could be managed by a therapist; however, a person may be left alone without answers or support when using DHIs.
Therefore, participants requested the inclusion of telephone, video chat, or instant messaging options via DHIs should individuals feel they require further support or need answers to practical questions raised. Contact details for further support outside the DHI such as charity helplines, emergency services and crisis teams were also suggested if people felt they needed immediate support after DHI use.

Many participants wanted to have the opportunity to connect with others using the DHI to ask questions and send and receive support. Therefore, participants requested the inclusion of social networking design features and moderated peer support forums to allow them to speak with others with this shared understanding.

“It produces kind of feelings of isolation just doing this thing all by yourself and… modules where you’ve got more forum interaction would be much easier to engage with and much more motivating than ones that don’t have a very active forum.”

(Participant 14)

However, one participant detailed previous experiences of accessing online mental health forums and witnessing others engage in unhelpful comparisons regarding symptom severity, rather than having a supportive dialogue. This participant suggested that separate forum walls, each with a different topic, should be constructed on DHIs to retain focus. Additionally, many participants requested trained moderators with lived experience of SMI to help facilitate friendly and supportive discussions.

The suggestion of additional communication options within DHIs were frequently mentioned in all interviews. This reflects the importance participants placed on the idea of communicating with others with shared experiences and the opportunities that digital devices could offer to make this possible and address this need.

Theme 5: DHIs should provide positive, fun, practical and interactive methods for self-management

Participants noted that people often focus on the negatives of experiencing mental health problems. They felt DHIs should challenge this negative stance and contain design features that provide positive, fun, practical and engaging activities to help people self-manage their mental health.

A common suggestion for design features to include in future DHIs was stories written by people with SMI at different stages of their treatment and recovery. These stories were viewed by participants as a method to help normalise and understand their experiences and learn from others with SMI, rather than health care professionals:

“…you can read the medical part and the science part but that doesn’t touch your heart and that doesn’t motivate you… you need somebody’s experience to think well they’ve got that; they’ve got out the other end better.” (Participant 17)
Some participants said they would want a page about well-known successful figures who also experienced SMI to be included in DHIs to provide inspiration and hope for the future and demonstrate to themselves and others what people with SMI can achieve. The preferred medium for these stories was video; however, some participants commented that people sharing the stories should have lived experience, rather than actors.

Symptom monitoring was viewed as a potentially useful strategy to recognise triggers and patterns; however, concerns were expressed that continually filling in information about symptoms could lead to ruminating and catastrophising. Therefore, participants wanted monitoring to focus on positive feelings and activities in addition to, or instead of, symptoms. Importantly, it was believed that this focus when monitoring could allow people to recognise the achievements and positive aspects of their days, weeks and months and identify activities or behaviours that elicited positive feelings. Additionally, one participant suggested colours should be used rather than words to represent mood:

“I wear a mood ring sometimes and I look at the mood ring and oh it's green right okay that means I can't do this… but I can do this and I can do that so I think… you make it colours rather than feelings… for people to plan their timetable for the day according to the colour so they're not concentrating… on their feelings but on what they can achieve.” (Participant 8)

Participants also commented that information about mental health could often be boring and complicated, with a focus on the negative aspects of mental health problems. Therefore, many said they wanted some information provided in the form of games to make DHIs fun and interactive, which would then motivate them to engage:

“… cos if you was one of those people that weren't motivated but the thing is like playing games… if you had a way to learn more about your illness and a game… cos while you're in the game you know you might like learning from the games.” (Participant 1)

For many, it had been daily living activities and exercises that had helped them to self-manage their mental health, rather than specific mental health-related support and tasks. Therefore, participants presented strong viewpoints that DHIs should not focus entirely on mental health-related activities. Instead, participants wanted DHIs to incorporate suggestions, tasks and exercises that were unrelated to mental health, but would still have a positive impact. For example, during symptom emergence, some participants struggled with daily living skills such as cooking and managing their finances and productivity. They suggested the inclusion of simple recipes, cleaning and gardening tips, craft ideas and money management advice to help provide people with clear, easily accessible and interactive guidance and distractions. Several participants also described the positive impact that engaging in physical exercise had made on their mental health, but noted that it was
often difficult to have the motivation to exercise or have the knowledge about the type of physical exercise to do. Participants said they need information, recommendations and videos of physical exercises to help motivate and inform them about specific activities that could be beneficial for them. Indeed, some participants requested guidance about physical activities tailored for people with SMI:

“I haven’t done proper exercise in about two years because I’m trying to keep the adrenalin like that [moves hands to level] for now. I think it would be great to have something that says okay this is a low impact thing that you can do; this is a medium and a high and progress…” (Participant 7)

Difficulties and anxieties towards arranging appointments were also raised during interviews and DHIs were viewed as a method to address these concerns. For example, appointment scheduling via DHIs was suggested as a design feature that would be practical and useful for individuals to use to arrange appointments. Additionally, some participants commented that it could be difficult to remember medication and appointments so felt DHIs could be a way to deliver reminders. However, some felt there was not a need for reminders because they were able to remember, whilst others preferred traditional paper calendars. Furthermore, one participant raised the caveat that reminders should be made humorous so that people felt like they would want to engage, rather than view instructions as burdensome or tiresome:

“… you can actually have… an icon like Big Pharma, Big fat farmer with a corn stick handing out his mouth or something. Big Farmer says take your meds [laughs] because we’re all pretty anti-psychiatry. I think we all go along with it cos, well… they do know some things, but you need humour to do this stuff.” (Participant 8)

Additional examples of information and activities participants wished to receive in DHIs included: 1) simple games to distract from thoughts and feelings; 2) lists of activities that take five minutes if people are at a loose end; 3) videos posted by others of outdoor activities that people can view if they are unable to leave the house; 4) music that may help improve mood or distract from thoughts or feelings; and 5) mindfulness and relaxation-based exercises. Therefore, participants wanted a variety of design features they would like to see in DHIs included mental health-related content such as symptom monitoring, reminders and scheduling, goal setting, coping strategies, peer support and psychoeducation, whilst also including non-mental health recovery-focussed specific information and activities.

4.3. Discussion

The aim of this study was to explore the perspectives of individuals with SMI about the hypothetical acceptability of DHIs for self-management. Participants felt DHIs could empower individuals by providing the information and tools needed to give users choice and control over their treatment and recovery. However, potential barriers to adoption were also
identified including: perceptions surrounding lack of access to digital devices; fears about breaches in data protection and handling; and assumptions that DHIs would be used to replace, rather than enhance, other mental health services. A further aim of the study was to identify service user needs and suggestions to inform recommendations for specific content and design features that should be included within DHIs for SMI. Whilst specific mental health features such as psychoeducation, symptom monitoring and appointment and medication reminders were requested, participants also wanted non-mental health recovery-focussed content.

Having the control and autonomy over the type, time and location of intervention access was viewed as a benefit over traditional face-to-face interventions. Additionally, the delivery of accessible and trustworthy information about SMI, coping strategies and symptom monitoring was viewed as a potential way DHIs could be used to aid shared decision-making by providing individuals with the tools needed to contextualise their experiences. People with SMI often describe feeling disempowered in their mental health care choices and uninvolved in the decision-making process (Matthews, 2013; Nelson, Miller, & Ashman, 2016; Stovell et al., 2017; Velligan et al., 2016). Feelings of disempowerment and lack of autonomy can be a barrier to service engagement (Tindall, Francey, & Hamilton, 2015) and recovery (Rhodes & De Jager, 2013). Giving people the choice over treatment options and promoting shared decision-making form key elements in the NHS Constitution Pledge (The Department of Health, 2015) and has been highlighted as a target for improvement by 2020 in the NHS Five Year Forward View for Mental Health (NHS England, 2016). These findings indicate that the needs of service users and aims of service providers appear to align. Therefore, to improve DHI acceptability and subsequent likelihood of adoption, DHIs should be created and positioned as avenues to empower individuals, give people choice and facilitate shared decision-making.

Participants raised concerns about the potential for DHIs to create further divisions in society through digital exclusion. These fears seemed to stem from observations of cuts to disability benefits and the assumption that some people would not have the technology skills required to engage with DHIs. However, almost all participants reported smartphone ownership and Internet access and a high level of comfort with using technology. Therefore, issues surrounding digital exclusion were not directly personally relevant to those interviewed, who seemed to raise these fears on behalf of others who may be affected. Assumptions about a lack of technology access or ownership amongst people with SMI may not be entirely accurate. A meta-analysis of studies reporting mobile phone ownership rates in people experiencing psychosis highlighted a narrowing gap in ownership in comparison with the general population (Firth et al., 2016). More recently, survey-based studies have generally indicated high levels of technology access and ownership amongst people with SMI (Gay et al., 2016; Gitlow et al., 2017; Matthews et al., 2017; Thomas, Foley, Lindblom, & Lee, 2017), although one UK-based survey reported substantially lower levels of technology
engagement than the general population (Tobitt & Percival, 2017). Therefore, whilst some studies indicate a narrowing gap in ownership, some people remain digitally excluded and participant concerns in the context of the current political environment must be considered as potential barriers to DHI adoption. Acceptable solutions were suggested including technology skills training, medical discounts and community setting access. These considerations should be made and explored when delivering DHIs to ensure people who could benefit are not prevented from gaining access.

The third theme focussed on individuals who should gain access to the data provided on DHIs. Participants believed that entering data, particularly symptom information, on a DHI in the absence of any clinician involvement may be meaningless. Therefore, participants wanted access by their care team, but mixed views were presented towards whether this access should be automatic or facilitated by the user. Traditionally, symptom monitoring approaches tend to involve the automatic transfer of symptom information to health care provider systems (Bell et al., 2017); however, these findings suggest that individuals may feel more comfortable if they are placed in control of what information is transferred to providers. This overall position echoes previous work where mental health care staff believed information transfer should be initiated by service users, rather than automatically, to give users ownership of their data (Berry, Bucci, & Lobban, 2017). Concerns were also raised regarding third party access to data, particularly government agencies who could use the data to provide evidence for DLA cuts or pharmaceutical companies who could use the data to target medication selling. Fears about the potentially harmful and inappropriate use of data could be a barrier to DHI adoption that should be addressed. Participants suggested the inclusion of clear terms and conditions regarding data use that are clearly presented and easy to understand. This is important because a recent qualitative analysis of reviews posted about apps for bipolar disorder on Google Play and Apple app stores revealed that some reviews contained warnings for potential users about unacceptable privacy issues (Nicholas, Fogarty, Boydell, & Christensen, 2017). More work is needed to identify whether these views regarding both clinician and third-party access extend beyond that of this small sample of participants.

The key fear expressed throughout interviews was that DHIs would be used as an excuse to replace other face-to-face intervention and support options. These fears appeared to be directly related to perceptions about budget cuts to NHS services at the time of interviews. However, participants were positive about the provision of DHIs to enhance user choice, provide an adjunct to existing options and reduce the number of face-to-face appointments required. Concerns about the potential for DHIs to be used as a replacement for current services have also been expressed by mental health care staff working in NHS services (Berry et al., 2017). A recent analysis of user reviews of apps for bipolar disorder highlighted that service users had sometimes reporting using these apps in conjunction with usual care to help members of their care team understand their experiences, gain more accurate insight
into symptoms and facilitate communication (Nicholas et al., 2017). Other qualitative studies with people experiencing SMI have stressed the need for continued face-to-face support, due its importance in the promotion of communication and recovery (Aref-Adib et al., 2016; Lobban et al., 2017; Palmier-Claus et al., 2013). Clearly, DHIs are generally seen as an adjunct to, rather than as a replacement for, face-to-face support, but the assumption that DHIs would be used as a replacement warrants consideration when promoting DHIs. Specifically, it must be stressed that DHIs are being as a method to extend choice and enhance care to enhance acceptability and subsequent adoption.

The inclusion of social networking design features and moderated forums was a frequent suggestion. Peer support for SMI is recommended by NICE (2014; 2014b) and there was some evidence suggesting that peer support can improve hope, recovery and empowerment (Lloyd-Evans, Mayo-Wilson, Harrison, Istead, Brown, & Pilling, 2014). Additionally, some individuals report discussing their mental health online to receive support from others with a shared understanding of mental health problems (Berry et al., 2017; Highton-Williamson, Priebe, & Giacco, 2015). Some DHIs for SMI include peer support and social networking design features (Alvarez-Jimenez et al., 2013; Thomas et al., 2016); however, considerations to improve acceptability of DHIs for SMI were noted by participants such as ensuring there was forum moderation by trained peer supporters and specific structured topics were included for forum engagement. Additionally, participants expressed the need for additional remote support options attached to DHIs to help with engagement and to allow users to ask questions and receive support if needed. Whilst there are limited DHIs that have compared the provision of remote support to no support, a recent systematic review indicated that DHI completion rates were higher when remote coaching and support were offered in conjunction with the DHI (Berry et al., 2016). These findings underline the perceived need to incorporate forums and remote support options within DHIs for SMI.

Whilst participants requested some mental health-related content, they also wanted DHIs to contain non-mental health activities and asked for all content to be engaging, fun and interactive. For example, some participants suggested games should be used within DHIs for distraction tasks and to improve motivation to engage. Gamification strategies including role-playing features, cognitive training and virtual reality games, reward systems and exercise and entertainment games show some promise in improving engagement with DHIs (Fleming et al., 2016; Li, Theng, & Fu, 2014; Smith et al., 2011). However, the effectiveness in improving engagement and motivation to use DHIs in SMI warrants continued investigation. Additionally, participants wanted DHIs to include design features not directly related to mental health, but that may still improve their quality of life and some were concerned that too much focus on self-management of mental health would lead to catastrophising and ruminating. As such, it is important that DHIs not only focus specifically on treatment, but also on recovery and quality of life.
4.5.1. Limitations

The findings must be interpreted in the context of the setting and participants interviewed. Specifically, the views expressed by a small number of participants who all had mobile phone and Internet access may not be representative of people with SMI. Second, recruitment materials specified the topic of discussion in interviews, which may have led to only individuals with strong views towards DHIs self-referring to the study. Interviews were conducted mid- to late-2016. During this time in the UK, government-funded organisations were reviewing expenditures and making well-reported service and funding adjustments to improve cost-efficiencies. Therefore, some views expressed by participants about DHIs directly appeared to stem from their experiences of seeing themselves or others be affected by such changes. Finally, whilst all participants had received a diagnosis of SMI, assessments were not made prior to interviews. This means that we were not able to identify whether symptomatology at the time of interviews could have affected the views expressed by participants. Finally, the researchers involved in the analysis were all involved in trials implementing DHIs for SMI, which may have led to bias in interpretation of the data. To mitigate the possibility of researcher bias during the analysis process, regular research team meetings were scheduled to discuss potential biases and the first author kept a reflective journal during the data collection and analysis stages to reflect back on with the research team.

4.5.2. Clinical implications

This study highlights the feasible and creative content and design features service users want to see researchers include in DHIs for SMI and demonstrates the need for continued and improved service user involvement from DHI conception. The suggestions made by participants indicate that content that is recovery-focussed and strengths-based would be acceptable for people with SMI in addition to mental health-focussed content. Additionally, the findings demonstrate the need for continued consideration of the potential utility of symptom monitoring in clinical practice. Specifically, the automatic availability of symptom monitoring data for clinical use was perceived as advantageous to identify early warning signs and triggers and patterns and aid diagnosis. However, concerns were raised regarding access by unauthorised parties and the transfer of service user data ownership and control and ownership to staff. This transfer was viewed to have the potential to disempower service, despite being designed to empower them. Work is needed to understand how automatic transfer of data to services can still occur for those who want it, whilst still maintaining their feelings of control and ownership. Finally, remote peer support design features were popular amongst participants, which highlights the need for continued integration of social media and forums within DHIs.
4.5.3. **Conclusion**

This study identified the hypothetical acceptability of DHIs for SMI through discovering service user views about the facilitators and barriers to use. Additionally, service users had a number of suggestions for design features and content to include DHIs to address their needs. Specifically, barriers to DHI use included the potential exclusion of individuals without DHI access, concerns about privacy and confidentiality and fears that DHIs would be used to replace other mental health support options. Participants were encouraged about the idea of DHIs through the ability to self-manage their mental health, access trustworthy information, and take control over their own health care needs. Importantly, service users wanted DHIs to be fun, positive, engaging and recovery-orientated, with a mix of mental health and non-mental health-related content. Ideas proposed by service users in this study could be used by others to inform the design of future DHIs that are likely to be acceptable to individuals with SMI.

4.6. **Acknowledgments**

The authors would like to thank the participants who took their time to provide their views and experiences. NB is a PhD student funded by the MRC Health eResearch Centre (HeRC), Farr Institute, United Kingdom (MR/K006665/1).

4.7. **Authors’ Contributions**

All authors contributed to the development of the research question, study design, and final manuscript. NB completed the first draft of the manuscript, with SB and FL providing critical feedback. All authors approved and contributed toward the final manuscript.

4.8. **Conflicts of Interest**

NB is a PhD investigating how technology can be used to deliver psychological interventions for people who experience severe mental health problems. SB and FL are both principal investigators on current clinical trials implementing digital health interventions for severe mental health problems.
Chapter 5: Use of the Internet and mobile phones for self-management of severe mental health problems: a qualitative study of staff views

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Use of the Internet and mobile phones for self-management of severe mental health problems: qualitative study of staff views

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5.1. **Abstract**

**Background:** Researchers are currently investigating the feasibility, acceptability, and efficacy of digital health interventions for people who experience severe mental health problems such as psychosis and bipolar disorder. Although the acceptability of digital health interventions for severe mental health problems appears to be relatively high and some people report successfully using the Internet and mobile phones to manage their mental health, the attitudes of mental health care staff toward such approaches have yet to be considered.

**Objective:** The aim of this study was to explore mental health care staff experiences of clients with severe mental health problems engaging with the Internet and mobile phones to self-manage their mental health and their views toward these behaviours. The study also sought to examine the opinions expressed by mental health care staff toward digital health interventions for severe mental health problems to identify potential facilitators and barriers to implementation.

**Methods:** Four focus groups were conducted with 20 staff working in mental health care services in the North West of the England using a topic guide. Focus groups involved 12 staff working in secondary care psychological services (7 participants in focus group 1 and 5 participants in focus group 4), 4 staff working in a rehabilitation unit (focus group 2), and 4 staff working in a community mental health team (focus group 3). Focus groups were transcribed verbatim, and transcripts were analysed thematically to identify key themes that emerged from the data.

**Results:** Four overarching themes, two with associated subthemes, were identified: 1) staff have conflicting views about the pros and cons of using Web-based resources and digital health interventions to manage mental health; 2) digital health interventions could increase access to mental health support options for severe mental health problems but may perpetuate the digital divide; 3) digital health interventions’ impact on staff roles and responsibilities; and 4) digital health interventions should be used to enhance, not replace, face-to-face support.

**Conclusions:** This study is the first, to our knowledge, to qualitatively explore the experiences and attitudes of mental health care staff toward individuals with severe mental health problems using the Internet, mobile phones, and digital health interventions to self-manage their mental health. Understanding the positive and negative experiences and views shared by staff toward both current and potential digital health intervention use has enabled the identification of several considerations for implementation. Additionally, the findings suggest mental health care staff need clear guidance and training in relation to their responsibilities in recommending reputable and secure websites, forums, and digital health interventions and in how to manage professional boundaries on the Internet. Overall, the
study highlights that digital health interventions could be well received by staff working in mental health services but importantly, such management options must be presented to frontline staff as an avenue to enhance care and extend choice, rather than as a method to reduce costs.

**Keywords:** Psychosis; bipolar disorder; mHealth; eHealth; clinicians; mobile phone; Internet; intervention

5.2. Introduction

Mobile phone and Web-based psychological interventions, or digital health interventions, are increasingly being developed for people who experience mental health problems. Indeed, the National Institute for Health and Care Excellence has recommended the provision of computerized cognitive behavioural therapy (cCBT) for the treatment of depression and anxiety (NICE, 2013). However, the Five Year Forward View, an initiative by the UK National Health Service (NHS) aiming to reform current services and transform care, highlights the current limited use of technology within services and sets out the priority to harness technology within clinical settings (NHS England, 2014). To this end, the NHS has approved a number of websites and mobile phone apps for a range of mental health problems (NHS Choices, 2015) and has recently launched an early version of the NHS Digital Apps Library that catalogues a number of apps aimed to help people manage their health care needs (NHS, 2017).

Some individuals who experience severe mental health problems such as psychosis and bipolar disorder report already using the Internet and mobile phones to self-manage their mental health. For example, some use the Internet to search for health-related information such as medication, diagnoses, and symptoms and to discuss their mental health on the Internet with others (Aref-Adib et al., 2016; Birnbaum et al., 2015; Lal et al., 2016; Schrank et al., 2010; Townsend, Zippay, Caler, & Forenza, 2016; Villani & Kovess-Masfety, 2017). Additionally, staff working in mental health care services have reported largely neutral or positive attitudes toward the use of digital health interventions for the management of mental health problems (Carper, McHugh, & Barlow, 2013; Gun, Titov, & Andrews, 2011; Pierce, Twohig, & Levin, 2016; Schueller, Washburn, & Proce, 2016; Sinclair et al., 2013; Stallard et al., 2010; Vigerland et al., 2014, but are cautious about using digital health interventions for severe and complex cases (Sinclair et al., 2013; Stallard et al., 2010; Vigerland et al., 2014). Specifically, many believe that digital health interventions could improve access to psychological interventions, increase comfort in disclosing information, normalize experiences and reduce stigma, monitor clients' symptoms, evaluate therapeutic outcomes, and promote help-seeking behaviours (Schueller et al., 2016; Sinclair et al., 2013; Stallard et al., 2010; Vigerland et al., 2014). However, staff also have numerous concerns about digital health interventions, including the perceived inferiority in comparison to face-to-face support, limited guidance with regard to efficacy and credibility, ethical concerns if clients report that
they themselves or other people are at risk, potential breaches of data confidentiality, and limits in clients’ technology access and skills (Pierce et al., 2016; Sinclair et al., 2013; Stallaed et al., 2010; Vigerland et al., 2014).

An evidence base is emerging regarding current Internet and mobile phone use for self-management reported by people with severe mental health problems, but there is a paucity of research examining the experiences and views of staff toward these behaviours. Additionally, although several studies have explored service user views regarding the hypothetical acceptability of digital health interventions for severe mental health problems (ie, the acceptability before or without receiving an intervention) (Berry et al., 2016), much of the current research investigating staff views is based on cCBT for mild-to-moderate mental health problems, rather than digital health interventions more generally for severe mental health problems. Digital health interventions informed by approaches such as CBT (Bucci et al., 2015), psychoeducation (Hidalgo-Mazzei et al., 2016; Proudfoot et al., 2012; Smith et al., 2011), and mindfulness (Murray et al., 2015) are being offered in a research context for people with severe mental health problems. However, to successfully implement digital health interventions, it is important to understand the views and concerns of staff who will be required to promote and support their use (Donovan, Poole, Boyes, Redgate, & March, 2015; East & Harvard, 2015). Therefore, this study aimed to: 1) investigate the experiences and views of mental health care staff toward clients with severe mental health problems using the Internet and mobile phones to manage their mental health and 2) explore opinions expressed by mental health care staff (hypothetical acceptability) toward digital health interventions for severe mental health problems to identify the potential facilitators and barriers to the implementation of digital health interventions in mental health care services.

5.3. Method

5.3.1. Design

Focus groups were used as a convenient way to explore a range of staff views while minimizing the burden of participation. Through the process of group discussion, they also facilitated the development and elaboration of ideas that may not have been previously articulated (Stewart et al., 2014).

5.3.2. Sampling and Recruitment

Participants comprised mental health care staff working in the NHS based in the North West of England and recruited via convenience sampling. Service leads working in mental health services were approached via email by the researchers enquiring as to whether they would be open to presenting their staff with the opportunity of participating in a focus group. The researcher then liaised with the service leads to arrange the focus groups with staff who had expressed an interest in participating. The lead researcher had no established relationship with any of the participants before the start of the study.
5.3.3. Procedure

Four focus groups were held across three mental health trusts in the North West of England from April 2016 to September 2016. Focus groups involved staff working in psychological services, a community mental health team, and a rehabilitation unit and lasted between 30 and 60 min. Before the audio-recording of the focus groups, participants were presented with consent forms and a brief demographics and technology ownership questionnaire to complete. NB conducted all focus groups using a topic guide (Appendix 8) in a private room in participants’ workplaces. Questioning focused on two key areas: 1) staffs’ experiences of clients’ use of the Internet and mobile phones and 2) views about the acceptability of implementing digital health interventions for severe mental health problems in mental health care services. NB kept field notes throughout focus groups, completed a reflective journal, and reviewed the topic guide and transcripts after each focus group to identify any additional areas of discussion that naturally arose.

5.3.4. Data analysis

Data were analysed thematically to understand common themes arising in response to the research questions (Braun & Clarke, 2006). After the focus groups were completed and transcribed, NB (PhD student, psychology) read each transcript repeatedly for data familiarization and initially coded the transcripts in a cyclical process, returning to previous transcripts when new codes emerged. The other members of the research team (academic clinical psychologists SB and FL) also independently read and assigned codes to the first group transcript, and the team met to discuss and compare codes and develop an initial coding scheme. NB continued to develop this coding framework by analyzing the remaining transcripts and started to draw out preliminary subthemes emerging from these codes. Further team discussion was used to refine and create a final set of themes that reflected participants’ views and experiences across all focus groups. These themes were presented to some of the group participants, which helped to refine the way in which the themes were presented.

5.3.5. Reflexivity

NB is a PhD student investigating how digital health interventions could be used to support people with severe mental health problems. SB and FL are academic clinical psychologists who are principal investigators on clinical trials implementing digital health interventions for this population and have extensive experience in conducting and supervising qualitative studies. It is important to acknowledge that these experiences may affect the analysis and interpretation of the data, so several steps were taken to minimize the likelihood of this occurring. First, NB was careful to present the research questions in an open and neutral way with no indication of the views of the research team and encouraging people to explore the full range of views. Additionally, questions surrounding the potential benefits and
drawbacks of digital health interventions were initially phrased broadly to ask staff about their thoughts surrounding digital health interventions, and the terms benefits and drawbacks were only used later for further probing. Finally, NB kept a reflective journal to consider how staff responses in each focus group affected her own views about digital health interventions throughout data collection, analysis, and reporting and tried to take this into consideration when analyzing the data.

5.3.6. Ethical Considerations

The study received ethical approval from NHS Cambridge South Research Ethics Committee (ref: 16/EE/0059). All participants provided verbal and written consent for participation, audio-recording of focus groups, and the use of direct quotations in publications resulting from the research. Participants did not receive any financial or professional incentives for participation.

5.4. Results

5.4.1. Participant Characteristics

A total of 20 mental health care professionals were recruited across four focus groups. A summary of participant characteristics is presented in Table 8.

Table 8. Summary of participant characteristics (N=20),

<table>
<thead>
<tr>
<th>Demographic information</th>
<th>Overall sample</th>
<th>Mean age (years)</th>
<th>42.35 (range: 27-62)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Gender</td>
<td></td>
<td>16 female; 4 male</td>
</tr>
<tr>
<td></td>
<td>Ethnicity</td>
<td></td>
<td>White British (n=16)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>White Irish (n=2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>British Pakistani (n=1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>White other (n=1)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Job role and technology ownership information</th>
<th>Focus group 1 (secondary care psychological services)</th>
<th>Job title</th>
<th>Clinical psychologist (n=7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean time working in mental health services (years)</td>
<td>14 years 8 months (range: 12 years - 21 years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean technology comfort level</td>
<td>5.5. (range: 4-6)a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobile phone ownership n (%)</td>
<td>7(100)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smartphone ownership n (%)</td>
<td>7(100)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tablet computer ownership n (%)</td>
<td>4(57.14)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social media use n (%)</td>
<td>6(85.71)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Focus group 2 (rehabilitation unit)</th>
<th>Job title</th>
<th>Staff nurse (n=3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean time working in mental health services (years)</td>
<td>14 years 6 months (range: 5 years 6 months-19 years)</td>
<td></td>
</tr>
<tr>
<td>Mean technology comfort level</td>
<td>4.25 (range 1-6)a</td>
<td></td>
</tr>
<tr>
<td>Focus group 3 (community mental health team)</td>
<td>Focus group 4 (secondary care psychological services)</td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>--------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>Job title</strong></td>
<td><strong>Job title</strong></td>
<td></td>
</tr>
<tr>
<td>Occupational therapist (n=2)</td>
<td>Clinical psychologist (n=3)</td>
<td></td>
</tr>
<tr>
<td>Clinical practice nurse (n=1)</td>
<td>Psychological therapist (n=2)</td>
<td></td>
</tr>
<tr>
<td>Community team lead (n=1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mean time working in mental health services (years)</strong></td>
<td><strong>Mean time working in mental health services (years)</strong></td>
<td></td>
</tr>
<tr>
<td>12 years 9 months (range: 5 years-16 years)</td>
<td>19 years 5 months (range: 15 years-25 years 11 months)</td>
<td></td>
</tr>
<tr>
<td><strong>Mean technology comfort level</strong></td>
<td><strong>Mean technology comfort level</strong></td>
<td></td>
</tr>
<tr>
<td>5.75 (range: 5-6)</td>
<td>5 (range 5-5)</td>
<td></td>
</tr>
<tr>
<td><strong>Mobile phone ownership n(%)</strong></td>
<td><strong>Mobile phone ownership n(%)</strong></td>
<td></td>
</tr>
<tr>
<td>4(100)</td>
<td>5(100)</td>
<td></td>
</tr>
<tr>
<td><strong>Smartphone ownership n(%)</strong></td>
<td><strong>Smartphone ownership n(%)</strong></td>
<td></td>
</tr>
<tr>
<td>3(75)</td>
<td>5(100)</td>
<td></td>
</tr>
<tr>
<td><strong>Tablet computer ownership n(%)</strong></td>
<td><strong>Tablet ownership n(%)</strong></td>
<td></td>
</tr>
<tr>
<td>3(75)</td>
<td>4(80)</td>
<td></td>
</tr>
<tr>
<td><strong>Social media use n(%)</strong></td>
<td><strong>Social media use n(%)</strong></td>
<td></td>
</tr>
<tr>
<td>3(75)</td>
<td>3(60)</td>
<td></td>
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</tbody>
</table>

\(^a\) 1 = extremely uncomfortable; 6 = extremely comfortable

### 5.4.2. Thematic Analysis

Thematic analysis of focus group data generated four key themes and five subthemes: 1) staff have conflicting views about the pros and cons of using Web-based resources and digital health interventions to manage mental health; 2) digital health interventions could increase access to mental health support options for severe mental health problems but may perpetuate the digital divide; 3) digital health interventions impact on staff roles and responsibilities; and 4) digital health interventions should be used to enhance, not replace, face-to-face support. A diagram of the themes and associated subthemes is presented in Figure 4.
Figure 4. Diagram representing main themes and subthemes.

**Theme 1: Staff Have Conflicting Views about the Pros and Cons of Using Online Resources and DHIs to Manage Mental Health.**

**Subtheme 1: Pros and Cons of Individuals Searching Online for Information about Mental Health.**

Across all focus groups, staff welcomed clients searching the Internet for information about mental health problems because it allowed people to access potentially helpful information at any time and in any place, without the need to ask staff:

*Participant 15:* “It’s instant for them at a time when they’re needing answers...It’s there at their fingertips. They don’t have to wait...until the clinic opens to speak to the CPN.” (Focus group 3, Community mental health team)

Indeed, several participants in both focus groups in secondary care psychological services described instances where clients had gone to extensive lengths to educate themselves about their mental health using information that had been retrieved on the Internet. This had sometimes been beneficial before beginning therapy:

*Participant 20:* “…she’d done a lot of research herself...so when she came into therapy she was in a very different place than a lot of people because she kind of already started herself.” (Focus group 4, Secondary care psychological services)
Additionally, several clinical psychologists and psychotherapists in focus groups 1 and 4 had used Web-based resources within sessions with clients, which had been a valuable component of the session and helped normalize experiences:

Participant 6: “There are some good YouTube videos...around compassion focussed therapy...we've done that together...so I guess if it's done in a clinical setting in a careful way it's been massively useful...in terms of normalising particularly and de-shaming.” (Focus group 1, Secondary care psychological services)

Across all focus groups, staff also revealed that they searched the Internet for information about their own mental and physical health care needs. Consequently, they understood and related to clients’ information-seeking and were generally willing to embrace, encourage, and, if needed, guide this behaviour. Indeed, staff expressed that they would specifically want to see psychoeducation included within future digital health interventions. These comments reflect current Internet information-seeking behaviours by both staff and clients alike and suggest that staff would be positive about the provision of psychoeducational material in digital health interventions.

Although many of the experiences that staff shared were positive, concerns were raised about the abundance of unregulated Web-based material relating to mental health. Specifically, Web-based information could be biased, inaccurate, and misleading and, in all focus groups, staff described situations where clients had engaged in what they perceived as harmful or damaging behaviours as a direct result of reading information on unregulated websites:

Participant 17: “I had a client in the past who bought...something...from America. He thought it was gonna cure his mental health problem...he ended up on the ward...but that was his belief that he read it on the Internet that if he got this substance it would make him better.” (Focus group 4, Secondary care psychological services)

Concerns were also expressed about Web-based information surrounding topics such as religion, conspiracy theories, and antipsychiatry messages. These were perceived as having the potential to reduce engagement with services and medication adherence and fuel distressing beliefs often associated with severe mental health problems:

Participant 9: “...you can find information saying all psychiatry is the work of Satan and you can find sites that say don’t see a psychiatrist...”

Participant 11: “It can feed your delusions” (Focus group 2, Rehabilitation unit)

The term trusted websites was, therefore, mentioned frequently, with specific examples of charitable and national organizations. Private company websites such as pharmaceutical
companies, private counseling and psychotherapy services, and unmoderated chat rooms were viewed as untrustworthy sources of information. Although staff noted that they themselves actively engaged in Web-based information-seeking, they had concerns about the vulnerability of clients. Specifically, staff felt that they had the training and experience to filter potentially biased or inaccurate information but that the general public (including clients) may not have such capabilities. Therefore, staff were keen to see the promotion of greater awareness regarding the potential dangers of unregulated websites.

In summary, staff expressed many positive and negative experiences of clients searching the Internet for information about mental health. Specifically, Web-based information had been a helpful resource before, and in-conjunction with, face-to-face therapy and could be accessed at any time clients needed information. However, negative experiences of clients accessing unhelpful Web-based content had led to concerns regarding the quality and trustworthiness of Web-based information.

Subtheme 2: Pros and Cons of Communicating on the Internet about Mental Health.

Participants detailed many benefits of interacting with others via the Internet. In particular, staff in all groups had experienced clients’ receiving helpful support from peers via Web-based forums and social media websites. The anonymous nature of forums and the ability to communicate with others who had faced similar experiences were viewed as potential reasons why people may feel more comfortable expressing themselves via these platforms in comparison to face-to-face environments:

Participant 6: “a lot of the forums you have pseudonyms and stuff don’t you...so you do feel more open and able to express yourself and your opinions more freely”

(Focus group 1, Secondary care psychological services)

Social media websites and forums were also viewed as a place where individuals could vent and feel like they had spoken with another person, even if they do not have a close social network, are unable to leave the house, or not comfortable speaking with others face-to-face:

Participant 18: “people who struggle to relate to other people…they don’t have to leave their comfort zone in a way to almost be with people. It’s kind of an interim position perhaps.” (Focus group 4, Secondary care psychological services)

The positive experiences of social media websites and forums reflect the perceived utility of these resources as pathways to receive peer support and to connect with others with a shared understanding.

Staff in all focus groups were, however, concerned that discussing mental health problems on forums and social media websites could lead to individuals being bullied, trolled, or taken advantage of by others. One participant working in secondary care psychological services
speculated whether the occurrence of negative Web-based behaviours such as cyberbullying could be because of the faceless nature of forums and some social media websites, which could lead to people not seeing the distress that negative comments can cause. Other participants acknowledged this viewpoint and agreed that clients they had seen had made similar observations:

*Participant 5: “Is there something about the internet though that can attract some negativity that people wouldn’t say in real life to people…you can sort of not see the impact of what you say…” (Focus group 1, Secondary care psychological services)*

Staff across groups also described instances in which they felt clients had disclosed what they believed had been too much personal information on the Internet. They felt that such disclosures had the potential to cause embarrassment, distress, and lead to others targeting and taking advantage of the person who had posted this information. Of particular concern to all participants was that the Internet could increase opportunities to communicate with others in ways that were seen to enhance risk of self-harm and suicide:

*Participant 13: “we…had a bunch of girls who were communicating via Facebook…they all had a suicide pact together…” (Focus group 3, Community mental health team)*

Staff suggested strategies that could be used to manage this, such as ensuring that forums are moderated. Staff working in a community mental health team even suggested that NHS Trusts should offer their own moderated forums for clients to engage with, reflecting the level of importance staff placed on forum provision and moderation.

In summary, staff believed the opportunity to connect with others with a shared understanding and the potential for accessible peer support was a benefit of Web-based communication and could be incorporated into future digital health interventions. However, staff had experienced or were concerned about the potential drawbacks of cyberbullying and trolling, overdisclosures, and Web-based communication about engaging in suicidal behaviours.

*Subtheme 3: Pros and Cons of Implementing DHIs for SMI in Mental Health care Services.*

The anonymous nature of digital health interventions was viewed as beneficial in comparison to face-to-face support because there may be times and situations where individuals feel more comfortable disclosing sensitive information to a digital device, rather than another person. Additionally, staff in the community mental health team and secondary care mental health services observed that clients could sometimes be reluctant to complete paper-based exercises because of concerns about others finding these materials. Therefore, people may feel more comfortable using digital health interventions because of the
increased privacy and reduced risk of others being able to find hard copies of therapy materials:

Participant 20: “We've had clients who have wanted to record but are fearful of somebody finding paper so I think it could give some sort of privacy confidentiality…” (Focus group 4, Secondary care psychological services)

However, staff in all focus groups raised fears that companies or individuals could be able to hack digital devices and obtain sensitive user information and responses. These concerns reflect the dilemma that although digital health interventions may increase privacy, this may still be limited because of the potential security issues associated with using technology.

Staff were also asked about the use of digital devices to monitor thoughts, feelings, and experiences in-the-moment. Responses to symptom monitoring via apps were largely positive and staff across groups identified times when clients had found it difficult to remember how they had been feeling since the last session or appointment they attended. Therefore, digital devices were viewed as a potential method for people to record symptoms and experiences in the moment, offering the opportunity to discuss and reflect on over time. Indeed, one staff member specifically searched for an app for a client to help identify triggers and patterns:

Participant 14: “…I was sort of looking at that as a way of getting her to monitor her moods over a period to try to understand a bit better the pattern of what was happening with her and why” (Focus group 3, Community mental health team)

However, staff working in secondary care psychological services and a community mental health team felt continuous monitoring may become tiresome and could lead people to unhelpfully dwell on experiences. Therefore, the suggestion was made that monitoring via digital devices should also involve recording positive events for people to identify, recognize, and acknowledge.

Across all focus groups, digital health interventions were seen as useful for some people because it may be easier for them to be honest about their feelings when asked on a faceless device rather than by another person. Conversely, concerns were raised that the faceless nature of digital health interventions may lead to people underreporting the severity of their symptoms to reduce the levels of care they receive, although others might exaggerate symptoms to increase care:

Participant 9: “…you don’t know whether that person’s racking it up…”
Participant 11: “…it could be like I have no symptoms no problems right now, can I get out of hospital now?” (Rehabilitation unit)

Staff responses regarding the potential benefits and concerns about digital health interventions reflect the mixed views toward this approach. Specifically, concerns regarding
data confidentiality and truthfulness of responses need to be addressed to ensure that staff feel comfortable recommending clients to receive digital health interventions.

**Theme 2: DHIs Could Increase Access to Mental Health Support Options for SMI, But May Perpetuate the Digital Divide.**

Regular Internet and mobile phone use was viewed as the norm, particularly for the younger generation and, therefore, seen as a mechanism to improve access to mental health support. However, there was the recognition that many people do not have the technology skills required to use digital health interventions. Staff working in a residential unit noted that many clients showed very limited technology skills and feared this would pose a significant barrier to providing digital health interventions within services, thus perpetuating the digital divide:

*Participant 8: “I do get asked quite a lot. I’ve got a phone I don’t know how to send a text, can you send a text for me? But it’s that basic…” (Focus group 2, Rehabilitation unit)*

A technology skills training program was suggested as one possible solution to overcoming this barrier. Staff also revealed that some clients did not have ownership of, or access to, the Internet or mobile phones and even those who did would lose their phones and change numbers frequently. These perceptions led to concerns about how individuals would be able to access digital health interventions. When asked about the NHS supplying devices for digital health interventions, staff in all groups felt the NHS should not provide the required technology because of concerns that tablets and mobile phones may get lost, sold, or damaged. Additionally, staff in rehabilitation unit and community mental health team believed that other health care needs such as medication should take precedence over the provision of digital health interventions. Conversely, a smaller number of participants within these groups argued that digital health interventions could allow more people to have access to support options, which could reduce the levels of staff needed and save the NHS money. The reflective journal completed by the interviewer detailed the observation that NHS funding digital health interventions was a particularly contentious issue and raised animated responses from all participants. A note made in the journal after the focus group with the community mental health team reflects this point:

*Interviewer: “I am beginning to see a pattern emerging with participants displaying particularly strong views towards the idea of the NHS funding devices. As soon as the digital divide barrier is raised by participants, the view that the NHS should not pay for devices is raised almost immediately. When I then try to explore why, this question is met with polite laughter at the thought that the NHS should make these provisions”. (Reflective journal, Focus group 3, Community mental health team)*
Therefore, the overall position of staff was that the NHS would not have the resources required to supply the devices needed to deliver digital health interventions.

Although potential issues regarding access and capacity were raised, participants in all focus groups were still able to recall experiences of clients actively engaging with digital devices to self-manage their mental health, including 1) accessing information about medication, diagnoses, symptoms, personal stories, and coping strategies; 2) using forums and social media websites to discuss mental health; 3) using mobile phone cameras to photograph formulations during therapy sessions; 4) using alarms and calendars on mobile phones for appointment and medication reminders; and 5) using apps to receive already existing self-management options.

Findings from this theme suggest the digital divide may be a barrier that prevents mental health care staff from supporting the implementation of digital health interventions into clinical practice. Specifically, concerns were raised by participants about clients’ basic technology skills and ownership, and staff questioned how some would be able to afford access to digital health interventions. However, this theme also identified the potential facilitator to implementation that some individuals and staff are already using digital devices for self-management.

Theme 3: DHIs Impact on Staff Roles and Responsibilities.

Subtheme 1: Responsibility to protect clients from potential harm

Staff reported a strong sense of responsibility toward clients engaging with digital devices. This was particularly evident in a focus group involving participants working in a residential unit that was soon to be serviced with a tablet computer for use by clients. Staff felt they would need to limit the amount of time that clients could access the tablet, monitor and control websites and apps visited, and conduct risk assessments before allowing access:

*Participant 11: “We’d supervise, we’d restrict, we’d filter, we’d feedback…” (Focus group 2, Rehabilitation unit)*

This perceived responsibility seemed to stem from fearing that clients may use the tablet to access websites containing potentially inappropriate content such as extreme beliefs written by others, antipsychiatry messages, pornographic material, and gambling websites, which may exacerbate symptoms and decrease engagement with services. However, 2 participants noted that, despite these concerns, access should still be provided to ensure that clients are given the opportunity to live autonomous lives. Additionally, prior experiences of clients writing status updates on their social media profiles surrounding delusional beliefs had led to staff in this service needing to intervene by contacting social media websites and restricting client access. Therefore, it was apparent that staff felt they needed to protect some clients’ because of their perceived vulnerability to Web-based content and
overdisclosure. The reflective journal completed by the interviewer after this focus group detailed the emotional response from participants:

“I get the sense that staff feel a huge burden of responsibility towards protecting their clients from harm and take this responsibility incredibly seriously. Staff expressed strong concerns that they would be required to supervise clients using the tablet, when their time would be better spent elsewhere. It felt like staff believed tablets could be positive, but the limited staff resources would mean the provision of tablets at this time would be a burden for staff; not a helpful addition. Whilst conversations remained positive, two participants did raise their voices and spoke emotionally about their fears regarding the additional responsibilities and work pressures associated with the acquisition of a tablet for the unit”. (Interviewer, Reflective journal, Focus group 2, Rehabilitation Unit).

Staff participating in the focus groups within secondary care psychological services and a community mental health team also raised concerns about perceived responsibility. For example, several staff said they would recommend reputable websites or apps to clients; however, others were uncomfortable making recommendations because of their responsibility if these resources were unhelpful. Indeed, in one focus group, participants expressed a wish for more detailed information about NHS-endorsed websites and apps that they could recommend to clients:

Participant 14: “If I was thinking of an app for a service user, you’re a bit uncomfortable recommending…”
Participant 15: “that’s what we were taking about developing weren’t we something like a directory of things that we could use…” (Focus group 3, Community mental health team)

Additionally, staff in all focus groups were worried about their moral, legal, and professional obligations with regard to assessing risk information such as suicidal ideation and behaviours if clients were monitoring symptoms via digital devices:

Participant 19: “…if somebody’s really low and threatening suicide, what responsibility do you have for that; what would be their expectations?”
Participant 18: “What if it gets to you when you’re in an appointment and you can’t respond to it until the next day?” (Focus group 4, Secondary care psychological services)

A potential solution identified by staff working in secondary care services and a community mental health team was that clients could bring their own symptom reports to appointments. Not only did staff feel this would give clients control over the information they shared, they also felt the level of burden and responsibility on themselves would be minimized. This
proposal received particularly strong responses from all participants in these focus groups, as noted in a comment in the reflective journal made by the interviewer after the fourth focus group:

Interviewer: “Staff made the really interesting suggestion in the first focus group that rather than receive symptom monitoring responses automatically, they would prefer to receive them from the client to address the power imbalance and minimise the burden associated with automatic responses. Therefore, I decided to explore this further in subsequent focus groups. Participants seemed particularly animated and excited at the potential for technology to be used in this way, which was demonstrated through non-verbal communication such as nodding in agreement and smiling and through verbal acknowledgements of agreement. These positive responses were a stark contrast to the proposal of automatic symptom monitoring, which generated immediate disapproval from all but one participant across groups”.

(Reflective journal, Focus group 4, Secondary care psychological services)

Staff working in secondary care services also described devoting time within sessions to reflect on friendships clients had formed on the Internet over topics such as suicide pacts and self-harm strategies. Additionally, staff in these focus groups had experiences of providing psychoeducation to address misinformation that clients had obtained on the Internet. These past experiences had contributed toward concerns about the availability of unregulated Web-based material and Web-based discussions surrounding mental health.

To summarize, staff recounted several experiences of clients accessing Web-based content that led to negative consequences. Therefore, staff felt paternalistic toward clients’ access to this content. Additionally, concerns regarding their own knowledge of websites and apps prevented some from making recommendations and concerns raised about the potential legal, moral, and ethical implications regarding automatic symptom monitoring need to be considered during implementation.

**Subtheme 2: Maintaining Professional Roles and Boundaries**

Staff were not directly asked about how the Internet and mobile phones affected their professional boundaries with clients; however, the issue naturally arose during all focus groups and was discussed at length. For example, participants reported concerns about clients sending friend requests over social media websites, the availability of personal information on the Internet that may affect professional relationships with clients, and fears that others may see personal social media posts that they disagree with and subsequently report. For this reason, many staff said they did not use social media websites or limited the amount of personal information they disclosed on the Internet.

Staff in focus group 1 (secondary care psychological services) also detailed situations in which they had used text messages (short message service, SMS) to remind clients about
upcoming appointments; although, one participant noted this would only be for the first few appointments to avoid taking too much responsibility. Additionally, there were differing opinions expressed by community mental health team staff regarding sending text messages to clients. Some staff shared their personal mobile phone numbers, with the understanding that there would be limits as to when clients could contact them, whereas others were concerned about breaches in data confidentiality and the risk of clients contacting them outside working hours. Indeed, the focus group transcript and reflective journal maintained by the interviewer revealed a debate between participants regarding the boundary issues associated with staff and client mobile phone communication:

Participant 12: “I text a few of mine…I don’t do it with everybody but they do respond well to it…”
Participant 13: “I think you have to be very careful what data is relayed in a text. If it’s simple facts of phone numbers or dates and times fine”
Participant 11: “and they have your number then so you don’t want to be giving it out to people who might be contacting you.” (Focus group 3, Community mental health team)

Monitoring clients’ social media profiles for information about daily functioning and risk was unanimously criticized in all groups as a misuse of trust and power, which could potentially damage the therapeutic relationship.

Participant 3: “I think it could actually be quite damaging…especially if your clients have quite paranoid thoughts…”
Participant 2: “you should respect that everything they want to bring to that session that’s what they want to talk about…” (Focus group 1, Secondary care psychological services)

The suggestion of staff accessing clients’ social media profiles was the topic that seemed to provoke the most emotive responses from participants during focus groups. The interviewer noted in the reflective journals that responses often involved verbal utterances of disagreement such as tutting and shocked laughter and nonverbal cues such as shaking heads and raising eyebrows. The importance participants placed on this topic was also reflected in focus group 1 responses to the interviewer asking how they found taking part in the research:

Participant 6: “fine particularly that social media [question]…”
Participant 7: “especially when it comes to researchers who are obviously very very far removed from the real world or (.) working with people with complex mental health problems on therapy you know they might think things are a good idea… so if there’s any way that we can kind of you know just inform their thinking a little bit” (Focus group 1, Secondary care psychological services)
Additionally, staff wanted to receive mobile phone symptom assessments directly from clients themselves rather than automatically via an app, and only one participant outwardly expressed the preference for receiving these automatically. This was so clients should take ownership of their data and choose what to share, thus ensuring that staff were not placed in the expert role.

**Theme 4: DHIs Should be Used to Enhance, not Replace, Face-to-face Support**

The self-directed nature of digital health interventions was also viewed by all groups as an empowering way people could take control of, and responsibility for, their own mental health care needs:

*Participant 16: “It gives them some control doesn’t it. It can be empowering…”*  
(Focus group 4, Secondary care psychological services)

However, across groups, staff held the unanimous belief that digital health interventions should never be offered as a replacement to face-to-face support. Instead, it was suggested that digital health interventions should be used to extend support options available. For example, one participant suggested that app-based symptom monitoring could be implemented by services as a method for routine outcome monitoring to evaluate changes throughout therapy. Additionally, staff working in secondary care psychological services suggested that digital health interventions could be used at the end of therapy to allow clients to access coping mechanisms and strategies they had developed during sessions:

*Participant 19: “the ones that do…the best in follow up are the ones that have kept their letters and maps and have kept everything kind of accessible and have continued to use them so I guess that these could be transferable to some sort of technology”* (Focus group 4, Secondary care psychological services)

Staff in both focus groups in secondary care services were against the idea of clients using solely self-directed digital health interventions because of fears that individuals would be left alone to deal with any issues that surface. Therefore, they suggested that members of their care team might be able to support clients using digital health interventions during routine home visits. Interestingly, staff working in a community mental health team were willing to support engagement with digital health interventions; one participant suggested that staff could take tablet computers to clients’ homes to work through digital health interventions together:

*Participant 15: “…if there were tablets that could work outside the community that we could show and go through the process to show how simple it (an app) is and what they could potentially gain from it, I think there could be a definite place for it”*  
(Focus group 3, Community mental health team)
The novel ideas described by participants reflect their overall view that digital health interventions have the potential to be used within existing services, but there was a strong view that digital health interventions should not replace in-person support:

*Participant 8: “It shouldn’t be used to replace face to face, but it should be used to enhance.”* (Focus group 2, Rehabilitation unit)

Such views seemed to stem from the need for a strong therapeutic relationship in delivering support for people with severe mental health problems, and staff expressed the concern that digital health interventions could not and should not attempt to mimic this relationship:

*Participant 5: “I’ve seen computer programs, where it almost tries to offer a therapeutic relationship and it gives kind of fake empathy…It is terrible and it kind of made me a bit annoyed just watching it…”* (Focus group 1, Secondary care psychological services)

Staff in secondary care psychological services also noted that you can never take a one size fits all approach in therapy and that clinical formulations are needed. Therefore, staff were concerned that digital health interventions would not allow the personalization needed to deliver effective therapy. Cautions about digital health interventions were also based on previous experiences of cost-cutting strategies implemented in NHS services, and staff were therefore concerned that digital health interventions may be used as an excuse to reduce staffing costs and care provisions in severe mental health problems:

*Participant 16: “…it’s substituting proper therapy for something that isn’t proper therapy and anticipating or hoping that people will get better and it being a way of actually saving money and resources.”* (Focus group 4, Secondary care psychological services)

The strong position held by staff regarding their views that digital health interventions should never attempt to replace face-to-face care was reflected in the repetitious comments made about this viewpoint. The interviewer noted in the reflective journal that the recurring nature of these comments indicated that this was a significant potential factor affecting the likelihood of implementation:

*Interviewer: “Following initial reviews of these transcripts, I am yet again struck by the repetitive viewpoint expressed by staff that we should never attempt to replace in-person support with DHIs. During focus groups, it felt like staff could list a significant number of benefits of DHIs, but this overarching concern led to caution. If staff hold such dogmatic views about this issue, it may be a significant barrier to the implementation of DHIs in secondary care services”.* (Reflective journal, Data analysis)
5.5. Discussion

5.5.1. Principal findings

This study sought to examine the experiences and views of mental health care staff toward clients with severe mental health problems using the Internet and mobile phones to manage their mental health and the hypothetical acceptability of digital health interventions for severe mental health problems to identify facilitators and barriers to implementation in secondary care services. Staff had a wide range of both positive and negative experiences of clients with severe mental health problems using the Internet and mobile phones for self-management, and staff were cautious, but optimistic, about the implementation of digital health interventions.

Web-based information-seeking was viewed positively and staff welcomed the incorporation of psychoeducation material into digital health interventions, suggesting that this could be well received by staff and service users alike. Concerns surrounding the abundance of unregulated Web-based material echo previous qualitative work, where individuals experiencing severe mental health problems also queried the trustworthiness of information from Internet sources and preferred information from organizational and charitable websites, rather than private companies or chat rooms (Aref-Adib et al., 2016; Townsend et al., 2016). Such skepticism surrounding the reliability of information found on the Internet may be warranted. A recent search for schizophrenia-related videos on the video-sharing website YouTube, revealed that only 34% accurately portrayed schizophrenia (Nour et al., 2017). Additionally, mental health-related information on the Internet is reportedly of poor quality (Reavley & Jorm, 2011), and many websites are biased toward providing information about biological causes and medical treatment options (Read & Cain, 2013). However, a more recent study has reported that the quality of Web-based information specifically for severe mental health problems is of relatively good quality (Grohol, Slimowicz, & Granda, 2014). It has been suggested that health care professionals should direct clients to appropriate trusted websites to combat issues regarding the reliability of Web-based information (Monteith, Glenn, & Bauer, 2013). In this study, staff endorsed this suggestion; however, some were concerned about their own limited knowledge surrounding websites and apps. Therefore, some participants expressed a need for a catalogue of evidence-based and NHS-endorsed resources they could recommend to clients.

Recently, the NHS introduced an early version of the once defunct NHS Digital Apps Library that contains a list of NHS-approved apps for numerous physical and mental health care needs (NHS, 2017). Globally, the American Psychiatric Association (APA) has developed an evaluation model for use by staff to determine the appropriateness of apps for clients (APA, 2017) and in Australia, the mindhealthconnect website, supported by the Australian government, lists a range of trusted Web-based tools and apps for people to self-manage their mental health and well-being (Mind Health Connect, 2017). Given the enthusiasm of
participants to receive information regarding credible websites and apps, it is likely that these resources would be helpful for staff to review and implement. Therefore, efforts must be made to ensure that staff are made aware of, and encouraged to use, these new resources.

It has been suggested that social media websites and forums could be used to deliver interventions and provide peer support options for people experiencing severe mental health problems (Naslund, Aschbrenner, Marsch, & Bartels, 2016a; Torous & Keshavan, 2016). Early findings have indicated that this approach could be feasible and acceptable (Alarez-Jimenez et al., 2014; Lal et al., 2015; Naslund, Aschbrenner, Marsch, & Bartels, 2016b) and that individuals already actively access these platforms to receive support (Berry et al., 2016; Highton-Williamson et al., 2015). Although staff outlined several fears about clients engaging with social media websites and forums, they also described situations where clients had been able to connect with others on the Internet with a shared understanding. Therefore, the use of social media websites and forums to deliver interventions may be valued and utilized by people with severe mental health problems, although staff concerns such as forum moderation must be considered for successful implementation. Additionally, researchers have proposed that social media profiles may contain valuable information about individuals’ daily lives and functioning, which could be a useful tool for clinicians to make assessments and diagnoses (Appelbaum & Kopelman, 2014). Staff were unanimously against viewing clients’ social media profiles and viewed this behaviour as a misuse of power; therefore, staff attitudes would be a significant barrier to the implementation of this approach in services.

Staff appeared to be paternalistic toward clients’ access and use of the Internet and mobile phones, with a perceived need to guide clients toward the right information; this was particularly true for staff working in a rehabilitation unit. Gatekeeping and paternalism by staff is not restricted to Internet access and digital health interventions. For example, staff have also been found to be paternalistic when deciding whether to refer clients to clinical trials (Bucci et al., 2015) and treatment options clients should receive (Holttum, 2016). Involving clients in a shared decision-making process with regards to Internet, mobile phone, and digital health intervention access is therefore key, and rather than preventing access, clients should instead be encouraged to speak with staff to help make decisions regarding access together.

Although some staff believed that digital devices could increase access to evidence-based interventions, concerns regarding client access and ability to use such devices were raised. These perceptions about technology access and ownership somewhat contradict recent findings in the field. For example, a recent meta-analysis indicated a narrowing gap in mobile phone ownership between the general population and individuals experiencing psychosis (Firth et al., 2016). Numerous studies since this review have indicated relatively high technology access and ownership by people who experience severe mental health
problems (Gay et al., 2016; Gitlow et al., 2017; Thomas et al., 2017). However, although there has been a reduction in the digital divide since 2011, some people with severe mental health problems remain digitally excluded (Robotham et al., 2016). Therefore, those delivering digital health interventions should remain mindful of access issues within this population and ensure digital exclusion is minimized. For example, staff suggested that technology skills training programs could be offered to ensure people are able to fully engage with digital health interventions. Additionally, staff did not feel the NHS should provide digital devices for people to receive interventions because of fears that clients may lose or sell mobile phones and tablets. In contrast to this viewpoint, technology return rates have been high (86% and 95%, respectively) in two studies where digital devices were provided for participants with severe mental health problems (Biagianti, Schlosser, Nahum, Wooley, & Vinogradov, 2016; Granholm et al., 2012). This suggests that staff concerns regarding individuals’ capabilities of maintaining and returning digital devices may be inaccurate, and researchers should report device return rates to determine whether such concerns are warranted.

Staff were generally optimistic toward using mobile phone apps for symptom monitoring but expressed concerns about their responsibility when receiving symptom reports from clients’ because of the fear of missing risk disclosures. Therefore, staff stated a preference for receiving symptom reports from clients directly within sessions, rather than automatically. This somewhat contradicts the current direction of mobile phone apps for symptom monitoring in this population, which, although can be used by clients to share with their care team, tend to deliver symptom reports to a central server for staff to use to identify indications of relapse (Bardram, Frost, Szántó, & Marcu, 2012; Palmier-Claus et al., 2012). Therefore, issues surrounding the legal and moral responsibilities of staff when viewing automatic symptom reports and their comfort in implementing such approaches in practice need to be considered.

Staff in all groups repeatedly expressed the concern that digital health interventions could not, and should not, replace face-to-face care and should instead be used as an adjunct and as a method to extend choice. Such fears seemed to stem from the belief that the therapeutic relationship between client and therapist is key, and digital health interventions could never replace or mimic this relationship. There is some evidence to indicate that individuals can form a positive therapeutic alliance with self-directed digital health interventions (Barazzzone, Cavanagh, & Richards, 2012; Clarke et al., 2016). However, further work is required to fully understand the therapeutic relationship in the context of digital health interventions to address the concerns expressed by staff.

5.5.2  Study Limitations

Findings must be interpreted in the context of some limitations. First, half the sample were clinical psychologists. Therefore, experiences of clients engaging with websites and apps
and views toward using digital health interventions may be different to individuals working in other roles. Participants were mental health care staff working in the NHS in the North West of England; implications regarding implementation are, therefore, limited to NHS mental health services. Participants reported generally high levels of comfort using technology themselves, which may have resulted in them finding digital health interventions more acceptable than staff who are less comfortable using technology. Staff involved in each focus group were part of the same team and, in all cases, the service lead also participated in the focus group. Therefore, staff may have been more cautious when sharing information about their views than if focus groups had involved staff with no prior relationships. Conversely, the close working relationships observed within each focus group may have enabled participants to feel more comfortable speaking openly and honestly about their views. To explore this potential limitation further, the reflective journals kept by the interviewer were reviewed for commentary about the group dynamics observed. Specifically, positive interactions during all focus groups and the absence of any conflicts between members were noted. Furthermore, the interviewer noted that service leads did not differ from other participants in the duration or number of experiences expressed and all the participants seemed to welcome and acknowledge opposing viewpoints. A strength of the focus group design is that it allows people to generate ideas through discussions with each other. However, an associated limitation with this approach is that the data generated are dependent on the individuals within each group, so individual perspectives may not be discussed and social pressures may impede members giving differing opinions from the group consensus. However, to minimize the interdependency of participants, group dynamics were managed by the interviewer so that each group member had the opportunity to present their views, and the interviewer kept a reflective journal throughout data collection and analysis to reflect on group dynamics. Finally, because of the practicality and time pressures for mental health care staff taking part in focus groups, we were advised to conduct focus groups within teams, rather than invite mental health staff to separate focus groups. Ideally, sample characteristics across focus groups are homogenous; however, to minimize participant burden, we accepted groups would be heterogeneous in nature. That said, across all four focus groups commonalities in experiences and viewpoints were stark despite differing job roles and any differences in viewpoints were noted in the results section.

It is often considered best practice to return interview transcripts to participants for member checking. It was not possible to return transcripts to participants for this purpose because of the potential breaches in privacy and different viewpoints presented within focus groups. Finally, the research team have previous and current involvement in projects implementing digital health interventions for severe mental health problems. Although the researchers were mindful about reducing potential biases, it is important to acknowledge that such experiences may still affect the interpretation and analysis of data.
5.5.3. **Implications for Clinical Practice and Implementation**

The concerns raised by staff regarding client access to potentially harmful Web-based content reflects the need for a comprehensive, accessible, and widely disseminated resource containing links to approved websites for clients to access. Additionally, some staff expressed limited knowledge about websites and mobile phone apps they could recommend to clients and were concerned about making unhelpful recommendations. Therefore, Web-based libraries containing information about approved websites and apps such as the NHS Digital Apps Library (NHS, 2017) must be presented to staff as a potential resource they can use to identify relevant options they can recommend to clients. Additionally, paternalistic viewpoints were expressed toward clients accessing the Internet and mobile phones and staff acknowledged that Web-based misinformation and communication had often needed to be addressed in therapy. Therefore, mental health care staff must be prepared to explore and address these issues in clinical practice. Furthermore, the exploratory nature of the qualitative methodology led to the identification of new and interesting staff perspectives that have not yet been explored. Therefore, researchers could use the viewpoints identified in this study to inform the design of future surveys to explore quantitatively whether these views are prevalent on a larger scale.

This study also reports numerous facilitators and barriers to the implementation of digital health interventions for severe mental health problems in secondary mental health care services. Staff views align with the general theory of implementation, which details the key constructs that influence the implementation of complex interventions in health care settings (May, 2013). These findings in relation to this theory suggest that technology skills training for staff and clients alike must be delivered to foster capability. Additionally, further reporting of technology return rates in clinical trials delivering digital health interventions and considerations for funding devices in service settings are needed to ensure capacity for implementation. The cautious optimism shown by staff suggests there is the potential to implement digital health interventions for severe mental health problems in secondary care services, but the identified barriers must be considered and addressed before implementation. Digital health interventions for severe mental health problems are not routinely offered in treatment because of the need to establish a more concrete evidence base. Therefore, clients are often only referred to these management options as part of a clinical trial. Although the exploration of continuous investment by staff cannot currently be determined, if digital health interventions are to be implemented within secondary care services, examination of continuous contributions by staff must be made.

5.5.4. **Conclusions**

This study is the first, to our knowledge, to qualitatively explore the experiences and attitudes of mental health care staff towards individuals with SMI using the Internet, smartphones and DHIs to manage their mental health. Findings showed that staff had both
positive and negative experiences of using the Internet and smartphones for self-
management. Additionally, a range of facilitators and barriers to implementation were
identified. While staff were generally positive about current use and able to detail many
experiences where clients had found engaging with these resources helpful, some concerns
were expressed regarding trustworthy websites and the security of DHIs. Therefore,
continued and improved identification and cataloguing of evidence-based online resources
and DHIs must be made to facilitate staff comfort in referring clients to manage their health
care needs digitally. Staff approached the idea of DHIs with cautious optimism, but concerns
regarding legal and moral responsibilities and fears over a diminished therapeutic
relationship must be addressed prior to implementation. Importantly, staff endorsed the
provision of DHIs for SMI as an adjunct to face-to-face support, but held the fear that DHIs
would be used as a cost-cutting strategy. Therefore, to ensure implementation, DHIs should
be presented to frontline staff as tool to enhance care and extend choice.

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5.7. Authors Contributions

All authors contributed to the development of the research question, study design and final
manuscript, NB completed the data collection, analysis and the first draft of the manuscript.
SB and FL also assisted with data analysis and provided critical feedback on manuscript
drafts. All authors approved and contributed toward the final manuscript.

5.8. Conflicts of Interest

NB is a PhD student investigating how technology can be used to deliver interventions for
people who experience severe mental health problems. SB and FL are both principal
investigators on clinical trials implementing digital health interventions for severe mental
health problems.
Chapter 6:  #WhyWeTweetMH: understanding why people use Twitter to discuss mental health problems

This paper has been published in the Journal of Medical Internet Research.

#WhyWeTweetMH: Understanding why people use Twitter to discuss mental health problems.

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6.1. Abstract

**Background:** Use of the social media website Twitter is highly prevalent and has led to a plethora of Web-based social and health-related data available for use by researchers. As such, researchers are increasingly using data from social media to retrieve and analyse mental health-related content. However, there is limited evidence regarding why people use this emerging platform to discuss mental health problems in the first place.

**Objectives:** The aim of this study was to explore the reasons why individuals discuss mental health on the social media website Twitter. The study was the first of its kind to implement a study-specific hashtag for research; therefore, we also examined how feasible it was to circulate and analyse a study-specific hashtag for mental health research.

**Methods:** Text mining methods using the Twitter Streaming Application Programming Interface (API) and Twitter Search API were used to collect and organize tweets from the hashtag #WhyWeTweetMH, circulated between September 2015 and November 2015. Tweets were analysed thematically to understand the key reasons for discussing mental health using the Twitter platform.

**Results:** Four overarching themes were derived from the 132 tweets collected: 1) sense of community; 2) raising awareness and combatting stigma; 3) safe space for expression; and 4) coping and empowerment. In addition, 11 associated subthemes were also identified.

**Conclusions:** The themes derived from the content of the tweets highlight the perceived therapeutic benefits of Twitter through the provision of support and information and the potential for self-management strategies. The ability to use Twitter to combat stigma and raise awareness of mental health problems indicates the societal benefits that can be facilitated via the platform. The number of tweets and themes identified demonstrates the feasibility of implementing study-specific hashtags to explore research questions in the field of mental health and can be used as a basis for other health-related research.

**Keywords:** mental health; Twitter; social media

6.2. Introduction

6.2.1. Background

Use of social media websites such as Facebook and Twitter is commonplace, with around 65% of American adults (Pew Research Centre, 2015) and 66% of British adults (Deloitte, 2014) reporting ownership of at least one active social media account. High rates of social media use are also evident by individuals who experience mental health problems (Birnbaum et al., 2015; Gowen, Deschaine, Gruttadara, & Markey, 2012). Research in the field of social media and mental health has largely focused on the potential harm of social media engagement. For example, researchers have observed or empirically evidenced...
associations between social media use and the occurrence and exacerbation of experiences associated with psychosis (Kalbitzer, Mell, Bermpohl, Rapp, & Heinz, 2014; Krishna et al., 2013; Nitzan, Shoshan, Lev-Ran, & Fennig, 2011), mood disorders (Lin et al., 2016; Pantic et al., 2012; Rosen, Whaling, Rab, Carrier, & Cheever, 2013), personality disorders (Rosen et al., 2013), eating disorders (Mabe, Forney, & Keel, 2014; Smith, Hames, & Joiner, 2013), and obsessive compulsive disorder (Lee, Park, & Tam, 2015). However, others have reported that there are no associations between mental health problems and social media use and, in some cases, significant improvements in social functioning have been observed following social media engagement (Jelenchick et al., 2013; Simoncic, Kuhlman, Vargas, Houchins, & Lopez-Duran, 2014; Veretilo & Billick, 2012). Mixed and correlational findings in the field and limitations in the methodological design of studies highlight the infancy of our understanding of the relationship between social media use and mental health (Best, Manktelow, & Taylor, 2014; Seabrook, Kern, & Rickard, 2016; Toseeb & Inkster, 2015). In addition, much of the current research has focused on the use of Facebook, rather than Twitter, but the nature of the two sites and users differ extensively. For example, a recent comparative analysis of user behaviour of individuals with Facebook and Twitter accounts demonstrated no significant overlap between Facebook “friends” and Twitter “followers,” and reported that Facebook was often used as the main platform for communication, whereas Twitter was used as a secondary platform (Buccafurri, Lax, Nicolazzo, & Nocera, 2015). In addition, user preference for the two different social media platforms has been found to differ based on user personality traits (Hughes, Rowe, Batey, & Lee, 2012). Therefore, caution needs to be taken when applying findings relating to Facebook to Twitter use.

Twitter (www.Twitter.com) is a popular microblogging site, with 313 million monthly users (Twitter, 2016a). Twitter users are able to post 140-character limit posts or “tweets,” which others can respond to via retweeting, replying, or liking posts (Twitter, 2016b). Such posts are often publicly accessible and, therefore, available for collection and analysis by researchers. As such, recent studies have collected tweets that included hashtags such as #depression, #schizophrenia, and #dearmentalhealthprofessionals to analyse mental health-related attitudes and experiences (Joseph et al., 2015; Reavley & Pilkington, 2014; Shepherd et al., 2015). A recent editorial argued that the use of mental health-related hashtags facilitates connections, enables sharing without barriers, and provides the opportunity to voice opinions (Betton et al., 2015). Furthermore, a mental health ambassador and educator with lived experience described the “helping hands” of Twitter that can guide people to safety (Knightsmith, 2016). However, there is little empirical research examining reasons why individuals use Twitter to discuss mental health problems.

6.2.2. Aims of the Study

This study implemented the hashtag #WhyWeTweetMH to: 1) examine why people use Twitter to discuss mental health problems and 2) investigate whether it is feasible for researchers to directly implement a Twitter hashtag that yields meaningful data for analysis.
Twitter was specifically chosen as the social media platform of interest due to the prevalence and popularity of discourse surrounding mental health that is evident on the website.

6.3. Methods

6.3.1. Hashtag Development

Twitter allows users to post any information that they wish to share in the form of a 140-character tweet. Tweets posted by users can be “retweeted” so that any tweet an individual wishes to share can be posted on their Twitter profile for their followers to see. Twitter also affords users the opportunity to include hashtags within tweets, which can facilitate communication about, and efficient search for, a specific topic. To this end, the hashtag #WhyWeTweetMH was selected to be circulated on Twitter by the research team (see Figure 5). The decision to use the hashtag #WhyWeTweetMH was based on a number of discussions within the research team. The initial hashtag #WhyWeTweet was developed due to the small number of characters that would be used within response tweets and the alliterative and, therefore, memorable phrasing used. Additionally, popular mental health-related hashtags such as #MHawareness, #MHcare, and #MHservices use the acronym “MH” to refer mental health on the platform. Therefore, the letters MH were added during the development of the hashtag to ensure that the users were aware that the study was seeking reasons for discussing mental health specifically on Twitter.

Figure 5. Example circulation tweet on the social media website Twitter using the #WhyWeTweetMH hashtag, research study disclaimer, and link for additional information.

6.3.2. Data Collection

The first author (NB) posted the circulation tweet on the researcher’s own Twitter page; this was retweeted by other members of the research team. The researcher then individually contacted various mental health charities, campaigners, and advocates asking them to retweet information about the study. Initially, we were only seeking to collect responses from people with current or past experiences of mental health problems; however, some responses were written from other perspectives; for example, academics, clinicians, and charities. Therefore, it was decided that any tweet including the hashtag #WhyWeTweetMH
would be analysed. Frequent attempts were made by the research team to circulate the hashtag until no new tweets were posted including #WhyWeTweetMH. Collection of tweets using the hashtag occurred between September 2015 and November 2015.

Tweets were automatically collected and stored in a password-protected database. We used both the Twitter Streaming Application Programming Interface (API), for real-time data collection (Twitter, 2016c), and the Search API for daily data collection (Twitter, 2016d) to minimize the risk of missing data due to any network connection failures. This approach ensured that if network errors resulted in a loss of real-time data, past data could still be obtained through the Search API. The hashtag #WhyWeTweetMH was used as the search and streaming keyword.

6.3.3. Data Analysis

Once data collection was completed, all tweets including the hashtag #WhyWeTweetMH were imported to a password-protected Excel (Microsoft) file for qualitative thematic analysis. The Twitter handles (usernames) of users were removed to protect anonymity. During this process, retweets and any tweets posted to circulate the hashtag were removed. In addition, user geolocation was also collected and stored in a password-protected file.

Tweets containing #WhyWeTweetMH were visually inspected several times for common terms. Thematic analysis was used to identify the key reasons that users gave for discussing mental health problems on Twitter. The research team conducting the analysis consisted of a researcher with limited clinical experience and two clinical academics with extensive experience working with people with mental health problems. To ensure transparency and reliability, all tweets were read and analysed by two members of the research team (NB and SB), who developed an emergent coding scheme to arrange the data. A hierarchical structure of descriptive headings and subheadings was produced and compared across all tweets. This structure was independently reviewed by FL and, as recommended by Turpin and colleagues (1997), these categories were discussed again and refined with all members of the research team.

6.3.4. Ethical Considerations

Ethical issues surrounding research using social media websites are complex and some individuals may perceive researchers “lurking” on Internet communities as intrusive (Eysenbach & Till, 2001). However, as Twitter is considered a public platform, content posted on Twitter is publicly available to be used for research purposes (Shepherd et al., 2015). Throughout the development and implementation of this study, several guidelines for Internet research were consulted and adhered to, specifically, the Association of Internet Researchers (AoIR, 2012), the British Psychological Society (BPS, 2013), and INVOLVE (2014). In addition, ethical approval was granted by the University of Manchester Research Ethics Committee (ref: 15347). The use of these guidelines and consultation with the local
ethics committee during the development process enabled the formulation of several methodological considerations to protect the safety and privacy of Twitter users.

As this was the first study of its kind to implement a mental health hashtag for research purposes, rather than collecting data from an already trending hashtag, new methods were employed to ensure that the study was ethically sound. First, the tweet circulating the hashtag #WhyWeTweetMH explicitly stated that the hashtag was being used for research purposes. The tweet circulating the hashtag also contained a link to an information sheet, which detailed a list of helplines that individuals would be able to contact should they require further support. The hashtag was also monitored several times a day to ensure that any potentially offensive or bullying comments to individuals who tweeted using the hashtag could be reported to Twitter. However, it is of note that none of the tweets identified contained offensive or bullying responses. Individual Twitter handles (usernames) were removed from the tweets to maintain confidentiality and, after thematic analysis, all tweets for presentation and publication purposes were paraphrased to ensure anonymity. Tweets were paraphrased by NB and reviewed by SB to confirm that the paraphrased tweets accurately reflected the content of the original tweets. Each paraphrased tweet was inputted into search engines and the Twitter search function to ensure that users’ profiles were not identified in the search results. In line with recommendations for the reporting of research conducted via Twitter (Rivers & Lewis, 2014), a full list of paraphrased Tweets is available in Appendix 29.

6.4. Results

6.4.1. Tweet Features

After the removal of retweets, a total of 132 original tweets posted by 90 different users contained #WhyWeTweetMH. The participant information sheet from the study was viewed 145 times during the study period. Respondents were located in the United Kingdom (n=44), the United States (n=22), Canada (n=4), South Africa (n=1), and Australia (n=1). The remaining users either listed a fictional location or did not have their location available (n=18). Respondents’ tweets were analysed to determine whether experiences of using Twitter to discuss mental health problems were from personal or professional perspectives. The majority of the Twitter users who responded to the hashtag were identified from their responses as having personal experiences of mental health problems (n=50) and others were identified as working in the field of mental health (n=8). Inferences about user experience could not be made for the remaining respondents (n=32). We identified 4 themes and 11 associated subthemes. Some tweets presented several reasons for tweeting about mental health and are, therefore, applicable to multiple themes and subthemes. The frequency of themes and subthemes derived from the data, words used within subthemes, and the numbers of retweets and “likes” for each subtheme are presented in Table 9.
Table 9. Themes and subthemes derived from the #WhyWeTweetMH hashtag and the associated frequencies of retweets, “likes”, and popular words for each of the subthemes.

<table>
<thead>
<tr>
<th>Theme and subthemes</th>
<th>Tweet frequency</th>
<th>Number of retweets</th>
<th>Number of tweets retweeted n (%)</th>
<th>Number of “likes”</th>
<th>Proportion of tweets “liked” n (%)</th>
<th>Commonly used words within subthemes</th>
<th>Word frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sense of community</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To connect or socialize and reduce isolation</td>
<td>47</td>
<td>55</td>
<td>25 (53)</td>
<td>61</td>
<td>27 (57)</td>
<td>Alone, Connect, Others, People or ppl, Friends, Isolation, Community</td>
<td>13 9 8 4 4 4</td>
</tr>
<tr>
<td>To send and receive messages of hope and support</td>
<td>35</td>
<td>44</td>
<td>20 (57)</td>
<td>49</td>
<td>18 (51)</td>
<td>Support or supporting, Hope, Help or helps, Hugs</td>
<td>14 5 4 3</td>
</tr>
<tr>
<td>To share and receive information</td>
<td>21</td>
<td>20</td>
<td>9 (43)</td>
<td>15</td>
<td>9 (43)</td>
<td>Share or sharing, Information or info, Learn</td>
<td>9 7 5 5</td>
</tr>
<tr>
<td><strong>Stigma and awareness</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To combat stigma</td>
<td>23</td>
<td>40</td>
<td>15 (65)</td>
<td>29</td>
<td>14 (61)</td>
<td>Stigma, Combat, Eradicate</td>
<td>19 3 2</td>
</tr>
<tr>
<td>To raise awareness</td>
<td>22</td>
<td>42</td>
<td>13 (59)</td>
<td>27</td>
<td>13 (59)</td>
<td>Awareness, Raise, Educate, Understanding</td>
<td>11 7 4 3</td>
</tr>
<tr>
<td>To fight and campaign</td>
<td>11</td>
<td>29</td>
<td>9 (82)</td>
<td>15</td>
<td>7 (64)</td>
<td>Services, Advocate, Improve</td>
<td>3 3 3</td>
</tr>
<tr>
<td>Safe space for expression</td>
<td>To share honest experiences without feeling judged</td>
<td>32</td>
<td>23</td>
<td>15 (47)</td>
<td>44</td>
<td>16 (50)</td>
<td>Experiences</td>
</tr>
<tr>
<td>--------------------------</td>
<td>--------------------------------------------------</td>
<td>---</td>
<td>---</td>
<td>---------</td>
<td>---</td>
<td>---------</td>
<td>--------------</td>
</tr>
<tr>
<td></td>
<td>To vent, give people a voice, and feel heard</td>
<td>21</td>
<td>25</td>
<td>12 (57)</td>
<td>29</td>
<td>9 (43)</td>
<td>Vent</td>
</tr>
<tr>
<td>Perceived benefit over Twitter and other social media platforms</td>
<td>7</td>
<td>6</td>
<td>4 (57)</td>
<td>17</td>
<td>5 (71)</td>
<td>Facebook</td>
<td>Networking or media</td>
</tr>
<tr>
<td>Coping and empowerment</td>
<td>To escape</td>
<td>4</td>
<td>0</td>
<td>0 (0)</td>
<td>2</td>
<td>2 (50)</td>
<td>Escape</td>
</tr>
<tr>
<td>Empowering form of self-monitoring and management</td>
<td>11</td>
<td>7</td>
<td>4 (36)</td>
<td>10</td>
<td>7 (64)</td>
<td>Empower</td>
<td>Resilience</td>
</tr>
</tbody>
</table>
Information regarding the frequency of common words in the tweets collected was recorded through splitting the text into single words. The words most frequently mentioned in the tweets were (1) stigma; (2) support or supporting; (3) alone; (4) connect; (5) awareness; (6) others; and (7) share or sharing appear in Figure 6, which was created using QSR International’s NVivo 11 software. These terms reflect some of the key themes and subthemes resulting from the tweets.

Figure 6. Word cloud reflecting the frequency of common words identified in tweets including the hashtag #WhyWeTweetMH.

6.4.2. Themes

Theme 1: Tweeting About Mental Health Provides a Sense of Community

The overall sense of a “Twitter community” was evident through the explicit use of the word “community” in some of the tweets. The terms “Twitter friends” and “virtual hugs” were also prevalent, which implies a reciprocal relationship within the Twitter mental health community. In total, 51% (42/83) of the tweets included within this theme were retweeted and 53% (44/83) received “likes” from other users.

Tweeting to Connect, Socialize, and Reduce Isolation

Some users expressed that Twitter is the only setting where they are able to connect and socialize with others. The use of Twitter for some people as the sole avenue for communication may be due to the accessible nature of websites:

“Because it is...the one space I can speak with people”.

“Because I am with friends even when I am unable to go out”.

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Users also commented that tweeting about mental health provided them with their only opportunity to connect with others with shared understanding:

“I am able to communicate with other people with the same experiences...”

Additionally, tweeting about mental health was perceived by users as a way to reduce feelings of isolation and loneliness and allowed them to show others and themselves that they are not alone:

“...so I do not feel that I am the only person with MH concerns.”

“If it helps even one person recognize they aren’t alone in their pain.”

**Tweeting to Send and Receive Messages of Support and Hope**

Support was detailed in many tweets, with users expressing that they often tweet about mental health to provide and receive messages of hope and support:

“I enjoy supporting people and receiving support from them.”

“Suicide might be complicated but extending a hand to someone is simple and it may save their life...”

“I tweet humour to show people that there is light at the end of the dark tunnel...”

Some users also expressed that by sharing their experiences on Twitter, they could help people who were facing similar challenges:

“So that, perhaps, my tweets and experiences may help others. Even if it’s only one person.”

Twitter was perceived as an accessible avenue for support due to the instantaneous nature of the responses:

“I am able to get fast, insightful and appreciated support in a way that’s meaningful for me...”

**Tweeting to Share and Receive Information**

Some users also reported that tweeting about mental health provided them with the opportunity to ask questions, learn more about mental health, and to seek and signpost useful resources:

“To advise, support, and to ask questions...”

“Tweeting about mental health helps people to obtain helpful info they would not normally hear about.”
Theme 2: Tweeting About Mental Health to Combat Stigma and Raise Awareness

Tweets that contained information about using Twitter to raise awareness of mental health problems, combat stigma, and fight and campaign received the largest proportion of retweets (65%, 31/48) and “likes” (58%, 28/48). Additionally, 82% (9/11) of the tweets in the subtheme tweeting to fight and campaign received retweets and 64% (7/11) were “liked.” The high proportion of responses to such tweets may be due to other users sharing these tweets in an attempt to further campaign for people experiencing mental health problems and the high number of followers that campaigners or advocates may have on the site. Tweeting to raise awareness, combat stigma, and fight and campaign were often detailed by users as an attempt to achieve a final outcome; for example, developing empathy and compassion, to show people that others care and to provide hope for the future:

“To raise awareness, stop stigma, create networks, & build empathy & compassion is #WhyWeTweetMH.”

“To bring buried, misjudged, and shameful disorders out of the darkness. To relieve the struggle of those still to come.”

Tweeting to Combat Stigma

Many of the antistigma tweets contained particularly strong and emotive language such as “combat,” “demolish,” and “fight” to describe the concept of using Twitter to address stigmatizing attitudes. In addition, some Twitter users embedded the already popular hashtag #endthestigma into their #WhyWeTweetMH responses:

“We do not only need to challenge stigma we have to eliminate stigma...”

“...to attempt to battle stigma...”

Tweeting to Raise Awareness

Some users reported that Twitter was a common starting point for important conversations about mental health problems:

“...begin speaking about what's actually important...”

“To begin the conversation and open the barriers...”

Additionally, some tweets also included already trending mental health awareness hashtags; for example, #mentalhealthawareness and #everyonesbusiness.

Tweeting to Fight and Campaign

Some people saw Twitter as an avenue for campaigning about mental health, which allowed them to represent others experiencing mental health problems:
“To inform, empower, and inspire. We must advocate for and show others how to advocate for themselves.”

“...An advocate told me that my voice was required on here to confront the “Master Narratives” about mental health, trauma, and suicide.”

Theme 3: Tweeting About Mental Health Because Twitter Is a Safe Space for Expression

Twitter was perceived as a safe setting in which users could discuss mental health honestly and openly without feeling judged by others. Perceptions of safety in comparison to other social media platforms were also evident in some tweets. On average, just under half of the tweets assigned to this theme were retweeted (48%, 22/46) and over half were “liked” by other users (54%, 25/46).

Tweeting to Share Honest Experiences Without Feeling Judged

Several respondents noted that the perceived anonymity of Twitter allowed them to feel safe and, therefore, felt comfortable in being open and honest about their experiences of mental health problems:

“I tweet because I am able to be anonymous so honest...”

Some users also stated that Twitter allowed them to share thoughts and feelings relating to mental health on Twitter without feeling judged by others. Although efforts have been made to reduce stigma and judgmental attitudes toward mental health problems, these issues are still prevalent in society (Corker et al., 2013; Pescosolido, 2013). However, perceptions of safety and accepting attitudes reported by users suggest that Twitter may provide a protective platform for communication and expression that is, perhaps, not available in everyday life:

“...because I’m never dismissed by my Twitter friends as being over sensitive, needing attention, or not making enough of an effort.”

Tweeting to Vent, Have a Voice and Feel Heard

Users expressed that tweeting about mental health was a release and provided them with an outlet to voice any worries or concerns they were experiencing:

“...When I tweet about mental health it’s a release...I also want the world to see how rubbish I feel...”

Respondents also reported that they tweeted to share their experiences of the mental health system and service availability:

“I can voice my infuriation with the professional support systems or lack of.”
“I like to tweet when I am angry at mental health services, so that even if nothing is resolved, my complaint is still public.”

Twitter was perceived to be a platform on which to vent because some users felt unable to share thoughts and feelings in face-to-face settings with people who they personally knew.

“Mainly I use Twitter as a soapbox so I am able to avoid burdening my friends...”

**Benefit of Twitter Over Other Social Media Websites**

Some users reported that discussing mental health on Twitter was more appropriate than other platforms because they did not feel judged by others on Twitter and could avoid the heavily embellished version of peoples’ lives evident on Facebook:

“I tweet about mental health problems, information, and feelings because no one judges me on Twitter, unlike other social networking sites...”

“Facebook is the sparkly sunny version of people, Twitter is the authentic version...”

**Theme 4: Tweeting About Mental Health Is an Empowering Coping Mechanism**

A smaller number of users revealed tweeting about mental health as a self-directed coping mechanism, which enabled them to escape from challenges faced in daily life; recognize and reflect on thoughts, feelings, and experiences; and facilitate feelings of empowerment. There were comparatively far fewer retweets of responses included in this theme than the other themes noted (27%, 4/15), although the proportion of “liked” tweets was similar (60%, 9/15).

**Tweeting About Mental Health Provides an Opportunity to Escape**

Some users reported that using Twitter provides them with the opportunity to escape from the “real-world” and distract themselves from difficult thoughts or feelings:

“To distract myself from my mental health. I enjoy being able to laugh and joke on Twitter—that’s the part of me that I like...”

“...interrupt my irrational and obsessive thoughts—it does work.”

**Tweeting About Mental Health as an Empowering Self-Management Strategy**

The concept of using Twitter as a mood monitor was evident in several tweets, as it allowed respondents to express themselves on Twitter and reflect back on the tweets to recognize their thoughts and feelings over time:

“I began tweeting so that I will someday be able to look back at how bad things have been, as blogging was too much for me...”
“My Twitter timeline performs as a sort of mood monitor for myself and those who personally know me…”

The potential strength of Twitter as a coping mechanism was evident in some tweets, which stated that Twitter was “cheaper than therapy,” “Twitter saves lives,” and the inclusion of the hashtag #lifehack.

Some users also commented that they felt empowered by tweeting about their mental health, which suggests that tweeting about mental health can be an empowering experience:

“Tweeting’s empowering…”

6.5. Discussion

6.5.1. Principal Findings

The aims of this study were to (1) explore reasons why people use Twitter to discuss mental health problems and (2) examine whether study-specific Twitter hashtags can be implemented by researchers as a method for data collection. The collective experiences noted are indicative of the positive role that Twitter can provide in mental health discussions and the number of tweets collected suggests that the circulation of study-specific hashtags on Twitter is a feasible avenue for investigating mental health-related phenomena.

The content expressed in collected tweets conveyed the notion of a “Twitter community” that allowed communication to flourish, awareness to be raised, stigma to be fought, and support that could be both offered and received. These perceived functions of Twitter support previous assertions that the platform provides a space for mental health-related discussions (Shepherd et al., 2015; Betton et al., 2015) and self-disclosures (Walton & Rice, 2013) and the wider literature regarding the social ties, sense of community, and support mechanisms that can be developed when communicating about health and experiences on the Internet (Mikal et al., 2013; Moorhead et al., 2013; Rains, Peterson, & Wright, 2015). Sense of belongingness and integration within a community can benefit an individual’s mental health and may be a protective factor in the development and exacerbation of symptoms associated with mental health problems (Fowler, Wareham-Fowler, & Barnes, 2013; Kitchen, Williams, & Chowhan, 2012; Tew et al., 2011). In addition, social disconnectedness is often associated with higher rates of relapse (Hultman, Wieselgren, & Ohman, 1997), increased mortality (Holt-Lunstad, Smith, & Layton, 2010), and poorer physical and mental health (Cornwell & Waite, 2009). Therefore, being a member of a large Twitter mental health community may act as a protective factor by facilitating communication and support. Furthermore, combatting stigma and raising awareness were key reasons identified for tweeting about mental health, which may help foster the sense of community that was evident in the tweets.
The positive evaluations of the Twitter mental health community for the provision of support may, in part, be due to the value of a shared understanding on Twitter. Some users noted that Twitter allows them to communicate and receive support from others with similar experiences. There has been a growing movement in psychological practice toward the inclusion of peer support approaches, whereby individuals with experience of mental health problems provide support for people with similar experiences (Resnick & Rosenheck, 2008). The potential value of peer support has been widely discussed in the literature and is associated with improved functioning, empowerment, and confidence (Resnick & Rosenheck, 2008), reductions in hospital admissions (Sledge et al., 2011), and increased social networks and wellbeing (Walker & Bryant, 2013). The notion that social media could provide an accessible avenue for peer support is not new necessarily. A recent commentary regarding social media usage in severe mental health problems reported that social media could facilitate help-seeking behaviours, reciprocal support, and antistigma campaigns (Naslund et al., 2016a). In addition, Naslund and colleagues (2014) analysed comments on videos created by individuals experiencing severe mental health problems on the video sharing platform YouTube (www.youtube.com). The authors reported that there was evidence of naturally occurring peer support within the comments, which provided supportive messages and coping strategies and reduced isolation. As such, the findings from this study support the view that social media websites, in this case, Twitter, could be a valuable tool for people who experience mental health problems.

Many users also noted that they were able to access resources and information on Twitter that they ordinarily would not be able to retrieve. The availability and subsequent use of Web-based material may help to facilitate self-directed psychoeducation, which is a potentially effective psychological intervention (Bond & Anderson, 2015). Therefore, resources on Twitter could be employed by users as a self-directed psychoeducation intervention. In addition, access to Web-based health-related information is reportedly beneficial for improving health behaviours, awareness and care of conditions, and could facilitate help-seeking (Kauer, Managan, & Sanci, 2014; Rice, 2006; Win, Hassan, Bonney, & Iverson, 2015). Individuals experiencing mental health problems, clinicians, and academics could also use Web-based resources shared by other Twitter users to remain informed about recent advances in clinical practice and current research in the field. Some of the tweets that included #WhyWeTweetMH also contained other trending hashtags; for example, #everyonesbusiness and #mentalhealthawareness. The inclusion of such hashtags illustrates the popularity of incorporating mental health hashtags within tweets and supports the notion that hashtags can be an effective method to facilitate communication about specific topics.

The use of Twitter to share experiences of mental health services was also evident in some of the tweets and supports previous conclusions that mental health services could use Twitter to receive feedback on the care that they provide (Shepherd et al., 2015). Users also
reported that Twitter allowed them to be open and honest about their experiences. Providing the individual consents, mental health professionals may have the opportunity to review clinically relevant information disclosed by users on Twitter accounts that they may ordinarily feel uncomfortable sharing in a formal clinical setting. However, further research assessing Twitter user and health care professional views toward the collection of clinically relevant information via Twitter is warranted. Additionally, the use of Twitter as a coping mechanism, which is evident in some tweets, suggests that social networking tools may be popular as a component for psychological interventions.

6.5.2. Feasibility of Circulating a Study-Specific Hashtag on Twitter for Research Purposes

Previous research using Twitter hashtags for data collection has relied on the analysis of already trending hashtags (Joseph et al., 2015; Reavley & Pilkington, 2014; Shepherd et al., 2015). Therefore, the second aim of this study was to assess the feasibility of circulating a study-specific hashtag for research purposes. As there was no precedence for what constituted a “sufficient” number of tweets for research purposes, we gathered a sufficient number for qualitative analysis, demonstrating that it is feasible to employ research hashtags on Twitter. Indeed, the ethical integrity of providing a study-specific hashtag that users are aware is being used for research, rather than collecting preexisting data, may negate the potential disadvantages of reduced data. However, when considering the implementation of study-specific hashtags in mental health research, researchers should remain mindful about the ethical considerations associated with asking people to tweet about their mental health and moral issues surrounding the duty of care toward users who choose to share their views. Additionally, further research should seek to identify Twitter users’ views about the collection of their data using Twitter hashtags to determine whether or not they find this approach acceptable or potentially intrusive. Researchers seeking to use study-specific hashtags in future work may also wish to consider creating a specific Twitter account for research studies. The circulation of a research hashtag on a study-specific Twitter account may allow users to feel more comfortable tweeting about their experiences due to the anonymous nature of a study account; therefore, potentially increasing responses.

6.5.3. Study Strengths

There were some strengths and limitations to the novel methodology employed. First, the ethical integrity of the study was a considerable strength. Specifically, a research disclaimer was included in the tweets circulating #WhyWeTweetMH, usernames were removed from all tweets before analysis, and tweets were paraphrased after analysis for presentation and publication purposes. Additionally, the investigation of tweeting behaviour took place in the setting in which the behaviour directly occurred, which ensured that respondents to the hashtag were active Twitter users. The use of both the streaming API and search API to collect tweets reduced the likelihood of missing data. The truly interdisciplinary nature of the research team (ie, computer scientists and psychologists) ensured that the approach to
collect tweets was technologically and methodologically sound, and the research question, analysis of tweets, and implications for clinical practice were appropriate. Importantly, conducting this research on Twitter allowed people to provide views for a study without the constraints of traditional research such as location, time pressures, and effort required.

6.5.4. Study Limitations

Some users may have chosen not to tweet using #WhyWeTweetMH due to the disclaimer that data would be used for research purposes, which may have led to missing data. Additionally, the use of Twitter to obtain reasons for tweeting about mental health may have led to biased responses of positive experiences, as people who do not use Twitter due to negative experiences will not have been able to detail reasons for not tweeting. As such, future research should seek to explore both the potential positive and negative experiences people have encountered when using Twitter to discuss mental health. The publicly accessible nature of Twitter may have also resulted in some users observing others responses and adapting their reasons for tweeting accordingly. The study also relied on the assumption that respondents actively tweeted about mental health and the 140-character limit of tweets may have prevented users from being able to give an in-depth insight about their reasons for tweeting. Therefore, the amount of material available for an in-depth exploration of tweet content was limited and could be utilized further as a method to identify a broad sample and purposively select participants from this sample for further questioning. It is generally seen as good practice to ask participants whether they agree that the analysed data and paraphrased quotes accurately captured discussions during qualitative interviews. However, this is not feasible via Twitter due to the ethical issues surrounding directly contacting individuals tweeting with the hashtag. Additionally, tweets were limited to English-speakers, which may impact on the generalizability of the findings. To prevent the collection, analysis, and dissemination of potentially identifiable information, only user location (city and country) and the content of tweets containing #WhyWeTweetMH were collected. Although the majority of respondents indicated in the tweets that they experienced mental health problems, for some, interpretations regarding personal or professional experience could not be made. Finally, information such as diagnosis, age, and gender could not be collected due to the ethical considerations surrounding the collection of identifiable information without specific user consent.

6.5.5. Conclusions

The number of tweets collected in the study and the thematic analysis applied demonstrates the feasibility of researchers directly implementing a hashtag for mental health research. Furthermore, the unique methodology employed resulted in the development and identification of several ethical considerations to ensure the safety and anonymity of Twitter users. The findings from #WhyWeTweetMH tweets suggest that individuals may actively use Twitter to discuss mental health as way of developing a sense of belonging within a
community, accessing support, challenging stigma and raising awareness, sharing experiences, and as an empowering coping mechanism. Future research is planned to explore whether Twitter users are open to their data being used for research purposes and the acceptability of using Twitter as an avenue for evidence-based psychological interventions. In addition, further work regarding clinician views about Twitter use in mental health and how Twitter could help or hinder clinical practice should be considered. Although potential drawbacks of Twitter use must be considered, for example, cyberbullying and Web-based predators, the strong expressions within the tweets suggest that respondents to #WhyWeTweetMH have experienced Twitter as welcoming and supportive and a useful forum for an open and honest dialog about mental health.

6.6. Acknowledgments

The authors would like to thank the Twitter users who retweeted and responded to the #WhyWeTweetMH hashtag. NB is a PhD student funded by the MRC Health eResearch Centre (HeRC), Farr Institute, United Kingdom (MR/K006665/1). MB is a PhD student funded by the Centre for Doctoral Training in Computer Science (United Kingdom, EPSRC).

6.7. Authors’ Contributions

All authors contributed to the development of the research question, study design, and final manuscript. NB completed the first draft of the manuscript, with SB, FL, RE, MB, and GN providing critical feedback. All authors approved and contributed toward the final manuscript.

6.8. Conflicts of Interest

None declared.
Chapter 7: Social media use and its relationship with mood, self-esteem and paranoia in severe mental health problems: An experience sampling study.

This paper has been prepared for submission to Psychological Medicine.
Social media use and its relationship with mood, self-esteem and paranoia in severe mental health problems: An experience sampling study.

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7.1. Abstract

Background. The use of social media websites is pervasive and an evidence-base is rapidly emerging indicating both detrimental and beneficial effects of social media engagement. However, little is known about the impact of social media use on people who experience severe mental health problems (SMI). Therefore, the current study explored the impact of social media use on people with and without SMI using the experience sampling method (ESM).

Methods. Twenty-five participants with psychosis or bipolar disorder and twenty-five non-clinical participants completed assessments of social media use and behaviours, perceived social rank, mood, self-esteem and paranoia over a 6-day period.

Results. General social media use predicted low mood, but did not predict self-esteem and paranoia. Although content posting and content consumption did not predict the variables per se, further analysis revealed that posting emotional self-disclosures predicted low mood and high paranoia. Additionally, perceptions of low social rank when using social media predicted low mood and self-esteem and high paranoia. Finally, the impact of social media use and behaviours did not differ between participants with and without SMI; although, frequency of use was significantly lower in people with SMI.

Conclusions. The findings show the potential detrimental impact of social media use for people with and without SMI and pinpoint specific behaviours associated with this effect. Despite no between-group differences, the overall negative psychological consequences highlight the continued need for the consideration of social media use for people both with and without experiences of SMI. Further clinical implications and future research directions are also noted.

Keywords: Social media, experience sampling, social rank, bipolar disorder, psychosis, severe mental health problems
7.2. Introduction

The use of social media websites such as Twitter (twitter.com), Facebook (facebook.com) and Instagram (Instagram.com) is widespread. Social media websites allow individuals to construct profiles in which they can maintain and create social networks, circulate details about their daily lives and respond to posts written by others (Boyd & Ellison, 2007). Rates of social media use by people who experience severe mental health problems (SMI) such as psychosis and bipolar disorder are lower than the general population based on small-scale studies (Brusilovskiy, Townley, Snethen, & Salzar, 2016; Miller et al., 2015).

People who experience mental health problems already use social media websites to self-manage their mental health. For example, some people have reported using social media as a helpful coping mechanism, which facilitates communication with others with similar experiences, allows access to motivational content, enables self-expression without the fear of being judged and can be powerful for combatting stigma and raising awareness (Berry et al., 2017; Miller et al., 2015; Gay et al., 2016; Highton-Williamson et al., 2014; Matthews et al., 2017). Furthermore, mental health care staff have observed occasions where online communication has been beneficial for clients’ with SMI through accessible peer support and ability for anonymous self-expressions (Berry et al., 2017). Individuals are also amenable to the idea of receiving mental health support via social media websites (Binbaum et al., 2015; Lal et al., 2015) and have suggested the inclusion of social media components, such as moderated discussion forums, in future interventions (Berry et al., 2016; Laine et al., 2016; Todd et al., 2013).

Despite some evidence for the potential therapeutic benefits of social media use, it has also been suggested that social media engagement may be harmful for an individual’s mental health and wellbeing. For example, several studies have reported a significant link between high social media use and low mood and depression (Blomfield Neira & Barber, 2014; Lin et al., 2016; Lup, Trub, & Lisa, 2015; Pantic et al., 2012; Primack et al., 2017; Sagioglou & Greitmeyer, 2014; Shensa et al., 2017). However, others have found no evidence of a link between social media use and mood (Benjanin, Banjanin, Dimitrijevic, & Pantic, 2015; Jelenchick et al., 2013). Mixed findings have also been reported for the relationship between social media use and self-esteem, with some reporting low self-esteem relating to high levels of social media use and investment (Blomfield Neira & Barber, 2014; Vogel et al., 2014) and others showing enhanced self-esteem (Gonzales & Hancock, 2011; Steinfield, Ellison, & Lampe, 2008). Systematic reviews have highlighted that conclusions cannot yet be drawn and further robust research is warranted (Best et al., 2014; Seabrook et al., 2016).

People who experience SMI may be particularly vulnerable to paranoid ideas after using social media websites (Torous & Keshavan, 2016), although there is a paucity of research exploring this potential link. Much of the current research has relied on participants with SMI retrospectively self-reporting whether they feel their use of social media leads to paranoia.
For example, in a recent survey, 34% of social media users with schizophrenia responded that they felt paranoid or suspicious using social media (Miller et al., 2015). Additionally, a case report of a young woman detailed the development of a paranoid delusion which coincided with excessive Twitter use (Kalbitzer et al., 2014), whilst some participants experiencing bipolar disorder noticed increases in paranoia after viewing negative content on social media websites (Veretilo & Billick, 2012). More recently, Bird and colleagues (2017) reported that the experience of negative affect during social media use correlates with paranoia severity. However, the lack of robust study designs and larger-scale research prevents conclusions from being drawn. Furthermore, the mixed findings and focus on primarily non-clinical or adolescent samples means that our current understanding regarding the impact of social media use for people with SMI is limited.

Recent findings in the field suggest there may be specific aspects of social media use that determine whether it is beneficial or detrimental. One such explanation is that social media may elicit downward online social comparisons; that is, comparing oneself less favourably to others; leading to negative feelings (Lee, 2014). Festinger (1954) highlighted the importance of social comparison to explain the inherent drive for individuals to achieve accurate self-evaluation of opinions and abilities. Social comparisons lead to the development of social ranks (SRs), whereby individuals compare themselves to others on relative power and social attractiveness (Gilbert, 1992). Social media may facilitate the formation of SRs due to the tendency for people to present themselves and their experiences in a positive light (Manago, Graham, Greenfield, & Salimkhan, 2008; Zhao, Grasmuck, & Martin, 2008). Researchers working in the field of social comparisons and psychopathology have proposed that perceived SR is associated with mood and self-esteem (Gilbert, 2000; Gilbert, Price, & Allan, 1995) and it has previously been reported that negative social comparisons on social media websites are associated with depression and low self-esteem (Appel, Gerlach, & Crusius, 2016; de Vries & Kühne 2015; de Vries, Möller, Wieringa, Eigenraam, & Hamelink, 2017; Feinstein et al., 2013; Jung, Park, & Song, 2016; Nesi & Prinstein, 2015; Steers, Wickham, & Acitelli, 2014; Vogel et al., 2015). Researchers have shown an association between perceived SR and paranoid ideation (Atherton et al., 2016; Freeman et al., 2005; 2014).

Therefore, the limited evidence available suggests that social media may lead to perceptions of a lower rank in comparison to others, which, in turn, may lead to paranoid ideation.

The current literature often reports psychological outcomes after high social media use in comparison to low social media use, rather than specific online behaviours. However, researchers have begun to explore whether social media behaviours contribute to psychological outcomes. For example, Burke and colleagues (2010) separated social media behaviours into: 1) directed communication such as posting on another user’s profile; 2) content production such as posting status updates; and 3) content consumption such as scrolling through social media newsfeeds. The authors reported that directed communication was associated with greater social networks and lower loneliness, whereas content
consumption was associated with reduced social capital and increased loneliness. Additionally, a recent review of the literature highlighted that active social media use such as directed communication can enhance subjective wellbeing, whereas passive social media use such as content consumption leads to a reduction in subjective wellbeing (Verduyn, Ybarra, Résibois, Jonides, & Kross, 2017). Therefore, the beneficial and detrimental consequences of social media use may relate to social media activities, rather than levels of social media use per se.

Previous research has employed retrospective accounts of social media use, SR, mood, self-esteem and paranoia, with many studies conducted in adolescent non-clinical samples. This study aimed to explore in real-time whether: 1) social media use and behaviours predict subsequent mood, self-esteem and paranoia; 2) the impact of social media use and behaviours on mood, self-esteem and paranoia differ between people with (clinical sample) and without (non-clinical sample) SMI; and 3) perceived SR when using social media predicts subsequent mood, self-esteem and paranoia. Experience sampling methodology (ESM) was chosen to explore the impact of social media use because it involves the repeated assessment of variables over a specified time-period, which are more ecologically-valid than traditional retrospective measures (Csikszentmihalyi & Larson, 2014). Specifically, we hypothesised the following:

\[H_1\]: Social media use will predict low mood and self-esteem and high paranoia.

\[H_2\]: Passive social media use (content consumption) will predict low mood and self-esteem and high paranoia, whilst active social media use (content posting and direct communication) will predict high mood and self-esteem and low paranoia.

\[H_3\]: Higher perceived SR in comparison with others on social media will predict high mood and self-esteem and low paranoia.

\[H_4\]: The impact of social media use and behaviours on mood, self-esteem and paranoia will be moderated by a diagnosis of SMI.

### 7.3. Methods

#### 7.3.1. Design

The study employed a cross-sectional within- and between-subjects design, whereby ESM was used to capture momentary assessments of social media use, mood, self-esteem and paranoia (within-subjects) and paper-based questionnaires were used to capture retrospective reports of these variables (between-subjects).
Participants were recruited via National Health Service (NHS) secondary care mental health services in the UK and through promoting the study on research volunteering websites.

Clinical participants were eligible to participate if they had a clinician-verified experience of first episode psychosis (FEP) or had received a diagnosis of DSM-IV schizophrenia-spectrum disorder or bipolar disorder. Non-clinical participants were eligible to participate if they self-reported no current experiences of mental health problems. Further eligibility criteria for all participants were: 1) 18 years of age or over; 2) able to speak and read English; 3) able to provide informed consent; 4) available for a week-long study; 5) reported ownership of a Facebook or Twitter account; and 6) reported using social media at least three times per week.

7.3.3. Baseline and trait-level measures

Trait-level mood was measured using the Positive and Negative Affect Schedule (PANAS; Watson et al., 1988). The PANAS consists of 20 adjectives associated with positive affect (PA) and negative affect (NA) and respondents are asked to indicate their levels of agreement on a 5-point Likert scale (1 = very slightly or not at all; 5 = extremely). The scale can be used to measure both trait- and state-levels of PA and NA depending on question phrasing (Watson et al., 1988). The scale has previously been used in other studies investigating the relationship between social media use and mood (Sagioglou & Greitemeyer, 2014; Vogel et al., 2015) and has excellent internal consistency for both PA ($\alpha = 0.86-0.90$) and NA ($\alpha = 0.84-0.87$). In the current study, Cronbach’s alpha was 0.91 for PA and 0.90 for NA.

Trait self-esteem was measured using the Rosenberg Self-esteem Scale (RSES), which consists of 10 statements on a 4-point scale (1 = strongly agree; 4 = strongly disagree). The RSES can also be used to measure both trait and state self-esteem (Donnellan et al., 2012). The scale has also previously shown excellent internal consistency and test-retest reliability ($r = 0.85-0.88$) (Rosenberg, 1979); in the current study, the Cronbach’s alpha was 0.93.

Trait paranoia was measured using the Paranoia Scale, which comprises 20 statements on a 5-point Likert scale (1 = not at all applicable to me; 5 = extremely applicable to me). The scale has been used in both clinical and non-clinical samples and has shown good construct validity ($\alpha = 0.84$) and test-retest reliability ($r = 0.70$) (Fenigstein & Vanable, 1992) and demonstrated excellent internal consistency in the current study ($\alpha = 0.95$).

Baseline perceptions of SR were measured using the Social Comparison Scale (SCS; Allan & Gilbert, 1995). The SCS contains a list of 11 pairs of antonyms and participants are asked to indicate on a 10-point scale how they feel in comparison to others (e.g. 1 = inferior, 10 = superior). The higher the SCS score, the higher the perceived SR relative to others. The SCS has demonstrated good internal consistency in both clinical ($\alpha = 0.91$) and non-clinical
(\alpha = 0.88) samples (Allen & Gilbert, 1995) and showed good internal consistency in the current study (\alpha = 0.85). Mean scores for PA, NA, self-esteem, paranoia and SR were calculated and compared between the clinical and non-clinical groups.

Baseline assessments of social media use were produced after a review of the literature to identify items that had been used in previous studies. The Social Media Use Integration Scale (SMUIS, Jenkins-Guarnieri, Wright, & Johnson, 2013) was included to measure participants’ emotional connection to social media and integration into their daily lives. The SMUIS is a 10-item scale ranging from 0 (strongly disagree) to 5 (strongly agree) and has shown strong internal consistency (\alpha = 0.91) and good test-retest reliability (r = 0.80) and can be modified for other social media platforms (Jenkins-Guarnieri et al., 2013). The subsequent six questions focused on social media privacy settings and were taken from research published by Ross and colleagues (2009). A further 14 questions were adapted from the same questionnaire to assess how often participants engaged in certain social media behaviours (8 response options, range: ‘never’ to ‘more than once a day’) and assigned to the overarching activities of content posting and direct communication (active social media use) and content consumption (passive social media use).

7.3.4. State-level (ESM) Measures

The first question of the ESM assessments asked participants whether they had used social media since the last assessment. If participants ticked ‘yes’, they were asked additional sets of questions regarding social media use prior to completing the remaining ESM assessments: 1) which social media website they used (Facebook, Twitter, Instagram, other); 2) what they did when they used social media; and 3) how they felt in comparison to others on social media using the SCS (Allan & Gilbert, 1995). The responses from question 2 were characterised under content posting, direct communication and content consumption using the criteria developed by Burke and colleagues (2010). Responses for question 3 were combined to produce the SCS scores for each participant at each time-point. In the current study, the momentary assessment of SR using the SCS had a Cronbach’s alpha of 0.96.

To account for the potential that other forms of personal interaction may lead to changes in the variables of interest, participants were asked whether they had spoken with another person since the last assessment (yes/no) and asked to indicate whether this communication was face-to-face, online, text-message, telephone or a messaging smartphone application. ESM assessments of mood were informed by a previous study that measured variations in mood states in psychosis over time (Myin-Germeys et al., 2001). Participants were presented with nine mood-related adjectives on a 7-point Likert scale and asked the degree to which the adjective described their current feelings (1 = not at all; 7 = very). Responses to negative adjectives and positive adjectives were combined for each participant to give a total value for NA and PA at each time-point. The ESM PA (\alpha = 0.94) and NA (\alpha = 0.92) scales showed excellent internal consistency in the current study. The
subsequent two questions used four ESM self-esteem items and four paranoia items that have also been used successfully in other ESM studies (Fuller-Tyskiewicz et al., 2015; Myin-Germeys et al., 2001; Thewissen et al., 2011). For both questions, participants were asked to indicate on a 7-point Likert scale (1 = not at all; 7 = very) the extent to which they agreed or disagreed with the items. Both the state self-esteem scale (α = 0.95) and state paranoia scale (α = 0.91) demonstrated excellent internal consistency in the current study.

A full list of ESM items is available in Appendix 25.

7.3.5. Procedure

Ethical approval was granted by the local research ethics committee. After consent, participants completed a demographics questionnaire and the baseline and trait-level measures. Participants were then given a unique username and password to access the ESM assessments and completed a trial run either on their own smartphone or a smartphone loaned to them for the duration of the study. ESM assessments commenced the following morning. Text-messages containing a link to a secure online site were sent to participants at six pseudo-random times a day over a 6-day period. Participants had up to 15 minutes to click the link and complete the assessments after each text-message received. The data collection period ranged from 10:00 and 21:00, although this could be adapted to allow for individual differences in waking hours. At the end of the ESM assessment period, participants were asked to complete an exit evaluation detailing reasons for missed assessments, debriefed by the researcher about the study and provided £20 vouchers (this was not contingent on the number of assessments completed).

7.3.6. Data analysis

Trait-level mood, self-esteem, paranoia and perceived SR were analysed by comparing between-group means using independent t-tests in SPSS Version 22 (SPSS Inc., USA). ESM data were assessed for normality through visual inspection of histograms and analysis of skewness and kurtosis. Analyses of ESM data were performed using Stata, version 14 (Stata Corporation, USA). The hierarchical structure of ESM data (observations are nested within days, within participants) requires multilevel modelling to be used due to the violation of the assumption of independence of observations. To explore whether social media use, behaviours and perceived SR predicted mood, self-esteem and paranoia, we fitted 3-level random intercept models containing in the error structure a random intercept for each participant, a random intercept for each participant-day and participant-beep error term. Estimation was by maximum likelihood.

To test whether social media use (H1), social media behaviours (H2) and perceived SR (H3) predicted mood, self-esteem and paranoia at the next time-point, several separate multilevel linear regression analyses were estimated with PA, NA, self-esteem and paranoia as the outcome variables, and social media use, behaviours and perceived SR as the predictor
variables. In all models, socialisation (whether or not an individual had spoken with another person) and group (clinical and non-clinical) were included as covariates to ensure any changes in the outcome variables could be attributed to the use of social media, rather than other forms of socialisation or group. To investigate whether the impact of social media use was moderated by a diagnosis of SMI (H4), a further set of multilevel linear regressions were estimated by looking at the two-way interaction between group and social media use. Finally, whilst we did not make any specific hypotheses relating to between-group differences in social media use, odds ratios (ORs) and the corresponding 95% confidence intervals were calculated through a multiple logistic regression to compare the likelihood of social media use between the clinical and non-clinical groups.

7.4. Results

7.4.1. Sample characteristics

A total of fifty-one people (26 clinical and 25 non-clinical) consented to participate. Data provided from one participant in the clinical group were excluded from analyses as they did not complete any assessments over the study period. Demographic information is presented in Table 10. The mean age of participants in the clinical ($M = 35.2$, $SD = 10.6$, range = 20-62) and non-clinical ($M = 35.4$, $SD = 14.7$, range = 20-59) groups did not significantly differ ($t(48) = -0.22, p = 0.982$). Over half the clinical group were unemployed (56%), whereas the majority of the non-clinical group were in paid employment (64%). The most popular social media site was Facebook (100%), followed by Twitter (52%) and Instagram (40%).
**Table 10.** Participant demographic information, clinical characteristics and social media use.

<table>
<thead>
<tr>
<th>Clinical group</th>
<th>Non-clinical group</th>
<th>Test statistic</th>
<th>p</th>
<th>Total n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender:</td>
<td>Gender:</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>8(32)</td>
<td>11(44)</td>
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<td>Female</td>
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<td>14(56)</td>
<td></td>
<td>31(62)</td>
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<tr>
<td>Employment status:</td>
<td>Employment status:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working full time</td>
<td>2(8)</td>
<td>13(52)</td>
<td>$\chi^2 = 22.99$, df= 4</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Working part time</td>
<td>4(16)</td>
<td>3(12)</td>
<td></td>
<td>7(14)</td>
</tr>
<tr>
<td>Working voluntary</td>
<td>3(12)</td>
<td>0(0)</td>
<td></td>
<td>3(6)</td>
</tr>
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<td>2(8)</td>
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<td></td>
<td>10(20)</td>
</tr>
<tr>
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<td>1(4)</td>
<td></td>
<td>15(30)</td>
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<td>Ethnicity:</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Asian or Asian British</td>
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<td>1(4)</td>
<td>$\chi^2 = 3.20$, df = 3</td>
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<td>21(84)</td>
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<td>45(90)</td>
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<td>1(2)</td>
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<td></td>
</tr>
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<td></td>
<td>16(32)</td>
</tr>
<tr>
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<td>3(12)</td>
<td>4(16)</td>
<td></td>
<td>7(14)</td>
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<td>Undergraduate degree</td>
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<td>10(40)</td>
<td></td>
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<td></td>
<td>4(8)</td>
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<tr>
<td>Diagnosis:</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>First episode psychosis</td>
<td>9(36)</td>
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<table>
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<th>Diagnosis</th>
<th>Count (Sample Size)</th>
<th>Facebook</th>
<th>Twitter</th>
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<th>Google+</th>
<th>Tumblr</th>
<th>Flickr</th>
<th>Social media websites currently used:</th>
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<tr>
<td>Schizophrenia</td>
<td>3(12)</td>
<td>25(100)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Facebook: 25(100) Twitter: 11(44)</td>
</tr>
<tr>
<td>Schizoaffective disorder</td>
<td>4(16)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Facebook: 25(100) Twitter: 11(44)</td>
</tr>
<tr>
<td>Paranoid schizophrenia</td>
<td>2(8)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Facebook: 25(100) Twitter: 11(44)</td>
</tr>
<tr>
<td>Psychosis NOS</td>
<td>1(4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Facebook: 25(100) Twitter: 11(44)</td>
</tr>
<tr>
<td>Bipolar disorder Type I</td>
<td>4(16)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Facebook: 25(100) Twitter: 11(44)</td>
</tr>
<tr>
<td>Bipolar disorder Type II</td>
<td>1(4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Facebook: 25(100) Twitter: 11(44)</td>
</tr>
<tr>
<td>Bipolar disorder NOS</td>
<td>1(4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Facebook: 25(100) Twitter: 11(44)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;i&gt;χ² = 0.00, df = 1&lt;/i&gt;</td>
<td>&lt;i&gt;χ² = 1.28, df = 1&lt;/i&gt;</td>
<td>&lt;i&gt;χ² = 0.00, df = 1&lt;/i&gt;</td>
<td>&lt;i&gt;χ² = 2.23, df = 1&lt;/i&gt;</td>
<td>&lt;i&gt;χ² = 1.09, df = 1&lt;/i&gt;</td>
<td>&lt;i&gt;χ² = 0.35, df = 1&lt;/i&gt;</td>
<td></td>
</tr>
</tbody>
</table>

| Devices used to access social media | | | | | | | |
|------------------------------------|---------------------|----------|---------|-----------|---------|--------|--------|---------------------------------------|
| Laptop                             | 12(48)              |          |         |           |         |        |        | Facebook: 23(92) Twitter: 13(52) |
| Desktop                            | 7(28)               |          |         |           |         |        |        | Facebook: 23(92) Twitter: 13(52) |
| Smartphone                         | 24(96)              |          |         |           |         |        |        | Facebook: 23(92) Twitter: 13(52) |
| Tablet                             | 13(52)              |          |         |           |         |        |        | Facebook: 23(92) Twitter: 13(52) |
|                                   | <i>χ² = 2.05, df = 1</i> | <i>χ² = 0.32, df = 1</i> | <i>χ² = 0.33, df = 1</i> | <i>χ² = 0.80, df = 1</i> | <i>χ² = 3.13, df = 1</i> | <i>χ² = 1.59, df = 1</i> | <i>χ² = 4.16, df = 1</i> |
7.4.2. Completion rates

Out of the total 1800 assessments that were possible during the study period, 1248 were fully completed by participants (n = 622 clinical; n = 626 non-clinical; 69.3% response rate). The proportion of assessments completed ranged between 25% and 94.4% in the clinical group and 36.1% and 91.7% in the control group. The mean number of assessments completed did not significantly differ between clinical and non-clinical groups (t(48) = 0.07, \( p = 0.946 \)), males and females (t(48) = 0.85, \( p = 0.401 \)), on the basis of employment status (\( F(4) = 0.64, \ p = 0.638 \)) or level of education (\( F(4) = 0.26, \ p = 0.903 \)). Finally, there was no correlation between assessment completion rate and age (\( r = -0.12, \ p = 0.417 \)).

It is generally accepted in ESM studies that participants should complete at least a third of assessments for the data to be included in analyses (Palmier-Claus et al., 2011). However, this value is arbitrary and given that ESM is not affected by issues relating to missing data, a specific completion rate of assessments is not required (Carter & Emsley, 2017). One person in the study completed less than the specified value (25%), but the data they provided were still usable for the purpose of this study due to the variations in the timing of the responses and was, therefore, included in all analyses.

7.4.3. Between-group differences in trait measures

Trait-level self-esteem, perceived SR, mood and paranoia are presented in Table 11. Participants in the non-clinical group had significantly higher scores for trait-level self-esteem and PA in comparison with the clinical group, whilst participants in the clinical group had significantly higher scores for trait-level NA and paranoia. There were no significant between-group differences in trait-level SR scores.

<table>
<thead>
<tr>
<th>Table 11. Participant trait-level scores</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Clinical group</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>Non-clinical group</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>Test statistic</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-esteem</td>
<td>25</td>
<td>13.5</td>
<td>6.0</td>
<td>Self-esteem</td>
<td>24*</td>
<td>22.3</td>
<td>3.5</td>
<td>t(47) = 6.3</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Social rank</td>
<td>25</td>
<td>55.0</td>
<td>16.0</td>
<td>Social rank</td>
<td>25</td>
<td>61.3</td>
<td>9.6</td>
<td>t(48) = 1.7</td>
<td>0.095</td>
</tr>
<tr>
<td>Positive affect</td>
<td>25</td>
<td>30.3</td>
<td>9.5</td>
<td>Positive affect</td>
<td>25</td>
<td>36.7</td>
<td>4.9</td>
<td>t(48) = 2.98</td>
<td>&lt;0.010</td>
</tr>
<tr>
<td>Negative affect</td>
<td>25</td>
<td>23.7</td>
<td>8.1</td>
<td>Negative affect</td>
<td>25</td>
<td>17.7</td>
<td>7.6</td>
<td>t(48) = -2.7</td>
<td>&lt;0.010</td>
</tr>
<tr>
<td>Paranoia</td>
<td>25</td>
<td>53.2</td>
<td>20.7</td>
<td>Paranoia</td>
<td>25</td>
<td>32.4</td>
<td>10.3</td>
<td>t(48) = -4.5</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

7.4.4. Does social media use predict subsequent mood, self-esteem and paranoia?

Table 12 demonstrates that the data partially support Hypothesis 1. Specifically, social media use led to significant decreases in PA and significant increases in NA. However, social media use did not predict self-esteem or paranoia. PA and NA did not predict social
media use at the next beep, therefore increasing confidence in the conclusion that changes in PA and NA were attributable to social media use.

**Table 12.** Effect of social media use on positive and negative affect, self-esteem and paranoia. Effect is unstandardized β coefficient from separate models.

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Effect</th>
<th>Standard Error</th>
<th>p</th>
<th>95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive affect</td>
<td>-0.5788</td>
<td>0.2301</td>
<td>0.012</td>
<td>-1.0298, -0.1277</td>
</tr>
<tr>
<td>Negative affect</td>
<td>0.6907</td>
<td>0.2425</td>
<td>0.004</td>
<td>0.2154, 1.6610</td>
</tr>
<tr>
<td>Self-esteem</td>
<td>-0.0847</td>
<td>0.1718</td>
<td>0.622</td>
<td>-0.4216, 0.2521</td>
</tr>
<tr>
<td>Paranoia</td>
<td>0.2715</td>
<td>0.1668</td>
<td>0.104</td>
<td>-0.0555, 0.5984</td>
</tr>
</tbody>
</table>

Multilevel logistic regression analyses were conducted to explore whether trait variables predicted social media use across the study period. Trait-level PA (β = -0.0022, SE = 0.0165, p = 0.895, 95% CI [-0.034-0.030]), NA (β = 0.0063, SE = 0.0160, p = 0.694, 95% CI [-0.038-0.025]), self-esteem (β = 0.0018, SE = 0.0205, p = 0.930, 95% CI [-0.038-0.042]), paranoia (β = -0.0089, SE = 0.0069, p = 0.199, 95% CI [-0.024-0.005]) and SR (β = -0.0113, SE = 0.0101, p = 0.263, 95% CI [-0.031-0.008]) did not predict social media use. Therefore, it likely that social media use predicted mood, rather than being predicted by mood.

7.4.5. **Do social media behaviours predict subsequent mood, self-esteem and paranoia?**

Table 13 shows that content posting did not lead to changes in PA, self-esteem or paranoia, but did lead to increases in NA. Content consumption and direct communication were not found to predict PA, NA, self-esteem or paranoia. Therefore, hypothesis 2 was not supported.

Further analyses were conducted to explore whether any specific social media behaviours predicted the outcome variables. Posting about daily activities led to significant increases in PA and self-esteem. Conversely, PA and self-esteem did not predict posting about daily activities. Posting about opinions and feelings, venting on social media and viewing profiles of people who were not “friends” on social media led to significant decreases in PA and self-esteem and significant increases in NA and paranoia. PA, NA, self-esteem and paranoia did not predict posting about opinions and feelings, venting on social media or viewing profiles of people who were not “friends” on social media.
Table 13. Effect of social media behaviours on positive and negative affect, self-esteem and paranoia

<table>
<thead>
<tr>
<th>Behaviour</th>
<th>n</th>
<th>Positive affect</th>
<th>Negative affect</th>
<th>Self-esteem</th>
<th>Paranoid</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Content posting</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Posting about daily activities</td>
<td>136</td>
<td>-0.1004</td>
<td>1.0260**</td>
<td>1.0260**</td>
<td>0.3149</td>
</tr>
<tr>
<td>Posting about opinions</td>
<td>78</td>
<td>1.7179**</td>
<td>-0.0324</td>
<td>0.7078</td>
<td>0.4083</td>
</tr>
<tr>
<td>Posting about feelings</td>
<td>26</td>
<td>-2.3516**</td>
<td>1.6872</td>
<td>0.7493</td>
<td>0.5989</td>
</tr>
<tr>
<td>Posting pictures/videos of self or others</td>
<td>23</td>
<td>-3.5849***</td>
<td>2.2401*</td>
<td>0.8469</td>
<td>0.6463</td>
</tr>
<tr>
<td>Venting on social media</td>
<td>14</td>
<td>-3.3573**</td>
<td>1.1914</td>
<td>-1.2160</td>
<td>0.8463</td>
</tr>
<tr>
<td><strong>Content consumption</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Looking through newsfeed</td>
<td>598</td>
<td>-0.2568</td>
<td>-0.2450</td>
<td>-0.1980</td>
<td>-0.1449</td>
</tr>
<tr>
<td>Viewing friends' profiles</td>
<td>551</td>
<td>0.1897</td>
<td>-0.5382</td>
<td>0.4606</td>
<td>-0.1726</td>
</tr>
<tr>
<td>Viewing profiles of people who are not friends</td>
<td>126</td>
<td>0.3194</td>
<td>0.8371</td>
<td>0.4749</td>
<td>0.3270</td>
</tr>
<tr>
<td><strong>Direct communication</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commented on</td>
<td>132</td>
<td>-0.4627</td>
<td>-0.1362</td>
<td>-0.0307</td>
<td>0.3144</td>
</tr>
</tbody>
</table>

Alpha = 0.05 (p < 0.05), **Alpha = 0.01 (p < 0.01), ***Alpha = 0.001 (p < 0.001)
<table>
<thead>
<tr>
<th>Action</th>
<th>N</th>
<th>Correlation Coefficient</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liked another person’s post/picture</td>
<td>44</td>
<td>0.0612</td>
<td>0.7171</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.2816</td>
<td>-0.1181</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.7460</td>
<td>0.4828</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.0109</td>
<td>0.5124</td>
</tr>
<tr>
<td>Shared another person’s post/picture</td>
<td>36</td>
<td>-0.3913</td>
<td>0.7206</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.4948</td>
<td>0.7461</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.0449</td>
<td>0.4817</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.3840</td>
<td>0.511</td>
</tr>
</tbody>
</table>

*** p<.001  ** p<.01  *p<.05  .<.1
7.4.6. Does perceived social rank when using social media predict subsequent mood, self-esteem and paranoia?

Table 14 shows that a higher perceived SR score in comparison to others when using social media led to significant increases in PA and self-esteem and significant decreases in NA and paranoia. These findings support hypothesis 3 and demonstrate that perceptions of high SR when using social media predict subsequent increases in mood and self-esteem and decreases in paranoia.

**Table 14.** Effect of perceived social rank on positive affect, self-esteem, negative affect and paranoia. Effect is unstandardized β coefficient.

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Effect</th>
<th>Standard Error</th>
<th>$p$</th>
<th>95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive affect</td>
<td>0.1352</td>
<td>0.0126</td>
<td>&lt;.0.001</td>
<td>0.1105, 0.1598</td>
</tr>
<tr>
<td>Self-esteem</td>
<td>0.1004</td>
<td>0.0096</td>
<td>&lt;.001</td>
<td>0.0815, 0.1193</td>
</tr>
<tr>
<td>Negative affect</td>
<td>-0.1288</td>
<td>0.0146</td>
<td>&lt;.001</td>
<td>-0.1573, -0.1002</td>
</tr>
<tr>
<td>Paranoia</td>
<td>-0.0821</td>
<td>0.0101</td>
<td>&lt;.001</td>
<td>-0.1019, -0.0622</td>
</tr>
</tbody>
</table>

7.4.7. Are lower scores for positive affect and higher scores for negative affect after social media use moderated by a diagnosis of SMI?

SMI was not found to moderate the observed relationship between social media use and PA ($β = 0.0369, SE = 0.4579, p = 0.936, 95% CI [-0.861-0.934]) or NA ($β = 0.1932, SE = 0.4826, p = 0.689, 95% CI [-0.753-1.139]). This finding does not support hypothesis 4 that SMI would moderate associations between social media use and mood.

7.4.8. Do social media use and behaviours differ between people with and without SMI?

Clinical participants were less likely to use social media than non-clinical participants (OR=0.5620, SE=0.1421, $p=0.023$, 95% CI [0.3423-0.9226]). Separate analyses revealed that clinical participants were less likely to use Facebook than non-clinical participants (OR=0.5910, SE=0.1599, $p=0.052$, CI [0.3478-1.0043]), but there were no differences in Twitter (OR=0.8952, SE=0.7142, $p=0.890$, 95% CI [0.1875-4.2753]) or Instagram (OR=0.4388, SE=0.4388, $p=0.435$, 95% CI [0.0554-3.4772]) use. Additionally, there were no between-group differences in posting content online (OR = 2.0176, $SE = 1.1056, p = 0.200$, 95% CI [0.689-5.906]), content consumption (OR = 0.7393, $SE = 0.4955, p = 0.652$, 95% CI [0.199-2.750]) or directed communication (OR = 0.7642, $SE = 0.3052, p = 0.501$, 95% CI [0.349-1.672]), or the types of social media behaviours participants engaged with online.
7.5. Discussion

7.5.1. General discussion

This study aimed to identify whether social media use predicted subsequent mood, self-esteem and paranoia, pinpointing any specific social media behaviours that contributed towards relationships observed. Additionally, we aimed to determine whether perceptions of SR when using social media predicted these outcomes. Finally, the study aimed to ascertain whether SMI status moderated any relationship between social media use and mood, self-esteem and paranoia.

As hypothesised, social media use predicted reductions in PA and elevations in NA. However, contrary to expectations, social media use was not found to predict self-esteem or paranoia. To explore this further, additional analyses were conducted and revealed certain types of social media behaviours predicted mood, self-esteem and paranoia. Specifically, posting about daily activities was found to predict high PA and self-esteem, whereas posting opinions and feelings and venting on social media predicted low PA and high NA and paranoia. Seidman (2013) proposed that posting opinions and feelings and venting on social media is an emotional form of self-disclosure, whereas posting information about daily activities is general self-disclosure. Emotional self-disclosures are important for social connectedness, belonging and feelings of intimacy (Derlega, Winstead, Wong, & Greenspan, 1987; Greene, Derlaga, & Matthews, 2006; Laurenceau, Barrett, & Pietromonaco, 1998) and people perceive personal disclosures on social media as a helpful mechanism to connect with others, maintain relationships, exchange opinions and to receive support (Al-Kandari, Melkote, & Sharif, 2016; Berry et al, 2017; Forest & Wood, 2012). However, in contrast to these findings, it was general factual-based disclosures that seemed to be beneficial for increasing mood and self-esteem, whilst emotional-based posting was detrimental to mood, contributed towards paranoia and did not affect self-esteem. One tentative explanation for this unexpected finding may be that participants did not receive the supportive and reinforcing responses they hoped for when they posted emotional self-disclosures. This possibility is supported by recent research that found social attraction towards a social media user was lower when posts contained highly personal or negative self-disclosures (Baruh & Cemalciğer, 2015; Orben & Dunbar, 2017). Additionally, individuals with low self-esteem considered Facebook to be an appealing platform for self-disclosure, but received undesirable responses to their posts due to the negativity expressed (Forest & Wood, 2012). Therefore, whilst speculative, reductions in mood after posting about opinions and feelings and venting on social media may be due to disappointment in the responses received.

Viewing the profiles of people who were not social media friends was found to have the most substantial negative effects, showing subsequent reductions in both mood and self-esteem and elevations in paranoia. This is consistent with previous research that has shown that the
number of strangers’ individuals followed on Instagram moderated the relationship between Instagram use and depressive symptoms (Lup et al., 2015). Additionally, it has been reported that individuals who have more Facebook connections with users who they do not personally know are more likely to endorse the suggestion that others are happier than them (Chou & Edge, 2012). Consistent with hypotheses, findings showed that low perceived SR when using social media predicted low mood and self-esteem and high paranoia. Therefore, the negative impact of viewing strangers’ profiles may be due to increased exposure to others and the tendency for others to only report the highlights of their lives, rather than the negative or neutral moments (Manago et al., 2008; Zhao et al., 2008), resulting in reductions in perceived SR. This is supported by previous research demonstrating the relationship between social comparisons and mood, self-esteem and paranoia (Appel et al., 2016; de Vries et al., 2015; 2017; Feinstein et al., 2013; Jung et al., 2016; Nesi & Prinstein, 2016; Steers et al., 2014).

The occurrence of SMI did not moderate the impact of social media use. However, because individuals with SMI may have lower mood prior to social media engagement, the finding remains clinically important because the impact of social media use may have far more serious consequences. This finding supports concerns raised by mental health care staff and researchers who proposed that the effects of social media use could be particularly detrimental for people with SMI (Berry et al., 2017; Torous & Keshavan, 2016). Therefore, the observed impact of social media use warrants further consideration in the context of SMI and mental health and wellbeing more generally. Additionally, clinical participants were more than 50% less likely to use social media than non-clinical participants. Small-scale studies demonstrate lower social media website access by individuals with SMI than the general population (Brusilovskiy et al., 2016; Miller et al., 2015); however, this is the first study to identify differences in frequency of use. Potential reasons for these findings should be explored in future studies to determine whether differences in social media use frequency are due to barriers to use or other factors such as symptom occurrence or avoiding social media to prevent negative outcomes associated with use.

7.5.2. **Strengths, limitations and directions for future research**

A strength of the current study was the use of ESM assessments, which allowed the ecologically-valid repeated measurement of social media use and psychological outcomes, rather than the reliance on retrospective reports. Additionally, socialisation was included to identify whether other forms of social interaction may have predicted outcomes. Trait SR, mood, self-esteem and paranoia were also measured at baseline and were not found to predict social media use. Additionally, examination of the reverse hypotheses revealed that mood, self-esteem and paranoia did not predict social media use or behaviours. Therefore, although exact directions cannot be established, the inclusion of these trait measures and exploration of the reverse hypotheses improves confidence in conclusions regarding outcomes associated with social media use. The comparison of both clinical and non-clinical
groups was also a strength, because it allowed the between-group comparison of the impact of social media use.

Explanations for the outcomes of different social media behaviours were speculative. Specifically, emotional self-disclosures were found to be particularly detrimental to mood and self-esteem and may be related to the feedback individuals received after making such disclosures. However, without clear knowledge of user responses to posts, firm conclusions cannot be drawn. Therefore, future research should seek to identify the responses to such disclosures to understand whether response type mediates the relationship between disclosure posting and outcome. It is also possible that the information participants were presented with when viewing social media profiles and newsfeeds may have contributed towards reductions in mood when using social media. Participants were not asked to provide details about the information they saw each time they accessed social media sites. Future research should expand on these findings by exploring whether type of content viewed contributes towards the impact of use and behaviours. A recent report by the Royal Society for Public Health (RSPH) revealed that Instagram was particularly detrimental to the mental health and wellbeing of young people in comparison to other social media websites (RSPH, 2017). In the current study, it was not possible to compare the impact of social media use across sites because participants mainly used Facebook on its own or a combination of social media websites at time-points. Potentially, a larger sample of participants or more assessments per day would have facilitated comparisons between sites. The sample was limited to mostly White British participants so findings are unlikely to be generalizable. Moreover, the methods used to recruit participants may have led to a biased sample. Specifically, individuals either referred themselves, or were referred by mental health care staff, to participate in the study. This means that those with an interest in social media and high levels of use may have been more likely to want to participate than those with lower levels of use. Additionally, mental health care staff may have been more likely to refer service users who had previously described the positive or negative experiences of engaging with social media. Finally, the design of the study was correlational in nature and it is likely that other factors may have also contributed towards the impact of social media use. Therefore, future research should seek to experimentally manipulate social media use to explore whether the effect is directly attributable specifically to social media use and behaviours.

7.5.3. Clinical implications

Despite finding that SMI did not moderate the impact of social media use per se, reductions in mood after social media use are likely to be more damaging for people with SMI due to reporting lower levels of mood to begin with. These findings support concerns highlighted in other studies where staff and researchers alike have noted the potential vulnerability of service users on social media (Berry et al., 2017a; Torous & Keshavan, 2016). The negative consequence of social media engagement in both samples highlights the importance of
continued consideration of the impact of social media in mental health settings. Specifically, mental health care staff should ensure that they are aware of and explore any potential issues clients face when using social media, particularly with regards to online self-disclosures. Additionally, the findings support the recent assertion made by the RSPH (2017) that social media websites should be used to discretely reach out to individuals who may be affected by content and signpost appropriate support options. It has been suggested that social networking components such as forums could be incorporated into digital health interventions (DHIs) for SMI to connect people with similar experiences and provide professional and peer support (Alvarez-Jimenez et al., 2014; Aschbrenner et al., 2016; Naslund et al., 2016a; 2016b; 2017; Välimäki et al., 2016). However, the current findings suggest that emotional disclosures via these platforms have the potential to elicit negative feelings. We speculated that the impact of such disclosures may be due to the absence of supportive feedback; therefore, these social networking components should be moderated to ensure individuals receive supportive responses when self-disclosing personal information. Finally, we identified significantly lower frequencies of social media use by people who experience SMI, which may be a potential barrier in the use of social networking components within DHIs. Further research is needed to explore the reasons for this comparatively low use and to identify whether these differences exist on a larger-scale.

7.5.4. Conclusions

These results demonstrate the complex relationship between social media use and psychological outcomes in both people with and without experiences of SMI. Importantly, the findings indicate social media use in itself does not necessarily have detrimental effects. Instead, the findings pinpoint specific social media behaviours that appear to determine whether outcomes are beneficial or detrimental. This study highlights considerations such as forum moderation that need to be made when delivering social networking components as potential support options.

7.6. Acknowledgments

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7.7. Authors’ Contributions

All authors contributed to the development of the review. NB collected the study data and completed the first draft of the manuscript, with SB, FL, and RE providing critical feedback and revisions. All authors approved and contributed to the final manuscript.

7.8. Conflicts of Interest

No conflicts to declare
Chapter 8: Discussion

The aim of this chapter is to provide a summary of the key findings from the five studies described in the preceding chapters and to identify common themes that pinpoint the implications for future research and clinical practice. The chapter will begin by presenting the main study aims and corresponding findings. The key findings from the overall body of work will then be discussed within the context of the current evidence. This will be followed by an outline of the strengths and limitations of the overall thesis. Finally, the wider implications for the use of technology in clinical practice, the development and implementation of DHIs and areas for future research will be discussed.

8.1. Overview of thesis aims and main findings

The overall objective of this thesis was to understand how technology could be used to deliver interventions for people who experience SMI. This objective was achieved by taking a mixed-methods approach to addressing five main aims. The main findings and key implications are summarised in Table 15.

Table 15. Summary of the key findings and implications generated from the five studies included in this thesis.

<table>
<thead>
<tr>
<th>Study 1</th>
<th>Systematic review exploring the acceptability of DHIs for SMI.</th>
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<tbody>
<tr>
<td>Study 2</td>
<td>Qualitative exploration of service user views about the hypothetical acceptability of DHIs and ideas for future DHIs.</td>
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<table>
<thead>
<tr>
<th>Study description</th>
<th>Key findings</th>
<th>Key implications</th>
</tr>
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<tbody>
<tr>
<td>Study 1 Chapter 3</td>
<td>Paucity of research exploring hypothetical acceptability. Hypothetical acceptability of DHIs is relatively low, whilst actual acceptability is relatively high. Hypothetical acceptability for interventions on mobile phone is higher than for those online. Actual acceptability higher with remote support. Qualitative: 1) mixed views about safety and privacy; 2) need to include interactive components; 3) should include remote peer support; and 4) concerns raised about motivation when experiencing acute symptoms.</td>
<td>Future studies should measure both hypothetical and actual acceptability, investigate factors that influence acceptability and recruit participants with and without contact with mental health services. Mixed-methods approach should be taken when evaluating the impact of DHIs. Continued service user involvement needed throughout the conception, development and delivery of DHIs.</td>
</tr>
<tr>
<td>Study 2 Chapter 4</td>
<td>DHIs could be empowering tools that instigate shared understanding and decision-making. Concerns were raised that society is already divided and DHIs will increase this divide. Further concerns were raised about who has access to data from DHIs and how the data are used. DHIs should be used to enhance care and extend access options, but should not replace other support. DHIs should be designed to be positive, fun, practical and interactive.</td>
<td>Solutions to prevent digital exclusion must be implemented. Terms and conditions regarding data access and use must be clearly stated, in addition to organisations involved in DHI development. Researchers and clinicians must remain mindful about the way DHIs are presented to service users. DHIs should include a mixture of mental health-related and non-mental health related content and components.</td>
</tr>
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</table>

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Study 3  
Chapter 5  
Qualitative exploration of mental health care staff experiences and views about technology use and the implementation of DHIs for SMI.

- Staff have conflicting views about the pros and cons of using online resources and DHIs to manage mental health.
- DHIs could increase access to mental health support options for SMI, but concerns were raised that DHIs may perpetuate the digital divide.
- DHIs will impact on staff being able to maintain professional roles and boundaries and will create additional responsibilities.
- DHIs should be used to enhance care and extend access options, but should not replace other support.

- Continued development and dissemination of online libraries about evidence-based websites and apps (e.g. NHS Digital Apps).
- Technology skills training for staff and service users is required.
- Reporting of digital device return-rates required in future interventions.
- DHIs should include a mixture of mental health-related and non-mental health related content and components.

Study 4  
Chapter 6  
Twitter study exploring why people use Twitter to discuss mental health problems.

- Twitter users discuss mental health on the platform because:
  - Twitter has a sense of community, which allows people to connect and reduces isolation, send and receive messages of hope and support and share and receive information.
  - Tweeting about mental health can combat stigma, raise awareness and fight and campaign for mental health.
  - Twitter is a safe space where people can share experiences, vent and feel heard without being judged.
  - Tweeting about mental health is an empowering form of self-monitoring and management and allows people to escape.

- Social media use is not necessarily bad for mental health and can be used for good.
- Social media components could be included in DHIs to enable individuals to benefit from accessing support from peers.
- Mental health services could consider using Twitter to review current service delivery.
- Study focussed on the perceived positive impact of tweeting about mental health. Further work is needed to explore if there are any associated drawbacks.

Study 5  
Chapter 7  
ESM study exploring the relationship between social media use and mood, self-esteem and paranoia in SMI.

- Social media use predicted subsequent reductions in positive affect and increases in negative affect, but did not predict subsequent self-esteem or paranoia.
- Content posting predicted subsequent increases in negative affect, but did not predict positive affect, self-esteem or paranoia.
- Content consumption and direct communication did not predict positive or negative affect, self-esteem or paranoia.
- Emotional content posting predicted positive and negative affect, self-esteem and paranoia.
- Fact-based content posting predicted decreases in positive and increases in negative affect and self-esteem.
- Perceived social rank predicted positive and negative affect, self-esteem and paranoia.
- SMI did not moderate the relationship between social media use and mood.
- Social media use was more frequent in the non-clinical group in comparison to the clinical group.

- Whilst reductions in mood were not moderated by SMI, the impact on mood in SMI is likely to be worse due to the overall differences in baseline and ESM assessments between groups.
- Mental health care staff must ensure they are aware of the potential adverse events of social media use and explore any potential issues clients face when using social media.
- Due to the potentially negative impact, platforms should include signposting to appropriate support provisions.
- Need to ensure moderation of any social media components that are included in DHIs.
- Research is needed to uncover whether the detrimental impact of emotional content posting could be explained by others responses to those posts.

Aim 1: To investigate service user perspectives about the acceptability of digital health interventions for the self-management of severe mental health problems.
The first aim of this thesis was to investigate the views of individuals with SMI towards the acceptability of DHIs for self-management. Investigating service user views towards DHIs is important because, ultimately, if an individual does not find particular aspects of this approach acceptable, they may be less likely to embrace and engage with an intervention (Musiat, Goldstone, & Tarrier, 2014). Additionally, the exploration of service user views towards the acceptability of the development of DHIs for SMI was required to identify the potential facilitators and barriers to uptake. Up until the current PhD project commenced, there were few studies focussing on individuals' views towards DHIs for SMI; therefore, this thesis sought to remedy this gap in the literature.

Study 1 addressed the first aim by conducting a systematic review of the current literature and concluded that whilst the actual acceptability of DHIs was high, hypothetical acceptability tended to be lower. This indicates that whilst people may report finding DHIs for SMI acceptable after receiving a DHI, they may be negatively predisposed to this approach to intervention delivery, which is likely to be a barrier to future uptake. The review also highlighted that there was a paucity of studies exploring hypothetical acceptability, particularly in relation to more complex interventions such as CBT and psychoeducation. Moreover, a lack of in-depth information about the underlying reasons for the low levels of hypothetical acceptability means that current knowledge about individuals' views towards the provision of DHIs is limited. This was the first review to systematically explore the concept of the acceptability of DHIs for SMI and to highlight the discrepancy between the hypothetical and actual acceptability of these approaches. Additionally, findings from this review demonstrated the importance of examining the hypothetical and actual acceptability to inform the likelihood of uptake of DHIs for SMI if implemented within services. Therefore, the review suggested further research was warranted to qualitatively explore the reasons that underlie views towards the hypothetical acceptability of DHIs for SMI to identify potential facilitators and barriers to future uptake.

The findings from the systematic review informed the development of Study 2, which was a qualitative study that sought to examine views of individuals with SMI towards the hypothetical acceptability of DHIs. Qualitative interviews identified specific needs that participants felt DHIs could address that were neglected by current face-to-face support options. Specifically, DHIs were viewed as a potential way to overcome issues in accessing current mental health services and empower service users by extending their choices of treatment options and by placing individuals in an expert role. DHIs were considered to be an acceptable and appropriate way to increase empowerment and correct the power imbalance because they could provide individuals with the tools needed to contextualise and understand their experiences, recognise triggers and patterns of symptoms, feelings and behaviours and obtain accurate and evidence-based information. However, participants also identified numerous barriers that may underlie the low levels of acceptability that were reported in the systematic review. Specifically, participants were concerned that the digital
divide would prevent some people from being able to access and use DHIs, expressed caution about who could potentially gain access to sensitive data and how the information may be used and that DHIs would be used as a cost-saving strategy to replace and reduce face-to-face interventions and support options.

This study enhances our understanding of the hypothetical acceptability of DHIs for SMI through gaining rich insights into individuals’ thoughts, feelings, fears and beliefs about this approach to intervention delivery. Implications for strategies to improve hypothetical acceptability include a focus during dissemination on the potentially empowering nature of DHIs, the delivery of technology skills training and funding strategies to prevent a digital divide in access options, clear statements on data use and access, and a focus on what people could gain from using DHIs, rather than what they may lose.

**Aim 2: To identify what service users want from a digital health intervention for the self-management of severe mental health problems.**

The second aim of this thesis was to identify the content and components people with SMI wanted to see included in DHIs for self-management of SMI. Researchers developing DHIs have often consulted service users during the development process once a DHI has been created, rather than prior to DHI conception. Indeed, even DHIs that have been co-produced with service user input have had a specific existing intervention type in mind, which may be subject to researcher and developer biases during subsequent development. Therefore, study 2 aimed to address the second aim of this thesis by identifying what people would like to see included in DHIs to ensure the creation of future DHIs that are based on true co-production to improve the likelihood of subsequent acceptability and uptake.

A key finding from the qualitative exploration of service user views was that participants did not want DHIs to focus specifically on mental health, but also include information, tips, games and exercises to educate and motivate them to take part in other activities. To this end, participants viewed DHIs as mental health toolkits, containing both information and activities directly focusing on mental health, but also activities that would indirectly benefit their mental health. Popular suggestions included: information about physical exercise; music to improve mood or distract from thoughts; distraction games; and tips and information to help with daily living skills such as simple recipes and money management advice. Suggested mental health-related content included: monitoring thoughts, feelings and experiences with a focus on positive experiences and feelings in addition to symptoms; mindfulness and relaxation-based exercises; appointment and medication reminders; recovery stories and videos; coping strategies; information about mental health presented via interactive mediums such as videos and games; and peer support delivered via social networking components or moderated forums.
The strengths-based and recovery-oriented focus of participant suggestions indicates that people with SMI do not want to receive DHIs that solely concentrate on mental health and instead want to receive a range of tools to help them live with and self-manage their mental health. This was particularly true for some participants who commented that they had experienced SMI for years so were already able to contextualise their experiences and had developed helpful coping strategies. These participants felt recovery-focussed content on DHIs would be helpful, but that mental health content would be more relevant for individuals who were experiencing symptoms for the first time or for those who had received a more recent SMI diagnosis.

This was the first study to qualitatively identify what service users want from a DHI for SMI to inform the future development of DHIs in general, rather than with a predetermined intervention already in mind. Therefore, these findings provide specific information about the mental health and non-mental health-related content that individuals would like to see, rather than the content that researchers and clinicians feel they should receive. It is hoped that other researchers will be able to use the suggestions made by participants during this study to create DHIs that are truly informed by the views of service users. In turn, the inclusion of content and components that service users want may improve the acceptability and subsequent uptake of future DHIs for SMI.

**Aim 3: To explore mental health care staff perspectives about the acceptability of digital health interventions for the self-management of severe mental health problems.**

The third aim of this thesis was to explore the views of mental health care staff towards the development and implementation of DHIs for SMI. Staff views towards DHIs for SMI have been overlooked in the current literature, with studies administering surveys to explore staff views towards DHIs for mental health problems generally, rather than SMI specifically. A qualitative investigation of staff views towards DHIs for SMI was needed to provide rich and in-depth views regarding attitudes towards the acceptability of current technology use and implementation of DHIs specifically for SMI. It is likely to be frontline staff who will refer and recommend DHIs to service users with SMI; therefore, staff views towards facilitators and barriers to implementation were needed to pre-empt potential issues in the delivery of DHIs for SMI. Focus groups were conducted with staff working in secondary care mental health services to explore their experiences of, and views towards, current use of the Internet and mobile phones for self-management and the potential implementation of DHIs for SMI.

Staff described numerous occasions where service users had disclosed engaging with the Internet and mobile phones to self-manage their mental health. Staff experiences and views regarding the potential benefits of current Internet and smartphone use in relation to mental health included the ability to normalise and understand experiences through access to online information about SMI, receive answers to questions at any time and in any location, obtain
easily accessible support from peers and connect with others with a shared understanding. However, staff also described several perceived and experienced negative consequences of using the Internet and mobile phones for self-management such as the availability of inaccurate or misleading information on the Internet, creation of suicide and self-harm pacts via online communication, cyberbullying after mental health disclosures and the blur of service user and staff boundaries that could be created via mobile phone communication and social media use.

Staff were positive about the potential of implementing DHIs within secondary care services due to the increased privacy compared with paper-based approaches, the anonymous nature of DHIs, the potential to use symptom monitoring as a memory aid and to contextualise experiences, the possibility of increasing access to psychological interventions and the opportunity to empower service users through providing them with the choice and control over treatment directions. However, concerns associated with DHIs included: individuals misreporting feelings and experiences to elicit or reduce care; users catastrophising or ruminating through excessive symptom monitoring; breeches in data privacy and confidentiality; lower levels of Internet and smartphone access amongst people with SMI; an increase in staff work pressures if supervising service users engaging with DHIs; uncertainty about the legal, moral and ethical responsibilities of staff if risk was reported via DHIs; and that DHIs would be used as an excuse to replace face-to-face mental health services.

This was the first published paper that qualitatively examined the views of mental health care staff towards the current and potential use of the Internet and smartphones to deliver interventions for people with SMI. Although staff were cautious about the use of DHIs for SMI, they described many potential benefits and facilitators and made suggestions to overcome potential issues associated with the use of DHIs for self-management in SMI. Therefore, the facilitators, barriers and suggestions described by staff in this study must be addressed during the development and implementation of future DHIs for SMI to ensure staff find this approach to delivery acceptable and, in turn, improve the likelihood of subsequent implementation into service structures.

**Aim 4: To understand how individuals currently use the Internet and smartphones to self-manage their mental health.**

The fourth aim of this thesis was to understand how people currently use the Internet and smartphones to self-manage their mental health. It is important to understand the current ways individuals self-manage their mental health and the reasons why the Internet and smartphones are used for this purpose to identify popular strategies to inform the development of components that may be acceptable in future DHIs. Given the numerous and extensive ways that the Internet and smartphones can be used to support mental health, in this thesis the decision was taken to focus on one component. The decision to
focus on the use of social media to self-manage mental health was taken due to the burgeoning use of social media components in DHIs, but paucity of research exploring why individuals may use social media for this purpose. It was decided that the focus of the investigation of using social media to self-manage mental health would be on the website Twitter, due to the well-documented increased use of the platform to discuss mental health problems (Betton et al., 2015; Mind, 2015). To this end, the hashtag #WhyWeTweetMH was created and circulated on the Twitter platform to capture individuals’ reasons for using Twitter to discuss mental health and identify the function of using Twitter for self-management in mental health. Responses on Twitter that included #WhyWeTweetMH were collected using the Twitter Search API and Streaming API and analysed thematically.

Respondents to the #WhyWeTweetMH hashtag noted several key reasons for discussing mental health via Twitter. First, respondents described the sense of community that was evident on Twitter through the provision of an accessible avenue to connect and socialise with others, which reduced isolation. Additionally, users described the sense of community on Twitter that was fostered by the ability to share and receive messages of hope, support and helpful information with other users on the platform. Second, users frequently reported discussing mental health on Twitter as a method to combat stigma and raise awareness of mental health problems and to fight and campaign for better support and services. Respondents also viewed Twitter as a safe space for sharing honest experiences without feeling judged by others and to vent, have a voice and feel heard, which was described as being unique to Twitter in comparison to other social media websites, because people followed individuals out of interest, rather than because they were friends. Finally, users described tweeting about mental health as an empowering form of self-monitoring and management, which they used as a tool to monitor their experiences and feelings over time.

These findings demonstrate the perceived value of using social media, particularly Twitter, to facilitate important mental health discussions and suggests that social media may be a useful form of support for people with mental health problems. Crucially, these findings challenge the common preconception that social media use is entirely detrimental to mental health and indicate that the inclusion of social media components in future DHIs for mental health problems may be acceptable and helpful.

**Aim 5: To explore the impact of Internet and smartphone use symptoms associated with severe mental health problems.**

The fifth aim of this thesis was to understand the impact of current use of the Internet and smartphones on feelings and experiences associated with SMI. Study 5 addressed this aim, specifically focussing on the immediate impact of social media use. The decision to focus on social media was due to previous findings presented in this thesis that some individuals are open to, and actively participate in, receiving support via these platforms (Berry et al., 2017; submitted; Birnbaum et al., 2015; Lal et al., 2015). The inclusion of social media components
within DHIs for SMI is in its infancy; however, researchers are now beginning to develop DHIs containing social media components to facilitate peer support during engagement and to supplement group-based approaches. Recent examples include: a smartphone app for schizophrenia aiming to improve motivation and address difficulties in reward processing (PRIME; Schlosser et al., 2016); an online intervention containing interactive psychoeducation and moderated social networking (HORYZONS; Alvarez-Jimenez et al., 2014) and a community-based lifestyle intervention for SMI including an adjunctive Facebook group (Naslund, Aschbrenner, Marsch, McHugo & Bartels, 2017). Indeed, the World Psychiatric Association commission by the Lancet Psychiatry about the future of psychiatry has highlighted that clinicians must find a way to leverage social media to support service users through this medium (Bhugra et al., 2017). However, concerns have been expressed about the potential detrimental consequences of social media and its potential impact on symptoms associated with SMI (Berry et al., 2017; submitted). Therefore, exploring the potential impact of social media use for people with SMI is important to understand the safety and acceptability of including social media and forum components within DHIs for SMI.

To explore this aim, individuals with and without SMI were recruited to participate in an ESM study to identify whether any relationship existed between social media use, perceived social rank, mood, self-esteem and paranoia. Findings from this study indicated that overall social media use predicted subsequent high negative affect and low positive affect, but did not predict self-esteem or paranoia. Further analysis revealed that certain behaviours on social media predicted subsequent changes in these variables. Specifically, reductions in positive affect and increases in negative affect and paranoia were associated with posting emotional self-disclosures on social media, whereas posting factual-based information was associated with increases in positive affect. Additionally, viewing the social media profiles of individuals who were not friends on social media websites and perceptions of a low social rank in comparison to social media connections was associated with subsequent low positive affect and self-esteem and high negative affect and paranoia. Finally, the results indicated that participants with SMI used social media websites less frequently than participants without SMI; although, the impact of social media use and behaviours on mood, self-esteem and paranoia did not differ between individuals with and without SMI.

This was the first study to quantitatively explore the impact of social media use on mood, self-esteem and paranoia in people with and without SMI. The findings indicate that it may not be social use generally that can be detrimental for factors associated with SMI, but specific social behaviours that determine the impact of such use. This may go some way in explaining the mixed between-study findings with regards to the positive and negative outcomes in the current literature concerning social media use and mental health. Crucially, the findings suggest that the inclusion of social media components within DHIs needs to be carefully thought through and moderation must be implemented to ensure individuals obtain
support if making emotional self-disclosures. However, the significantly lower levels of social media use by individuals with SMI in comparison to those without SMI may prove to be a barrier in the use of these components in future interventions.

8.2. General discussion

Whilst five studies were implemented to address the five distinct aims within this thesis, the studies also sought to address the principal objective of understanding how technology can be used to deliver psychological interventions for people who experience SMI. Therefore, a set of overarching themes addressing the overall objective of the thesis were generated by considering the findings from the studies together as a body of research. These overarching themes are: 1) DHIs have the potential to empower individuals with SMI in a way that current service provisions are sometimes unable to achieve; 2) DHIs should include a variety of content and components that are strengths-based and recovery-oriented to optimise acceptability, subsequent implementation and uptake; 3) DHIs should include remote peer support options; 4) findings support using the CHIME framework to design content and design features in DHIs; 5) digital exclusion may prevent some individuals from accessing DHIs; and 6) individuals fear that DHIs will be used to replace face-to-face intervention delivery options.

_DHIs have the potential to empower individuals with severe mental health problems in a way that current service provisions are sometimes unable to achieve._

A common idea presented throughout the studies included in this body of work was that DHIs could be empowering for individuals who experience SMI. As noted throughout this thesis, access to traditional face-to-face psychological interventions for SMI in a time-sensitive manner can be limited (Ince et al., 2016). Participants in study 2 described difficulties in accessing face-to-face psychological interventions due to personal barriers such as transport issues, work and childcare commitments and fears about leaving the house to travel to service locations, in addition to service barriers including being placed on lengthy waiting lists and being deemed too stable to receive support. As highlighted in studies 2 and 3, service users and staff viewed DHIs as a method for the delivery of an intervention that could combat these access problems by being available at any time and in any location when most needed. In turn, this would allow the user to have control over the timing and duration of intervention access. This perceived ease of access to support that could be facilitated by the Internet and smartphones was also detailed by respondents to the #WhyWeTweetMH hashtag described in study 4. Specifically, individuals used Twitter as an accessible platform, which allowed them to obtain helpful support and information whenever they required. Improving access to psychological interventions is a core component of the NHS Five Year Forward View for Mental Health, which proposes continued and improved investment into DHIs to facilitate intervention access (NHS, 2016). Findings from studies 2, 3 and 4 of this thesis support previous assertions that individuals with SMI want, but are often
unable to access evidence-based psychological interventions (Gibson, Brand, Burt, Boden & Benson, 2013; Haddock et al., 2014) and illustrates the need for continued and improved development and investigation of evidence-based DHIs to empower individuals with choice over intervention access.

Studies presented in this thesis also highlighted the power imbalance that can exist between service users, family members and staff in mental health care and services. In studies 2 and 3, both service users and staff observed that DHIs could correct this imbalance by providing individuals with the tools and information they need to facilitate informed choices over treatment options and to take control of their feelings and experiences by identifying triggers and patterns through monitoring via DHIs. Additionally, participants viewed the input of data and completion of activities on DHIs as a potential method to address the current power imbalance by giving service users ownership of their data and the opportunity to use DHIs as a visual aid to assist them when explaining their feelings and therapy materials to others. Previous studies have reported that some individuals with SMI express the need for more choice, information and collaboration with staff over the treatment options they receive (Byrne & Morrison, 2014; Mattner, Ehrlich, Chester, Crompton & Kendall, 2017). Therefore, DHIs may be a popular method to address the power imbalance and lack of collaboration within service settings.

Findings regarding the perceived need for autonomy and empowerment in DHIs for SMI echo previous conclusions drawn from user-centred design workshops and interviews with individuals with lived experience of schizophrenia-spectrum disorders, family members, mental health care staff and academics (Schlosser et al., 2016). Schlosser and colleagues (2016) noted that these findings are consistent with the self-determination theory, which highlights the need for autonomy, competence and relatedness to promote intrinsic motivation and enhanced mental health (Deci & Ryan, 1985). Given that individuals sometimes lack the opportunity to be self-determined in their health care needs, the views presented in this body of work suggest that service users and staff want DHIs to empower individuals by giving them the tools needed to be autonomous and competent. Therefore, the principles of self-determination should be leveraged in the components employed in DHIs to help promote motivation and empowerment.

Whilst studies 2, 3 and 4 reported that staff and service users felt the use of the Internet and smartphones for self-management could be empowering for individuals with SMI, concerns were raised in studies 2 and 3 that what may originally be intended as empowering may become disempowering. For example, the automatic transfer of data from DHIs to care teams was queried by participants in studies 2 and 3 because it was considered as removing and restricting service users control over their own data and passing that control and ownership to staff. Current DHIs, particularly those employing symptom monitoring, often include the automatic transfer of participant data for use by care teams (e.g. ClinTouch: Palmier-Claus et al., 2012; Whelan et al., 2015; MONARCA: Faurholt-Jepsen et
al., 2015; True Colours: www.truecolours.nhs.uk/demo/info.jsp; Micklowitz et al., 2012). Participants supported the premise that staff should receive access to data inputted by service users to help individuals interpret the information, aid therapeutic discussions and identify and provide a therapeutic and clinical response to indications of early warning signs. Therefore, the transfer of clinical data between digital devices and staff requires careful consideration to ensure that service users receive appropriate support and responses from care teams when required, whilst maintaining control of their own data. Both service users and staff suggested that allowing individuals to choose the information that was transferred may be a viable solution to this debate. Additionally, some participants also suggested that service users should be given the opportunity to decide whether they would like this information sent digitally or stored in the device which is then shown to staff during appointments to give them a sense of ownership of the information they choose to share.

Providing service users with the final decision about data-sharing was viewed as empowering because it allowed them to take responsibility over their data and access.

It has been suggested that social media websites may contain a significant amount of personal and clinical data that could be used in mental health treatment and care (DeChoudhury, 2013). Therefore, researchers and clinicians have highlighted the need to leverage social media to deliver support to individuals who experience mental health problems and to collect information that may be of clinical relevance with regards to the identification, treatment and management of mental health problems (Bhugra et al., 2017). The use of social media data for this purpose may revolutionise mental health care by identifying people at high risk to improve the likelihood of early intervention and to detect the ebb and flow of symptoms and feelings. For example, Birnbaum and colleagues (2017) were able to distinguish Twitter users with and without self-reported diagnosis of schizophrenia through linguistic differences in tweets posted. This led to the authors concluding that social media may be used to identify the emergence and changes of symptoms associated with SMI. Indeed, a respondent to the #WhyWeTweetMH hashtag in study 4 also described using their Twitter timeline to monitor their mood and record how they were feeling over time and noted that their friends and family were also able to monitor this. Additionally, given the potentially negative impact of particular social media behaviours on mood, self-esteem and paranoia as evidenced in study 5, examining individuals’ behaviours on such platforms in clinical practice may be warranted. Both staff and service users in studies 2 and 3 were asked about the acceptability of individuals’ social media data being used for this purpose. Participants were almost unanimously against the idea of this approach and believed that it would blur the boundaries between service users and staff, becoming disempowering and damaging the therapeutic relationship. Whilst these findings are brief and focus on the idea of staff viewing individuals’ social media profiles, rather than the more advanced and potentially less intrusive method of automatic identification via computer algorithms, the early indications are that service users and staff do not want social media data to be harnessed for the clinical care of individuals with SMI. Further research is warranted to
explore whether these viewpoints are generalizable to automatic collection across a larger sample.

*DHIs should include a variety of content and components that are strengths-based and recovery oriented.*

The body of work presented in this thesis also highlighted the need to include content and components that were focussed on individual strengths and recovery, rather than concentrating exclusively on specific mental health-related content. However, many DHIs developed for SMI purely focus on mental health and symptoms, rather than presenting recovery-oriented and strengths-based content. This misguided focus may be due to a trend in the field to consult, rather than collaborate with, service users and staff during the development phases of DHIs (Killykelly et al., 2017). This lack of collaboration has the potential to lead to the development of DHIs informed by what researchers feel service users should receive, rather than based on what service users want and need. Collaboration and co-production are likely to optimise acceptability and subsequent implementation and uptake of DHIs. Indeed, a recent review of DHIs for psychosis highlighted higher rates of adherence to those that had involved service users in the design (Killykelly et al., 2017). Therefore, it is crucial to present the key themes from the studies in this thesis regarding the suggestions and considerations made by the relevant stakeholders who will be involved in the use and recommendation of such approaches.

Participants in studies 2 and 3 expressed concerns that DHIs may inadvertently lead to individuals’ catastrophising and ruminating over negative feelings due to over-exposure to mental health-related content. Service users in study 2 also noted that there was often a focus in mental health on what people are not able to do, rather than their capabilities and that DHIs should challenge this negative assumption. The belief that DHIs should contain strengths-based information was particularly true for the inclusion of monitoring, which staff and service users felt could lead to individuals becoming self-limiting through focussing on symptoms, rather than capabilities. For this reason, participants requested that monitoring components should also prompt individuals to detail the positive aspects of their days and use imagery, rather than words with negative connotations, to describe their feelings and experiences. Currently, DHIs involving symptom monitoring components are often not consistent with this approach and tend to focus on monitoring symptoms associated with SMI, rather than experiences and successes (e.g. MONARCA: Faurholt-Jepsen et al., 2015; SIMPLE: Hidalgo-Mazzei et al., 2015); although, some have included diary components (e.g. ClinTouch www.afillo.io: Palmier-Claus et al., 2012; Whelan et al., 2015) or allow individuals to personalise questions or make notes (e.g. True Colours: www.truecolours.nhs.uk/demo/info.jsp; Micklowitz et al., 2012). Therefore, participant views suggest that future DHIs should include positive phrasing of monitoring questions, options to add additional experiences and successes and the use of interactive and visual images or colours to improve acceptability and provide more meaning to symptom monitoring.
The preference for a strengths- and recovery-focussed approach was also highlighted in study 2 through the suggestion that goal-setting should be included within DHIs. Goal setting is a tool often used in psychological interventions and has been argued to be central to the efficacy of CBT (Morrison & Barratt, 2009). Researchers are beginning to develop DHIs with goal-setting features (e.g. MoodSwings-Plus: Lauder et al., 2015; MyRecoveryPlan: Simon et al., 2014; PRIME: Schlosser et al., 2016; PRISM: Depp et al., 2015; SMART: Thomas et al., 2016). The findings from study 2 suggest that individuals with SMI want to use DHIs to identify and achieve goals and highlights that the movement towards incorporating recovery-focussed goals within DHIs would be acceptable for individuals with SMI.

Recovery- and strengths-based suggestions raised by service users in study 2 also included the provision of recovery stories presented by individuals who had experienced SMI and information about individuals who had been successful whilst living with mental health problems. Additionally, staff involved in the focus groups presented in study 3 detailed experiences of service users finding comfort and hope through reading recovery stories that had been posted online. Finally, hope and recovery was a subtheme identified in tweets that responded to the #WhyWeTweetMH hashtag described in study 4. Specifically, respondents explained that viewing users’ tweets about mental health and communicating with others on Twitter made them feel hopeful and inspired for their own recovery and futures. In addition to inspiring hope and recovery, stories from individuals with lived experience were also viewed as a method to combat self-stigma through the facilitation of normalising messages and shared understanding. Respondents to the #WhyWeTweetMH hashtag felt discussing and viewing experiences of mental health problems on the platform helped to combat the personal and public stigma of mental health problems. Perceived stigma has been shown to be a barrier to recovery (Landeen, Seeman, Goering & Streiner, 2007; Law & Morrison, 2014; Vass et al., 2015; Vass, Sitko, West & Bentall, 2017) and there is a growing evidence-base suggesting that self-stigma can be targeted in psychological interventions for SMI (Wood, Byrne, Varese & Morrison, 2016). Therefore, researchers should consider the inclusion of recovery and success stories as a central component in future DHIs in order to facilitate and promote recovery and shared-understanding and reduce self-stigma.

*Individuals should be provided with remote support options during engagement with DHIs.*

Findings from the systematic review presented in study 1 highlighted that individuals commonly requested remote peer support options, but that actual use of these components were sometimes low. Peer support options delivered via DHIs were also viewed favourably by service users in study 2, with some proposing components such as Facebook groups and forums that would allow users to connect, communicate and support one another when using DHIs. Staff in study 3 also described experiences of service users engaging with online forums and had found this activity a helpful way in which to receive meaningful support from others with a shared understanding. Similarly, respondents to the #WhyWeTweetMH hashtag in study 4 described discussing mental health problems on the
social media platform Twitter to connect with others and reduce isolation, send and receive messages of hope and support, connect with others with similar experiences and exchange helpful resources and information.

Despite the positive viewpoints towards the inclusion of remote peer support options, concerns were raised by both service users and staff that the use of social media and forums could lead to potential over-disclosures, trolling, cyberbullying and unhelpful responses from others. Therefore, both staff and service users wanted to see any social media or forum components moderated, with service users explicitly requesting the involvement of trained peer supporters, rather than clinicians or researchers. Moreover, study 5 found that emotional disclosures on social media were associated with subsequent reductions in positive affect and increases in negative affect and paranoia, thus indicating potentially negative psychological consequences of discussing feelings on social media. It was speculated that this affect may have resulted from individuals not receiving the desired social responses to such disclosures, which highlights the need for trained peer supporters to moderate discussions with the aim of promoting and facilitating appropriate and helpful conversations surrounding topics and self-disclosures. The systematic review highlighted that some participants in the Beating Bipolar study expressed disappointment with the poor engagement by people using the included forum (Poole et al., 2012). The inclusion of trained peer supporters may help to facilitate such discussions and ensure that forums and social media components remain active and may enhance the acceptability of DHIs for SMI.

Although there are potential issues with regards to the provision of remote peer support options within DHIs, researchers are beginning to successfully implement these approaches. For example, Naslund and colleagues (2016b) have reported high acceptability amongst participants across multiple studies which have aimed to improve healthy behaviours in people with SMI by the utilisation of Facebook groups. Additionally, early findings suggest that the provision of remote support from both staff and peers improve users’ engagement with DHIs (Killikelly et al., 2017). The overall body of work demonstrates the need for continued and improved incorporation of remote peer support options to improve acceptability, uptake and engagement. However, considerations must be made to ensure that moderation does not become restrictive and prevent users from feeling empowered to be open and honest in their disclosures and responses.

**CHIME framework of recovery.**

As an overall body of work, the findings from studies 1, 2, 3 and 4 highlight what people may want and need from DHIs for SMI. Participants wanted to receive content that was empowering, recovery-focussed, strengths-based and that allowed them to connect with others with a shared understanding. These findings are in line with the CHIME framework of recovery, which highlights the recovery processes: connectedness, hope, identity, meaning and empowerment (Leamy, Bird, Le Boutillier, Williams, & Slade, 2011). First, the desire to
connect with others via DHIs was identified as a key theme that was generated in the studies described in this thesis. For example, service users in study 2 wanted to see peer support options included within DHIs to allow them to connect with other users for support and encouragement, whilst staff in study 3 detailed experiences of service users obtaining helpful support via forums and social media and were positive about the inclusion of these components within future DHIS. Moreover, the systematic review presented in study 1 indicated that DHIs involving remote support were more acceptable than DHIs including no remote support options and Twitter users in study 4 reported discussing mental health problems on the platform to exchange messages of support and information by connecting with others. Second, the recovery processes of hope and optimism were also described as something DHIs should deliver through the incorporation of recovery and success stories by participants in studies 2 and 3. Additionally, Twitter users responding to the #WhyWeTweetMH hashtag in study 4 often expressed feeling hopeful and optimistic about the future as a consequence of viewing inspirational tweets posted by others with mental health problems. The identity process in the CHIME framework could be linked to being accepting of experiences, without being defined by a mental health-related label. Throughout studies 2 and 3, both service users and staff described how DHIs could normalise experiences associated with SMI through their availability and opportunity to connect with, and view the stories of, others to allow the recognition of not being alone in their experiences. Twitter users in study 4 also described using the platform to show themselves and others that they were not alone in their experiences, which also links to the identity process in the CHIME framework. Developing meaning and goals was viewed by service users in study 2 as an important aim for DHIs. Specifically, they wanted goal-directed content to motivate them towards recovery. Finally, empowerment was a principal theme generated in many of the included studies. Participants in studies 2 and 3 described how DHIs could be empowering by giving individuals the opportunity to take control of their mental health care needs, providing them with choice regarding when and where an intervention is used, the type and duration of intervention and correcting the power imbalance between service users, staff and family members.

These findings map onto the CHIME framework and suggest the need for researchers to consult the framework when developing DHIs for SMI to ensure they are recovery-focussed and acceptable to end users. Indeed, a recent project has used the CHIME framework to inform the content of sessions delivered using the SMART website (Thomas et al., 2016).

*Digital exclusion may prevent some individuals from accessing DHIs.*

A key concern expressed by participants throughout the studies was that digital exclusion might prevent some individuals from being able to access DHIs. For example, service users and staff in studies 2 and 3 were concerned that people with SMI may be unable to afford digital devices due to cuts and restrictions to disability living allowance (DLA); therefore, leaving these individuals further excluded from opportunities to access evidence-based
psychological interventions. Additionally, participants with SMI reported significantly less frequent social media use in study 5 in comparison to participants without SMI. Anecdotally, recruitment for studies 2 and 5, which required individuals to have Internet and mobile phone access (study 2) or use social media (study 5), was challenging due to the insistence of many staff that service users did not access the Internet or social media websites or use mobile phones. However, these assumptions may not be accurate as growing evidence suggests a narrowing gap in smartphone ownership rates between individuals with SMI and the general population (Firth et al., 2016). Nonetheless, there are still some people who would not be able to access DHIs and it remains important to consider how to develop and deliver these approaches to ensure any person who wants to receive a DHI has the opportunity to do so (Robotham et al., 2016).

Participants in studies 2 and 3 proposed several solutions to reduce the likelihood of digital exclusion, including: 1) providing access to DHIs on computers or tablets in community settings such as libraries or mental health service premises; 2) offering devices at a discounted rate or for free via the NHS; and 3) delivering technology skills training for service users and staff. However, staff were concerned that the NHS would not have the resources required to fund the devices needed for access and feared service users may lose, damage or sell handsets. Whilst further evidence is needed to establish the cost-effectiveness of DHIs (Donker et al., 2015), the implementation of DHIs in mental health services are frequently presented as a cost-effective method to increase access to care (Mohr, Burns, Schueller, Clarke, & Klinkman, 2013). Indeed, some service users and staff also noted the need for the NHS to be more cost-efficient and the potential value of DHIs to facilitate this requirement. Moreover, several studies have reported high return rates of DHIs at the end of trials (e.g. Biagianti et al., 2016; Granholm et al., 2012).

Current evidence suggests that rates of technology use by people with SMI are expanding. However, larger scale research is needed to determine ownership and access rates and to identify potential demographic, socioeconomic and clinical barriers to digital device ownership and technological literacy. Additionally, further exploration of cost-effectiveness is needed to examine the feasibility of the NHS providing digital devices for intervention delivery and strategies must be developed to improve digital inclusion for intervention delivery.

*Individuals fear that DHIs will be used to replace face-to-face intervention delivery options.*

The use of DHIs as a replacement for face-to-face service provision was a common fear raised by participants in studies 2 and 3. The author noted in the reflective journals completed after the interviews (study 2) and focus groups (study 3) that this concern appeared to be both the most prevalent and emotive viewpoint that participants raised. These views seemed to result from participants’ current experiences of mental health services and the political climate at the time of the studies. Specifically, participants
described experiencing negative consequences from cost-saving strategies within the NHS and were worried that DHIs would be used as a method to reduce face-to-face care, which was perceived as being superior. Although fears regarding the use of DHIs as a cost-saving strategy were almost unanimous, some participants noted that the NHS must be more cost-efficient in order to survive and DHIs could be one way of driving cost-efficiencies within the NHS. Nevertheless, the concerns expressed by staff and service users are warranted and require attention throughout the development, delivery and implementation of DHIs. These findings also demonstrate the need for further trials to establish whether DHIs are acceptable and effective for individuals with SMI and eventual comparisons with face-to-face delivery methods should be explored.

Concerns regarding the replacement of staff through the provision of DHIs were also due to the belief that face-to-face interventions would be superior to DHIs. Participants in studies 2 and 3 described the practical challenges of developing a meaningful connection with DHIs due to the lack of warmth and understanding that another person can provide. Additionally, staff in study 3 stressed the importance of forming a therapeutic relationship to improve therapeutic outcomes. Indeed, a recent review reported that symptomatic outcomes, rehospitalisation and self-esteem in individuals with psychosis are related to the quality of the therapeutic relationship (Shattock, Berry, Degnan & Edge, 2017). However, individuals have been shown to develop strong connections with smartphones and sometimes use both materialistic and anthropomorphic terms to describe them (Fullwood, Quinn, Kaye & Redding, 2017). The tendency to anthropomorphise digital devices was also evident in some interviews with service users in study 2, who described a DHI as being like a “little friend in your pocket”. Moreover, a growing number of DHIs include remote peer support options via forums and social media components and this potential addition to DHIs was viewed positively by staff and service users alike. Twitter users who responded to the #WhyWeTweetMH hashtag described in study 4 also revealed that they were able to form positive and supportive connections with others via Twitter, which suggests that the incorporation of remote peer support in DHIs may help to reduce the perceived disadvantages of reduced face-to-face contact. Although there is some evidence to suggest that individuals can form a positive therapeutic relationship with a DHI (Barazzone et al., 2012; Clarke et al., 2016), further research is needed to explore the similarities and differences in this relationship between face-to-face and digitally-delivered interventions.

It has also been suggested that the potential power of DHIs is their use in conjunction with other more traditional forms of support such as appointments with members of their care team or sessions of face-to-face psychological therapy. Indeed, staff and service users in studies 2 and 3 were enthusiastic about the provision of DHIs to enhance traditional support options. For example, suggestions were made that DHIs could be used in between appointments or sessions to reduce the number required, which would allow staff to see more individuals on a less frequent basis. Furthermore, some participants also spoke about
the potential to use digital devices within therapy sessions to help facilitate discussions and review experiences throughout the week. A recent example of the implementation of DHIs blended with face-to-face support is the Self-Management and Recovery Technology (SMART) project, which involved website content that a mental health support worker and service user viewed and discussed together within sessions (Thomas et al., 2016). SMART was found to be acceptable and feasible for individuals with psychosis who reported improvements in their mental health and recovery after participation. These findings highlight the potential leverage of DHIs directly in clinical practice and suggest that service users and staff find this approach acceptable. Further larger-scale research is needed to examine whether the wider population shares these views.

8.3. Critical evaluation of the methodology

The strengths and limitations of the specific methods employed in the separate studies in this thesis are presented in each of the respective chapters. However, a critical evaluation of the methodology employed throughout the thesis as a body of work is warranted to highlight the methodological strengths and weaknesses that are most likely to effect the strength of the overall conclusions drawn from this thesis.

*Multi-method approach.*

A key strength of this thesis was the implementation of a multi-method approach through the implementation of a systematic review of the current literature, focus groups, interviews, a Twitter hashtag and experience sampling methods. The combination of these methods provides a robust, holistic and thorough approach to addressing the overall thesis objective, taking advantage of in-depth and rich data that can be gathered qualitatively and the exploration of the relationships between variables and extensive data that can be obtained quantitatively, particularly via ESM. The integration of these methods within a single thesis also allowed for the advantages for each particular method to contribute towards strengths of the overall thesis.

*Inductive approach.*

This overall thesis was based on the observation that whilst many researchers were developing and delivering DHIs for SMI, there were few who were asking individuals with SMI how they felt about these novel delivery methods and what they would like to see in them. Therefore, there were no pre-existing theories or research findings behind the development of this thesis, meaning a mainly inductive approach was taken through being reactive to the limited background literature. Congruent with an inductive approach, studies 2, 3 and 4 employed qualitative methodology without any specific a priori hypotheses in mind, but the findings were then used deductively to inform study 5, which employed a quantitative approach to data collection and analysis. The combination of an inductive and deductive approach allowed the investigation of the acceptability of DHIs more generally and
then the pinpointing of a specific element of DHIs that warranted further detailed investigation. Additionally, this thesis overall took a social constructivist epistemological stance through seeking to understand the world from the sense individuals are making of it, but also acknowledging the usefulness of direct relationships between behaviour and outcome (Creswell, 1998). This positioning was advantageous because it allowed the qualitative identification of a potentially measurable relationship, which led to the direct testing quantitatively.

**Sampling and recruitment.**

The studies presented in this thesis benefitted from including participants with a broad range of experiences and diagnoses including: FEP, schizophrenia-spectrum disorders and bipolar disorders. Therefore, the onset, duration and severity of experiences between participants are likely to have been diverse, which may increase the generalisability of the findings to the wider population. Additionally, the views of mental health care staff were also obtained in study 3 of this thesis. Until now, staff views have generally been neglected in research investigating the acceptability of DHIs for SMI. The inclusion of both service user and staff views ensured that the perspectives of those who have the potential to influence the implementation and uptake of DHIs were gathered.

One limitation of the studies within this thesis is that participants were all self-selecting. Consequently, there may have been a sampling bias towards individuals who were interested in and capable of using technology. Indeed, this was evident in the high levels of comfort with technology described by service users in study 2 and mental health care staff in study 3. Similarly, most of the participants in studies 2 and 5 were recruited via staff working in secondary care services. Qualitative interviews with care coordinators who had referred service users for a trial revealed that they would be less likely to refer individuals with previous negative experiences of taking part in research or people who were deemed to be too unpredictable, unwell or lacking the capacity to participate (Bucci et al., 2015). However, care coordinators were more likely to refer individuals who were likely to benefit from participating in a particular research topic. Therefore, it is likely that individuals referred may have been identified by staff as having a particular interest in technology and were deemed “well enough” to participate. Moreover, Twitter users in study 4 were asked to respond to the study hashtag #WhyWeTweetMH to provide their reasons for discussing mental health on the platform. The self-selecting and public nature of responses mean that a full range of viewpoints are unlikely to have been gathered, particularly from individuals who may have had negative experiences after discussing mental health problems on social media websites. A more diverse range of mental health care staff could have also been selected to explore whether job roles led to any differences in views towards the hypothetical acceptability of DHIs for SMI. For example, views were predominantly gathered from individuals working in psychological services, rather than psychiatry.
The majority of participants in studies 2, 3 and 5 were recruited from mental health Trusts in the North West of England, but were mainly limited to White British participants. Therefore, this sample is not reflective of the current population and will lack generalisability both within the context of the North West of England and the UK as a whole. Individuals from black and minority ethnic backgrounds are typically under-represented within services (Bhui et al., 2003), but are more likely to receive a SMI-related diagnosis (Fearon et al., 2006). Additionally, nearly all participants recruited had current access to mental health services and many had either current or previous experiences of psychological interventions. As such, the views of individuals not currently accessing services were not gathered. Therefore, DHIs may be particularly helpful to increase access to psychological interventions for these individuals, but the lack of diversity regarding demographic and clinical characteristics within the sample meant differences in views towards DHIs for SMI based on demographic and clinical characteristics could not be examined.

Reliance on self-report.

The studies in this thesis all relied on participants’ self-reports to qualitatively identify hypothetical acceptability (studies 2, 3 and 4) or quantitatively examine the impact of social media use (study 5). Utilising self-report methods, particularly questionnaire-based designs, are advantageous due to the relatively quick collection of data and availability of rich information about specific topics and greater validity (Paulhus & Vazire, 2007). However, self-report can be influenced by social desirability, where a participant may provide answers that they perceive to be more socially acceptable than their actual views or experiences (Holtgraves, 2004). This issue may be particularly pervasive in the qualitative studies, because participants may have felt that they should be enthusiastic about the provision of DHIs for SMI due to the presence of the author. Efforts were made to reduce the likelihood of this occurring by, for example, informing participants at the beginning of focus groups and interviews that any answer they provided would be important and valid and by avoiding telling them the overall aim of the PhD until the end of study. However, in any research study, participants will still present a version of the reality that they wish to share at that moment in time.

Self-report methods are also subject to inaccurate recall due to the retrospective nature, difficulties in identifying self-descriptions about oneself and the reduced ability to capture the changeable views and feelings if questioned at one specific time point (Paulhus & Vazire, 2007). In an attempt to reduce the likelihood of inaccurate self-report, study 5 used ESM to capture participants’ social media use, mood, self-esteem and paranoia in a time-sensitive manner. Although ESM is still likely to be influenced by difficulties in self-identification and social desirability, the momentary element is likely to reduce the possibility of inaccurate retrospective recall. A further limitation of ESM is that there is the assumption that missing data will happen at random; however, in reality it may be closely linked to the hypotheses being tested. For example, participants feeling particularly paranoid at a specific time-point
may have not answered due to this paranoia. It is likely that other factors may have also contributed towards the relationship between social media use and behaviours and the independent variables. Therefore, future studies exploring the relationship between social media use and psychological constructs should contain an element of experimental manipulation to improve the likelihood of establishing causality.

*Lack of assessment of symptoms.*

Service users who participated in studies 2 and 5 had received a clinician-confirmed diagnosis of psychosis or bipolar disorder. However, specific symptom assessments were not conducted for these studies due to the potential burden and disruption this could cause to participants. Both service users in study 2 and staff in study 3 suggested that DHIs might be more acceptable for individuals with mild to moderate symptoms than for individuals experiencing severe symptoms. However, it was not possible to examine whether views towards the hypothetical acceptability of DHIs for SMI were related to the severity of symptoms experienced by individuals with SMI.

*Fast-paced development of DHIs.*

An updated database search of the terms used to identify potentially eligible studies for inclusion in study 1 yielded a total of 40 additional studies that had been published since the completion of the systematic review. The volume of recently published work highlights that the development and delivery of DHIs for SMI is a burgeoning area of research. This means that results presented in the systematic review (study 1) will need to be updated to account for the fast-paced rate of publications in the field. However, whilst the publication rate is high, the advancement of digital capabilities is outpacing the rate of research (Nilsen et al., 2012). Therefore, the potential use and functions of digital technologies expanded throughout the duration of this 3-year PhD project. Whilst findings remain current and informative, it was not possible to capture participant views towards the hypothetical acceptability of some recently suggested components of future DHIs. For example, wearable and smartphone sensors are increasingly being used by researchers with individuals with SMI to collect data such as heart-rate, movement, location, proximity to others and lighting to identify symptom severity (Cella et al., 2017), early indicators of relapse (Kerz et al., 2016) and aid clinical decision making (Lanata et al., 2015).

The use of artificial intelligence (AI) in mental health treatment is also a growing area of interest for researchers and companies, who are trying to capitalise on the growing tendency for individuals to seek mental health support online or via their smartphones. For example, researchers have previously explored the responses from four conversational agents Siri (Apple), Google Now, S Voice (Samsung) and Cortana (Microsoft) to mental health-related questions, finding inconsistent and incomplete responses to mental health disclosures (Miner et al., 2016). Due to these inconsistencies, technology companies are investing in
further staff and resources to improve the appropriateness and helpfulness of conversational agent responses to such disclosures. For example, Apple recently advertised the position of “Siri Software Engineer, Health and Wellness” for an individual with a background in counselling or psychology, with the aim of improving Siri’s responses to wellbeing questions and disclosures (Apple, 2017). Another example is the chatbot Woebot (www.woebot.io), which was developed by a team of researchers at Stanford School of Medicine (Fitzpatrick, Darcy, & Vierhile. 2017). Woebot is a conversational agent that aims to deliver CBT via the Facebook Messenger service and a recent trial has indicated that Woebot was feasible and effective for reducing depressive symptoms in students (Fitzpatrick et al., 2017).

**Conceptual issues with examining hypothetical acceptability.**

A limitation that was specific to studies 2 and 3 was that some participants found it difficult to conceptualise the idea of receiving a psychological intervention via a website or smartphone app. Therefore, the author was concerned that during interviews and focus groups, some participants did not fully understand the idea of DHIs and found it challenging to answer questions relating to hypothetical acceptability. Difficulties in the conceptual understanding of DHIs were only present in staff and service users in supported accommodation, which may be indicative of a lack of conceptual understanding among that client group and a lack of knowledge about DHIs amongst staff members. An excerpt taken from the author’s reflective journal after participant 3 illustrates concerns about conceptual understanding:

“Some people are not quite grasping the nature of DHIs and would instead refer to Skype and telephone counselling. This has been challenging because I would then need to explain some examples, but some participants still seemed to focus on the idea of receiving support from another person, rather than self-management via a digital device. This may relate to the idea that people can easily imagine traditional therapy face-to-face, which seems to be why they perhaps automatically go to this idea of tele-counselling, but the concept of receiving a psychological intervention on an app or website is very alien and therefore cannot be conceptualised”

(Interviewer, reflective journal).

To address the issue of conceptualisation, the topic guides were amended to include examples to help participants imagine what a DHI may look like. However, the inclusion of these examples might have biased participants’ views towards specific types of DHIs.

**8.4. Implications for clinical practice and implementation**

Practical implications relating to clinical practice and the implementation of DHIs have been presented within the respective chapter for each study. An overview of the implications of the thesis as a whole will now be discussed.

*Planning and commissioning DHIs for SMI.*
Although clear barriers to the implementation of DHIs are highlighted throughout the thesis, the findings from the studies suggest that DHIs have the potential to be well received by both service users and staff alike, provided that some key considerations are made. One of the main implications from the findings throughout the thesis was the need for clearer guidance and policies with regards to the use of technology within secondary care mental health services. Specifically, staff in study 3 raised mixed views and understandings about a range of NHS and trust policies and national guidelines relating to technology. Staff had conflicting knowledge with regards to communicating with service users via mobile phones and viewing the social media profiles of service users. Staff also raised additional fears with regards to their responsibility if they recommended a potentially unhelpful website or app to service users, and possible professional liability for staff if risk information inputted into DHIs was missed. In order to improve staff comfort with DHIs, clear and accessible policies and guidelines relating to technology use and the provision of DHIs must be created and disseminated. A recent example is the publication of social media guidelines by the Health and Care Professionals Council (HCPC), which outlines the considerations health care professionals must make when using social media in both a personal and professional capacity (HCPC, 2017).

**Technology skills training for staff and service users.**

Staff and service users in studies 2 and 3 highlighted concerns about the capabilities of individuals with SMI to engage with DHIs due to poor technology skills and suggested that some service users would need to receive technology skills training to ensure digital inclusion. Additionally, staff noted the need for the training of staff to enable them to feel confident in using and speaking about DHIs with service users. The findings from study 5 indicate that particular social media behaviours, namely emotional disclosures and viewing the social media profiles of others, may lead to low mood and increases in paranoia. Therefore, if social media components are to be included in future DHIs, staff and service user training and guidance on social media behaviours may be warranted. Additionally, the lack of confidence in recommending websites and apps to service users due to concerns over responsibility and effectiveness need addressing. Specifically, staff need to be kept informed about the emerging evidence-base of DHIs for SMI through dissemination of research findings. Moreover, the NHS digital apps library (NHS, 2017) lists current apps that are being tested in the NHS or NHS-approved. Whilst the website content is still growing, it may be a particularly helpful resource to ensure that mental health care staff have the knowledge and tools needed to make recommendations to service users. It is, therefore, vital that resources such as this are publicised to mental health care staff to help improve their comfort and confidence in the potential utilisation of DHIs.

*The use of technology and digital health interventions should be empowering; not disempowering.*
One of the central themes of the overall thesis was that the implementation of technology and DHIs for SMI could be empowering because it gives individuals the opportunity to take control over their own health care needs through extending intervention choice and access. However, the potential for DHIs to become disempowering are concerning. Participants noted that without mental health care staff input in interpreting outputs from symptom monitoring, clinical utility is limited. However, as noted in section 8.2.1, concerns were raised that the automatic transfer of symptom monitoring data may take ownership away from the service user and into the hands of staff; placing staff in an expert role and creating a power imbalance. These findings have significant implications for the implementation and uptake of DHIs that involve the use of symptom monitoring. Specifically, it needs to be considered whether the potential benefits of the ability for mental health care professionals to examine the ebb and flow of individual experiences and provide an early response through automatic data transfer outweighs the potential costs of individuals feeling disempowered. Personal preference is likely to play a role and researchers and clinicians alike must remain mindful of service user preferences and be prepared to create and deliver systems that offer service users’ greater choice over what information is shared and how the information is transferred.

The role of social media in clinical practice and in digital health interventions.

The acquisition and review of service user social media data by mental health care staff was criticised by participants as misuse of power and could lead to disempowerment. Mental health care staff should remain mindful that while there are no specific rules behind viewing service users’ social media profiles, this behaviour has the potential to undermine the therapeutic relationship. Additionally, researchers have been actively suggesting the use of social media in mental health care services (Bhugra et al., 2017); however, further consideration of the ethical and moral implications of this approach are warranted given the strong disapproval that was evident during service user interviews and staff focus groups.

Findings throughout the thesis also reflect the potential positive and negative consequences of social media use for individuals with SMI and the need for continued consideration regarding the responsibilities of all relevant stakeholders. The views of staff and service users presented in studies 2, 3 and 4 highlight the benefits of social media for the facilitation of peer support and positing factual-based information led to improvements in mood in study 5. Moreover, the inclusion of social media components and peer support forums were suggested by participants in studies 2 and 3, as well as some of the included studies presented in the systematic review (study 1). However, fears of cyberbullying, over-disclosure and the formation of potentially destructive relationships noted by participants (studies 2 and 3) and the observed relationship between emotional self-disclosures and mood and paranoia reported in study 5 highlight the need for caution. Therefore, social media and peer support components should be monitored by trained peer supporters to try to prevent issues such as cyberbullying and to promote supportive responses to emotional self-disclosures. Given the potential negative impact of social media websites, companies
who run such websites also have the responsibility to address any issues that may occur as a direct result of social media engagement. For example, the RSPH #StatusofMind report recommends that social media companies: 1) introduce automatic pop-up warnings indicating heavy usage and suggesting a break; 2) identify individuals who may be experiencing mental health problems through the content of posts and signpost to appropriate support options discretely; and 3) indicate when photographs on social media have been digitally altered (RSP, 2017). Finally, staff in study 3 described experiences of service users discussing situations that had occurred on social media within therapy sessions. Although some staff demonstrate a reluctance to use social media websites themselves, social media plays a significant role in today’s society and social relationships. As such, it is vital for staff to remain informed about the different types of social media websites and both the potential benefits and drawbacks of such use to be able to respond to social media-related discussions within therapy.

Assumptions regarding the potential for digital health interventions to replace face-to-face support options.

Both service users and staff were wary about the potential for DHIs to replace traditional face-to-face support options, despite never being directly asked what their thoughts were about this issue. The establishment of an evidence-base for DHIs for SMI is still in its infancy and, therefore, it remains unknown as to whether DHIs do have the potential to act as a replacement for interventions traditionally delivered via face-to-face means. However, the majority of concerns expressed by participants towards DHI implementation were directly attributable to fears regarding replacement. These findings have significant implications with regards to implementation because if staff fear that they are being replaced by a digital device, they are unlikely to want to refer service users to receive DHIs. Reluctance to recommend DHIs would have a direct impact on the ability to provide an evidence-base during the development stages of DHIs for SMI because researchers rely on staff to refer service users to participate in clinical trials (Bucci et al., 2015). Continued communication and input with mental health care staff throughout the development and delivery process is needed to identify strategies to address staff concerns.

Collaboration with service users and staff; not consultation.

A key finding in this thesis was the interesting, creative and unique ways staff and service users were already embracing technology for the self-management of SMI. Strategies included using: music and games for distraction; pictures of formulations via smartphones as memory aids; Twitter as a mood monitor and as an avenue for information-sharing and peer support; YouTube videos to learn new skills and enhance creativity; and reading peer support information on the Internet. Additionally, service users identified a range of ideas that they felt should be included within future DHIs for SMI that were recovery-focussed, empowering and strengths-based. These findings highlight the continued need for the
involvement of service users and staff throughout the process of DHI conception, development and implementation. Rather than exploring what service users want and need from a DHI, many researchers have sought views once development has finished. Collaboration, rather than consultation, is required to identify design features and content that should be included in order to improve the acceptability of DHIs for SMI.

8.5. Future research

Implications for future research have been discussed throughout the previous chapters. However, there are also several overarching directions for future research derived from the thesis as an overall body of work. Generally, the importance of service user and staff involvement in DHI development has been discussed throughout the thesis and support the assertion made by the BPS that service users should be treated as experts on their own experience (BPS, 2010). As such, service user and staff involvement in DHI development needs to continue and improve in order to ensure that: 1) DHIs are informed by what service users want and need, rather than based on what researchers feel service users should be receiving; and 2) practical barriers to implementation are identified and addressed to improve the likelihood of subsequent uptake and adoption.

**Understanding the role of social media websites for people who experience severe mental health problems.**

The qualitative and quantitative findings from this thesis highlight both the potential benefits and drawbacks of social media use for individuals with SMI. However, the findings also led to the recognition of further research questions that should be explored. Future research recommendations for understanding the role of social media in SMI are outlined below.

Responses to the #WhyWeTweetMH hashtag described in study 4 suggested that individuals disclosed information about their mental health on the platform because it allowed them to receive welcome peer support and connect with others with a shared understanding of mental health problems. However, study 5 found that emotional self-disclosures via social media were associated with significant reductions in mood and increases in paranoia. These contradictory findings may be because the majority of participants in study 5 used the social media website Facebook, rather than Twitter, whereas all the participants in study 4 were Twitter users. Therefore, people who post emotional self-disclosures on Twitter may receive more supportive comments than those on Facebook. However, it was not possible to explore differences in the impact of emotional self-disclosures between social media websites in study 5 due to the relatively small number of participants who used Twitter and the tendency for participants to use Twitter at the same time as other social media websites. Therefore, further research should explore whether differences in the chosen platform for self-disclosure may be the reason for differences in the impact of self-disclosures. Additionally, participants in study 5 were not asked to detail
the responses that they received after posting on social media, which means that the suggestion that reductions in mood and increases in paranoia were due to a lack of supportive responses are speculative. Future research should include the identification of responses to social media posts to determine whether the number and content of the responses explain the relationship between social media use and mood and paranoia.

Studies 4 and 5 were also limited to individuals participating who were active social media users at the time of the study. Although service users in study 2 were asked about social media use, identifying their experiences of social media use was not a direct aim of the study. Therefore, findings may be biased towards individuals who have had positive experiences with using social media, rather than people who have stopped engaging with social media websites after negative consequences. Indeed, it is notable that during the recruitment process for study 5, many people contacted the author to share their experiences of withdrawing from social media due to the perceived negative consequences of their engagement. Further qualitative research is needed to discuss the negative, as well as positive, experiences individuals have encountered when using social media in order to identify and resolve potential issues that could occur if social media is incorporated within DHIs for SMI.

The suggestion that social media data could be used to diagnose mental health problems, identify relapse and adjust interventions accordingly is controversial and was heavily criticised by participants in studies 2 and 3. However, at the time of the interviews and focus groups this was a particularly new area of interest in the field and there was limited evidence regarding the accuracy of the automatic detection of mental health-related phenomena in clinical practice. Therefore, questions in the interviews and focus groups focussed on mental health care staff viewing service user social media profiles themselves, rather than the more advanced automatic detection. Therefore, future research is needed to explore the views of service users and staff towards the automatic collection of social media data for diagnosis and relapse prevention.

Acceptability of digital health interventions for severe mental health problems.

Findings from the studies included in the overall thesis outline some of the content and design features that individuals want from DHI for SMI, the perceived need for a recovery-focussed and strengths-based approach and potential facilitators and barriers to implementation. However, one of the limitations of the overall body of work is that these suggestions were made by a specific set of individuals, in specific setting at a specific point in time. Therefore, the findings may not be generalisable to mental health care staff and service users more generally. Future research should take user views and suggestions identified in the studies in this body of work to inform survey-based designs to explore the extent to which the population as a whole agree with the views presented.
As previously highlighted earlier in the discussion, researchers are now using smartphone sensors and wearable technologies to monitor physical, environmental and social contexts of individuals. The use of sensors for monitoring offers the unrealised potential of integrating wearable technologies and sensors within DHIs to allow individuals to access time-sensitive interventions when need is identified. For example, over time geolocation could be linked with an individual's symptom reports to determine whether particular places elicit certain emotions or feelings. Once an individual enters a particular location identified where the person has previously reported negative emotions, the individual could be alerted via the smartphone with a brief intervention containing a motivational quote, coping strategy or distraction game. Moreover, the use of AI in the delivery of psychological interventions is now being recognised. The possibilities of the use of sensors and AI for the assessment and integration with DHIs for SMI are significant; however, the hypothetical acceptability of this approach remains unknown. Exploring the views of individuals with SMI towards the hypothetical acceptability of the use of wearable technologies and AI for mental health self-management and support is warranted to identify potential facilitators and barriers to implementation and uptake. Moreover, exploring how staff and service users would like to see these components incorporated within DHIs would be important to ensure a user-centred design focus, which is likely to improve acceptability, implementation and uptake.

The use of convenience sampling in the current studies due to the time-pressures associated with recruitment prevented the author from being selective in the participants who were recruited. As such, it was not possible to identify differences in views based on demographic characteristics. Additionally, some service users in study 2 believed that DHIs may be more acceptable and appropriate for individuals who are recently diagnosed. The systematic review (study 1) presented in chapter 3 highlighted the dearth of studies reporting the relationship between demographic and clinical variables and hypothetical acceptability.

8.6. Conclusions

This body of work has highlighted the numerous and diverse ways individuals are currently using the Internet and smartphones to self-manage their mental health and service users ingenious and creative proposals for potential DHI content and design components. Understanding the current ways service users engage with technology and ideas for future developments demonstrate the importance in recognising service users as experts on their own experience and the value of collaboration, rather than consultation, with service users throughout every stage of intervention design and delivery. Importantly, the findings highlight the need to ensure that DHIs are empowering, recovery-focussed and strengths-based and that the fast-paced innovations in the field remain grounded in delivering what service users want and need. The potential for the delivery of time-sensitive and easily accessible peer support via social media components and forums integrated within DHIs were popular amongst staff and service users alike. However, participants also stressed the need for moderation by trained peer supporters. This recommendation is supported by the finding
that emotional self-disclosures are related to and reduced mood and increased paranoia. Consequently, it is important to ensure that individuals receive supportive responses when engaging with social media and forum components. The findings demonstrate that staff and service users are optimistic, but cautious, about the potential role of DHIs in the self-management of SMI and, in particular, the integration of DHIs within existing face-to-face services. Whilst barriers to implementation exist, early identification will ensure such barriers can be addressed prior to implementation. There is a clear need to develop cost-efficient and evidence-based approaches to psychological intervention delivery for SMI and the work presented in this thesis highlights that digital devices are an acceptable method for delivery. Further investment in efficacy trials is now needed to determine whether DHIs can fulfil their unprecedented potential to transform mental health care.
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Participant Information Sheet

Study Title: Interest and use of technology for self-management purposes.

You are being invited to take part in a research study, which forms part of a PhD Psychology project at the University of Manchester. This study will investigate the use of technology for self-management and attitudes towards receiving support via technology. Before you decide whether or not you would like to take part, it is important for you to read the following information carefully. If you would like to go through the information in more detail then we can either meet in-person or discuss the study over the phone. Please feel free to contact the researcher (contact details are at the bottom of this information sheet) if you have any questions or would like to participate.

Who will conduct the research?

This study is being conducted by Natalie Berry, a PhD student based in the School of Psychological Sciences at the University of Manchester. Dr Sandra Bucci (School of Psychological Sciences, University of Manchester) and Professor Fiona Lobban (Spectrum Centre for Mental Health Research, Lancaster University) are both supervising this project.

Purpose of the study:

This study aims to look at the current use of technology by people experiencing psychosis or bipolar disorder. We also wish to look at participant interest in receiving support via technology and ideas for the development of new support options.

Who will be taking part?

We are hoping to recruit 20-25 people to take part in this study. Participants will all have a diagnosis of bipolar disorder or psychosis and will need to be between the ages of 18 and 65 and willing to have interviews audio-recorded.

Why have I been asked to take part?

We are inviting you to participate because you have either expressed an interest in taking part or your care team have felt you would be a suitable participant for the study.

Do I have to take part?

It is entirely up to you whether you decide to take part or not. If you decide not to take part, this will not affect any treatment or care that you receive. If you do decide to take part you
will be asked to sign a consent form and will be able to leave the study at any time without giving a reason, this will not affect any treatment or care that you receive.

What will taking part involve?

If you agree to take part you will be asked to meet with the researcher in a place that is convenient for you. At this meeting you will be asked questions about your technology use and experiences of using technology, your interest in receiving support via technology, and ideas for any support you would like to receive through digital services (e.g. smartphones, online programmes). Questions will last for around 1 hour and you will be given £20 as a thank you for your time.

Benefits and Risks:

By taking part, you will help us to inform the design of future services for people who experience mental health problems. We don’t expect any risks for participants in the study, but it is possible that talking about your experiences may cause some distress. If you do not feel comfortable with any of the questions asked then you can refuse to answer and we will move on to a different question. If you do have concerns and wish to speak with someone, we can signpost you to support that is available or we can contact your clinical team.

Involvement of the general practitioner (GP) and psychiatrist:

With your consent, we will inform your GP or psychiatrist that you have agreed to take part in this study. What you say during the interview will remain confidential and will not be discussed with any healthcare staff. The only exception to this will be if the researcher becomes concerned that you may be at risk of harming yourself or others. If this is the case, we will raise these concerns with your health care provider, but we will talk to you about this first.

Confidentiality:

If you agree to take part in the study, all the information you give the researcher will remain confidential. Information you give will not be passed to staff without your consent. The only exception is if the researcher feels that either yourself or others may be at risk, in which case this information will need to be passed on. Where possible, the researcher will always inform you beforehand who the information will be passed to and what information the researcher needs to pass on. Your name will not appear with any of the forms collecting data and you will instead be given a participant number. If you are under the care of a mental health NHS Trust, we will be required to put a copy of your consent form into your medical notes to show you have provided consent.

If you are not currently accessing mental health services, we will need your consent to access your medical records to confirm your diagnosis.
We will ask for your consent to audiotape the interview. We will need to audiotape interviews is because we need to make sure that the researcher is able to record what each person has said. The recordings will be transcribed by a member of the research team and both the recording and transcript will be stored separately, held securely and only identifiable by a participant number that you will be assigned.

The only other time that someone else might need to look at the study information is during an audit or monitoring visit. This is when people from the University of Manchester, NHS Trust or regulatory authorities review all the data to make sure the study is being carried out as planned. If you agree, they will include your identifiable data when doing the checks (they will see it belongs to you). Anyone that does look at the data will also have the duty to keep it confidential.

On the consent form you will be given the option to consent to being contacted about future research by members of the research team. This is entirely optional and whether or not you consent to being contacted in the future about research studies will not affect your participation in this research.

What will happen to the results from the study?

It is hoped that the results from this study will help to inform the design of future accessible support options for people who experience mental health problems. We also aim to publish the result in a scientific journal. Some quotes from your discussion with the researcher may be included in published papers. These quotations will be completely anonymous and no information will be included that would identify the person providing the quote.

What do I do if something goes wrong?

If you have any concerns about this study, please contact the researcher using the contact details listed at the end of this information sheet.

You can also contact the Patient Advice and Liaison Service (PALS) for advice and support about participating in this study. PALS can be contacted on 0161 772 3642 during normal office hours 9am – 5pm Monday to Friday or via email: customercare@gmw.nhs.uk.

What if I want to make a complaint?

Minor complaints

If you have a minor complaint then you need to contact the researchers in the first instance:

Researcher: Natalie Berry
Email: natalie.berry@manchester.ac.uk     Telephone: 0161 306 0428     Or

PhD Supervisor: Dr Sandra Bucci
Email: Sandra.bucci@manchester.ac.uk Telephone: 0161 306 0422

Formal complaints

If you wish to make a formal complaint or if you are not satisfied with the response you have gained from the researchers in the first instance then please contact the Research Governance and Integrity Manager, Research Office, Christie Building, University of Manchester, Oxford Road, Manchester, M13 9PL, by emailing: research.complaints@manchester.ac.uk or by telephoning 0161 275 2674 or 0161 275 2046.

Who is organising and funding the research?

This study is part of a PhD Psychology project, undertaken at the School of Psychological Sciences and Health eResearch Centre (HeRC) at the University of Manchester, and funded by the Medical Research Council Health eResearch Centre.

What should I do now?

If you would like any further information, have any additional questions about the study, or wish to participate, please contact the researcher:

Natalie Berry
Email: natalie.berry@manchester.ac.uk
Telephone: 0161 306 0428

Address: 2nd Floor Zochonis Building, University of Manchester, Brunswick Street, Manchester. M13 9PL

All research which involves NHS patients has to be reviewed by the National Health Service Research Ethics Committee (REC). This study has been reviewed by Cambridge South Research Ethics Committee (reference number: 16/EE/0059).
Appendix 2: Study advertisement (flyer) for study 2

Do you experience psychosis or bipolar disorder?

Do you have internet access and own a mobile phone?

We are interested in hearing about YOUR views!

Taking part in this study involves an interview with a researcher to discuss your experiences of using different types of technologies. We will also ask about your interest and views about receiving support via technology.

The interview will last for around 45 minutes and will take place at a time and location that is convenient for you. You will be compensated for your time.

We are interested in talking to you if you:

• Have a diagnosis of bipolar disorder or a psychotic disorder.

• Are aged 18 to 65 years and speak fluent English.

• Have internet access and own a mobile phone.

For more information about the study or if you would like to take part, please call: Natalie Berry on 0161 306 0428, or email natalie.berry@manchester.ac.uk
Appendix 3: Study advertisement (poster) for study 2

Version 1: 04/01/16

Do you experience psychosis or bipolar disorder?

Do you have internet access and own a mobile phone?

We are interested in hearing about YOUR views!

You are invited to take part in an interview lasting around 45 minutes to talk about your internet and mobile phone use and your experiences and interest in using these technologies.

The interview will take place at a time and location that is convenient for you and you will receive compensation for your time.

We are interested in talking to you if you:

* Have a diagnosis of psychotic or bipolar disorder
* Are aged 18-65
* Have internet access
* Own a mobile phone

If you would like more information about this study or if you would like to take part, please call:

Natalie Berry on 0161 3060428, or email: natalie.berry@manchester.ac.uk
Appendix 4: Participant Information Sheet for study 3

Participant Information Sheet

Study Title: Interest and use of technology for self-management purposes by individuals experiencing serious mental health problems: Service user and clinician perspectives.

You are being invited to take part in a research study, which forms part of a PhD Psychology project at the University of Manchester. This study will investigate the use of technology for self-management by service users who experience serious mental health problems (SMI) and clinician perceptions about the use of technology to deliver interventions for this population. Before you decide whether or not you would like to take part, it is important for you to read the following information carefully and discuss it with others if you wish. If you would like to go through the information in more detail then we can either meet in-person or discuss the study over the phone. Please feel free to contact the researcher (contact details are at the bottom of this information sheet) if you have any questions or would like to participate.

Who will conduct the research?

This study is being conducted by Natalie Berry, a PhD student based in the School of Psychological Sciences at the University of Manchester. Dr Sandra Bucci (School of Psychological Sciences, University of Manchester) and Professor Fiona Lobban (Spectrum Centre for Mental Health Research, Lancaster University) are both supervising this project.

Purpose of the study:

This study aims to look at clinician experiences of service users with SMI using technology for self-management. We also wish to look at clinician interest and attitudes towards the delivery of interventions for SMI via technology and how clinicians feel the use of technology could help and/or hinder clinical practice.

Who will be taking part?

We are hoping to recruit 20-30 people to take part in this study. Participants will be clinicians working in primary or secondary care services. Participants will need to give consent to be audio-recorded during interviews or focus groups.
Why have I been asked to take part?

We are inviting you to participate because you are employed in a primary or secondary care setting.

Do I have to take part?

It is entirely up to you whether you decide to take part or not and participation is voluntary in nature. If you do decide to take part, you will be asked to sign a consent form. You will be able to leave the study at any time prior to study publication without having to give a reason and without detriment to yourself.

What will taking part involve?

If you agree to take part, you will be asked to meet with the researcher in a place that is convenient for you (either a one-to-one interview or focus group depending on your availability and preference). At this meeting you will be asked questions about experiences of service users utilising technology to manage their mental health and about your attitudes towards the use of technology by these individuals. We will also ask you about your views towards the development of technology-delivered interventions for people experiencing SMI, your thoughts about potential facilitators and barriers to use, and how you feel technology could help and/or hinder clinical practice. Interviews and focus groups will last for around 30-45 minutes. Focus groups will involve around 5-10 healthcare professionals and 1 or 2 researchers. Focus groups will be led by the researcher, with prompts given to aid discussions. Interviews and focus groups will be audio-recorded and written notes will be taken during discussions.

Benefits and Risks:

By taking part, you will help us to inform the design of future services for people who experience mental health problems. We don’t expect any risks for participants in the study, but if you do not feel comfortable with any of the questions asked then you can refuse to answer and we will move on to a different question.

Confidentiality:

If you agree to take part in the study, all the information you give the researcher will remain confidential. Information you give will not be passed to staff without your consent. The only exception is that relevant individuals from the University of Manchester, regulatory authorities, and NHS Trusts may need to access the data for auditing or governance purposes. Your name will not appear with any of the forms collecting data and you will instead be assigned a participant number.
We will ask for your consent to audiotape the interview. The reason we will need to audiotape interviews is because we need to make sure that the researcher is able to accurately record what each person has said. The recordings will be transcribed by a member of the research team and both the recording and transcript will be stored separately, held securely and only identifiable by a participant number that you will be assigned.

The only other time that someone else might need to look at the study information is during an audit or monitoring visit. This is when people from the University of Manchester, NHS Trust or regulatory authorities review all the data to make sure the study is being carried out as planned. If you agree, they will include your identifiable data when doing the checks (they will see it belongs to you). Anyone that does look at the data will also have the duty to keep it confidential.

On the consent form you will be given the option to consent to being contacted about future research by members of the research team. This is entirely optional and whether or not you consent to being contacted in the future about research studies will not affect your participation in this research.

**What will happen to the results from the study?**

It is hoped that the results from this study will help to inform the design of future accessible support options for people who experience serious mental health problems. We also aim to publish the findings in a scientific journal. Some quotes from your discussion with the researcher may be included in published papers. These quotations will be completely anonymous and no information will be included that would identify the person providing the quote.

**What if something goes wrong?**

If you have any concerns about this study, please contact the researcher using the contact details listed at the end of this information sheet.

**What if I want to make a complaint?**

**Minor complaints**

If you have a minor complaint then you need to contact the researchers in the first instance:

Researcher: Natalie Berry  
Email: natalie.berry@manchester.ac.uk  
Telephone: 0161 306 0428  
Or

PhD Supervisor: Dr Sandra Bucci  
Email: Sandra.bucci@manchester.ac.uk  
Telephone: 0161 306 0422
**Formal complaints**

If you wish to make a formal complaint or if you are not satisfied with the response you have gained from the researchers in the first instance then please contact the Research Governance and Integrity Manager, Research Office, Christie Building, University of Manchester, Oxford Road, Manchester, M13 9PL, by emailing: research.complaints@manchester.ac.uk or by telephoning 0161 275 2674 or 0161 275 2046.

**Who is organising and funding the research?**

This study is part of a PhD Psychology project, undertaken at the School of Psychological Sciences and Health eResearch Centre (HeRC) at the University of Manchester, and funded by the Medical Research Council Health eResearch Centre.

**What should I do now?**

If you would like any further information, have any additional questions about the study, or wish to participate, please contact the researcher:

Natalie Berry  
Email: natalie.berry@manchester.ac.uk  
Telephone: 0161 306 0428

Address: 2nd Floor Zochonis Building,  
University of Manchester,  
Brunswick Street,  
Manchester.  
M13 9PL

All research which involves NHS patients has to be reviewed by the National Health Service Research Ethics Committee (REC). This study has been reviewed by Cambridge South Research Ethics Committee (reference number: 16/EE/0059).
Appendix 5: Study advertisement (flyer) for study 3

Are you a clinician working in primary or secondary services?

Do you see service users experiencing psychosis or bipolar disorder?

We are interested in hearing about YOUR views!

Taking part in this study involves attending an interview or focus group (depending on your preference) with a researcher to discuss your experiences and views about service users using technology to manage their mental health? We will also ask about your interest and views about service users receiving support via technology.

The interview or focus group will last for around 30-45 minutes and will take place at a time and location that is convenient for you.

We are interested in talking to you if you:

- Work in primary or secondary healthcare settings as a clinician.
- Have contact with service users experiencing psychosis or bipolar disorder.

For more information about the study or if you would like to take part, please call:

Natalie Berry on 0161 306 4028, or email

natalie.berry@manchester.ac.uk
Appendix 6: Study advertisement (poster) for study 3

Version 1: 04/01/16

Are you a clinician working in primary or secondary care services?
We are interested in hearing about YOUR views!

You are invited to take part in an interview or focus group (depending on your preference) lasting around 30 minutes to discuss your experiences and views about service users using technology for their mental health. We will also ask you about interest in technology-delivered intervention for people experiencing serious mental health problems.

The interview/focus group will take place at a time and location that is convenient for you and you will receive compensation for your time.

If you would like more information about this study or if you would like to take part, please call:

Natalie Berry on 0161 3060428, or email:
natalie.berry@manchester.ac.uk
Appendix 7: Topic Guide for Study 2

Interest and use of technology for self-management purposes by individuals experiencing severe mental health problems: service user and clinician perspectives.

Interview guide: service users.

Version 2: 20/07/16

Principal Investigator

Natalie Berry (PhD student)
Room S42, Zochonis Building
School of Psychological Sciences
Brunswick Street
University of Manchester
Manchester
M13 9PL
Tel: 0161 306 0428
Email: natalie.berry@manchester.ac.uk

Supervisory Team

Dr Sandra Bucci, School of Psychological Sciences, University of Manchester.
Professor Fiona Lobban, Spectrum Centre for Mental Health Research, Lancaster University.
| Equipment                  | Participant Information Sheet  
|                          | Consent forms  
|                          | Encrypted audio-recorder  
|                          | Demographic questionnaire  |
| Prior to interview:      | Participant Information Sheet - any questions?  
|                          | Consent form - explain audio recording and limits of confidentiality.  
|                          | Demographic data (separate sheet)  |
| Introduction:            | Introduce self, welcome, and thank participant for attending the interview. Ensure that the participant is comfortable.  |
| Consent:                 | Re-confirm informed consent is still valid and participant still wishes to take part.  |
| Interview details:       | Outline interview procedures and expected length of time for the interview.  
|                          | Remind the participant that the interview will be audio recorded, that participation is voluntary, that they have the right to withdraw at any point without penalty and offer pauses and breaks.  |
| Confidentiality:         | Explain confidentiality – everything the participant says during the interview will remain confidential; however, if the participant discloses a risk of harm to themselves or another person, the researcher will need to inform the named healthcare contact.  |
| Explain purpose of the study and take any questions: | “Thanks again for meeting with me today. The interview is split into two parts. In the first half we will discuss what sorts of things you use the internet and your mobile phone for and any experiences you have using technology to support your mental health. In the second half we will move on to talk about your thoughts, views and ideas of people receiving mental health support online and through mobile |
Demographics questionnaire:
phones. The interview will take around 45 minutes to complete, but for some people it may take a little bit more or less time. With your permission, the interview will be audio-recorded and then typed up to make sure we have an accurate summary of what you have said. Recordings will be securely stored in password protected computer files. Sometimes I may use quotes that you provide during the interview in publications, but I would always make sure that you would not be identifiable from these quotes. Do you have any questions at all?”

Remind participant that the interview is not being recorded yet and ask participants to complete the demographics questionnaire.

Section 1: Current technology use to support mental health

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<th>Domain</th>
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<th>General Internet use:</th>
<th>“My first question is just generally what sort of things do you use the internet for?”</th>
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| Information-seeking online: | “What are your experiences of using the internet to find out information about mental health?”

*prompt: what sort of information did you search for?*

*probe: what did you think about the information that you found?*

*probe: were there any websites that you found particularly helpful?*

*probe: were there any websites that you found particularly unhelpful?*

*probe: did you ever speak to a healthcare professional about any of the information you found online:*
| Talking about mental health online: | if yes – how did you find that conversation went?  
if no – were there any reasons why you didn’t discuss the information you found online?  

**prompt:** what are the positive things about searching for information about mental health online?  
**prompt:** have you ever had any negative experiences when searching for information about mental health online? |

| Talking about mental health online: | “What are your experiences of talking about your mental health on the internet?”  
**prompt:** social media (e.g. Facebook, Twitter), blogs, forums  
if yes - **probe:** what sort of things have you said about your mental health?  
- **probe:** why do you write about your mental health online?  
**prompt:** can you tell me about any good things that have happened when you have spoken about your mental health online?  
**prompt:** has anything negative happened when you have spoken about your mental health online?  
if no - **probe:** what are your thoughts about using the internet to talk about mental health problems?  
**probe:** are there any reasons why you haven’t spoken about your mental health online?  
**prompt:** what might be the benefits for people |
| Other ways people use the internet for their mental health: | "Are there any other ways you use the internet for your mental health?"
| General mobile phone use: | "What sort of things do you use your mobile phone for?"
| Health smartphone applications: | "What is your experience of using any health-related smartphone applications?"
*prompt: fitness apps, diet apps, smoking apps*
*if yes – probe: how did you find using the app?*
*if no – probe: are there any reasons why you haven’t used any health smartphone applications?*
| Other ways people use mobile phones for their mental health: | "How do you use your mobile phone to support your mental health?"
*prompt: appointment reminders, medication reminders, smartphone applications*
*if yes - probe: would you be able to tell me a bit more about that?*
*probe: how was that helpful?*
*probe: have you ever had any negative experiences when doing that?*
*if no - probe: are there any reasons why you don’t use your mobile phone for your mental health (e.g. appointment reminders, medication reminders, smartphone applications)?*
Section 2: Concept of technology-delivered interventions for SMI

| Introduce concept: | “So we’re now moving into the second part of the interview would you like to take a break at all or are you happy to continue? In this part we will be speaking about your thoughts, views and ideas about support options that could be offered on mobile phones applications or on websites. An example might be where people could be asked to put in how they’re feeling on a website or mobile phone application and then they would receive coping strategies or hints and tips back based on what they’ve put in. Another example might be where people are offered information about mental health problems on a website or smartphone application and might have interactive exercises to complete that may help them cope with some of the things that they are experiencing. The important thing to remember is that this would be done just with a mobile phone or website without another person there.” |

<table>
<thead>
<tr>
<th>Domain</th>
<th></th>
</tr>
</thead>
</table>
| Previous experiences of receiving therapy | “Have you ever received therapy or counselling?”  
**prompt:** give examples if unsure. |
| Support via a website | “What are your thoughts about receiving a therapy using a website?”  
**prompt:** “What might be the benefits for people receiving support through a website?”  
**prompt:** “What concerns would you have about people receiving support through a website?” |
| Support via a smartphone application: | “What are your thoughts about receiving a therapy using a smartphone application?”  
**prompt:** “What might be the benefits for people...” |
| Preferences for delivery method: | receiving support through a smartphone application?"  
**prompt:** “What concerns would you have about people receiving support through a smartphone application?”  

| Overcoming access issues: | “If you were offered a therapy in a face to face setting, a therapy delivered online, or a therapy delivered on a smartphone application, which would you be most likely to choose?”  
**probe:** “Why would (insert preferred choice) be your preferred option?”  

| Privacy issues: | “Which one would you be least likely to choose?”  
**probe:** “Why would you be least likely to choose (insert least preferred choice)?”  

| Willingness to receive support via technology: | “Not everyone is able to get access to the support that they need and there may be waiting lists to receive support. How do you think websites and mobile phone applications could overcome problems with access to help?”  

|  | “Do you have any concerns about the privacy or safety of support offered through mobile phone applications or the internet?”  
**if yes – prompt:** “can you tell me a bit more about these concerns?”  
**if no – prompt:** “can you tell me a bit more about why you do not have any concerns about this?”  

| Willingness to receive support via technology: | “If you were offered the option to receive a therapy on a smartphone application or on a website, would you want to receive it?”  
**Probe:** “can you explain why?”  


### Symptom monitoring:

“There are now smartphone applications where you can receive alerts or prompts to complete questions on the application about your thoughts and feelings a few times day; for example your mood or anxiety, and you can then be sent graphs weekly, monthly and so on to show how you’re feeling over time. What are your thoughts about this?”

**Prompt:** “What do you think might be the benefits of this type of application?”

**Prompt:** “What concerns would you have about this type of application?”

**Probe:** “How many times a day would you be willing to answer the questions?”

“There has also been the suggestion that the information a person gives on this sort of smartphone application could then be sent to their healthcare professionals for example their psychiatrist or care coordinator for them to have to look over. What are your thoughts about this?”

**Prompt:** “What do you think might be the benefits of healthcare professionals getting this information?”

**Prompt:** “What concerns would you have about healthcare professionals getting this information?”

**Probe:** “Would you prefer that the healthcare professional automatically receives this information or for you to take the information on the smartphone directly to them yourself? Why?”

### Healthcare professionals on social media:

“Some people have suggested that social media accounts contain a lot of information about a person’s daily life and could be used by a person’s psychiatrist or care coordinator to see how their doing. What are
<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>YOUR THOUGHTS ABOUT HEALTHCARE PROFESSIONALS LOOKING AT CLIENTS SOCIAL MEDIA ACCOUNTS?</td>
<td></td>
</tr>
<tr>
<td><strong>Prompt:</strong> “What might be the benefits of healthcare professionals accessing this information?”</td>
<td></td>
</tr>
<tr>
<td><strong>Prompt:</strong> “What concerns would you have about healthcare professionals accessing this information?”</td>
<td></td>
</tr>
<tr>
<td><strong>Probe:</strong> “How would you feel about healthcare professionals you have had contact with accessing this information? Why?”</td>
<td></td>
</tr>
<tr>
<td>RESEARCHERS ON SOCIAL MEDIA:</td>
<td>“What some researchers are now doing is automatically collecting mental health data for example tweets from people’s social media accounts for research if the account is not set to private. What are your thoughts about researchers using data from peoples social media accounts for research?”</td>
</tr>
<tr>
<td><strong>Probe:</strong> “Do you have any concerns that consent is not provided?”</td>
<td></td>
</tr>
<tr>
<td>FUTURE IDEAS FOR TECHNOLOGY-DELIVERED INTERVENTIONS:</td>
<td>“Can you think of anything you would like to see in future therapies offered online or through mobile phones?”</td>
</tr>
<tr>
<td><strong>If struggling:</strong> “Imagine you were creating a mobile phone application or website for people experiencing (insert diagnosis) what sort of things would you like to see included that might be helpful?”</td>
<td></td>
</tr>
<tr>
<td>INTERVIEW CLOSEDOWN</td>
<td>“Is there anything else that you would like to tell me that we haven’t discussed, but you think might be relevant when thinking about mental health and the internet and mobile phones?”</td>
</tr>
<tr>
<td></td>
<td>“How have you found this interview today?”</td>
</tr>
</tbody>
</table>
“So I'll also be interviewing other people about their experiences and thoughts about technology and mental health. How do you think this interview could be improved for future participants?”

“Ok I'll now switch off the audio recorder.”

End of interview

Thank the participant for taking part.
Explain what will happen with the information provided.
Ask whether it would be ok to contact the participant in a few months to double check they agree with the interpretation of their information.
Ask the participant whether they would like to receive a summary of the results.
Ask the participant whether they have any questions.
Offer a support phone call: “sometimes people take part in an interview and afterwards they have more questions to ask or they have been worrying about something they said. If you like, I can call you tomorrow just to check if any of this is happening for you – would you like me to do that?”
Appendix 8: Topic Guide for Study 3

Interest and use of technology for self-management purposes by individuals experiencing severe mental health problems: service user and clinician perspectives.

Interview guide: clinicians

Version 2: 04/08/16

Principal Investigator

Natalie Berry (PhD student)
Room S42, Zochonis Building
School of Psychological Sciences
Brunswick Street
University of Manchester
Manchester
M13 9PL
Tel: 0161 306 0428
Email: natalie.berry@manchester.ac.uk

Supervisory Team

Dr Sandra Bucci, School of Psychological Sciences, University of Manchester.
Professor Fiona Lobban, Spectrum Centre for Mental Health Research, Lancaster University.
| Equipment | Participant Information Sheet  
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Consent forms</td>
</tr>
<tr>
<td></td>
<td>Encrypted audio-recorder</td>
</tr>
<tr>
<td></td>
<td>Demographic questionnaire</td>
</tr>
</tbody>
</table>

| Prior to interview: | Participant Information Sheet - any questions?  
|---------------------|-------------------------------------------------|
|                     | Consent form - explain audio recording and what is discussed in focus groups must remain confidential.  
|                     | Demographic data (separate sheet)               |

| Introduction: | Introduce self, welcome, and thank participant for attending the focus groups. Ensure that the participant is comfortable.  
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Consent:</td>
<td>Re-confirm informed consent is still valid and participants still wish to take part.</td>
</tr>
</tbody>
</table>

| Focus group details: | Outline focus group procedures and expected length of time for the focus group  
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td></td>
<td>Remind the participants that the focus group will be audio recorded, that participation is voluntary, that they have the right to withdraw at any point without penalty and offer pauses and breaks.</td>
</tr>
</tbody>
</table>

| Confidentiality: | Explain confidentiality – everything the participants say during the focus group will remain confidential and that participants should not share what others have said during the focus group with others.  
|-----------------|--------------------------------------------------------------------------------------------------|

| Explain purpose of the study and take any questions: | “Thanks again for meeting with me today. The focus group is split into two parts. In the first half we will discuss what sorts of things your clients might use the internet and mobile phones for and any experiences you have with clients using technology to support their mental health. In |
the second half we will move on to talk about your thoughts, views and ideas of people receiving mental health support online and through mobile phones. The focus group will take around 45 minutes to complete, but for some people it may take a little bit more or less time. With your permission, the interview will be audio-recorded and then typed up to make sure we have an accurate summary of what you have said. Recordings will be securely stored in password protected computer files. Sometimes I may use quotes that you provide during the interview in publications, but I would always make sure that you would not be identifiable from these quotes. Do you have any questions at all?"

Demographics questionnaire:

Remind participant that the focus group is not being recorded yet and ask participants to complete the demographics questionnaire.

Section 1: Current technology use to support mental health

Domain

Information-seeking online:

“What are your experiences of clients using the internet to find out information about mental health?”

prompt: what sort of information did they search for?

probe: what did you think about the information that they found?

probe: were there any websites that they found particularly helpful?

probe: were there any websites that they found particularly unhelpful?

prompt: what are the positive things about searching for information about mental health online?
<table>
<thead>
<tr>
<th><strong>Talking about mental health online:</strong></th>
<th><strong>prompt:</strong> have clients ever had any negative experiences when searching for information about mental health online?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>“What are your experiences of clients talking about their mental health on the internet?”</td>
</tr>
<tr>
<td></td>
<td><strong>prompt:</strong> social media (e.g. Facebook, Twitter), blogs, forums</td>
</tr>
<tr>
<td></td>
<td><strong>probe:</strong> what are your thoughts about people using the internet to talk about mental health problems?</td>
</tr>
<tr>
<td></td>
<td><strong>prompt:</strong> what might be the benefits for people speaking about mental health online?</td>
</tr>
<tr>
<td></td>
<td><strong>prompt:</strong> do you have any concerns about people speaking about mental health online?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Other ways people use the internet for their mental health:</strong></th>
<th>“Are there any other ways your clients have used the internet for their mental health?”</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Health smartphone applications:</strong></th>
<th>“What is your experience of using any health-related smartphone applications?”</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>prompt:</strong> fitness apps, diet apps, smoking apps</td>
</tr>
<tr>
<td><strong>if yes</strong> – <strong>probe:</strong> how did you find using the app?</td>
<td></td>
</tr>
<tr>
<td><strong>if no</strong> – <strong>probe:</strong> are there any reasons why you haven’t used any health smartphone applications?</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Other ways people use mobile phones for their mental health:</strong></th>
<th>“What is your experience of clients using mobile phones to support their mental health?”</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>prompt:</strong> appointment reminders, medication reminders, smartphone applications</td>
</tr>
<tr>
<td><strong>if</strong> <strong>probe:</strong> would you be able to tell me a bit more about that?</td>
<td></td>
</tr>
<tr>
<td><strong>yes</strong> <strong>probe:</strong> how was that helpful for the client?</td>
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</tbody>
</table>
### Section 2: Concept of technology-delivered interventions for SMI

#### Introduce concept:

“So we’re now moving into the second part of the interview. In this part we will be speaking about your thoughts, views and ideas about support options that could be offered on mobile phones applications or on websites for people who experience severe mental health problems. These interventions often do not involve a clinician or support person, are entirely self-directed and may be used alone or in conjunction with face to face therapy. Recent examples are CBT-informed mobile apps and online programmes for psychosis and bipolar disorder, online psychoeducation and online and mobile-phone delivered mindfulness techniques.”

#### Domain

| Support via website and mobile phones | “What are your thoughts about using mobile phones and online programmes to deliver interventions?”
| **prompt:** “What might be the benefits for people receiving support through a website or mobile phone?”
| **prompt:** “What concerns would you have about people receiving support through a website or mobile phone?” |

| Overcoming access issues: | “Not everyone is able to get access to the support that they need and there may be waiting lists to receive support. How do you think websites and mobile phone |
Applications could overcome problems with access to help?

| Preferences for delivery method: | “If you were offered a therapy in a face to face setting, a therapy delivered online, or a therapy delivered on a smartphone application, which would you be most likely to choose?”  
**probe:** “Why would (insert preferred choice) be your preferred option?”  
“Which one would you be least likely to choose?”  
**probe:** “Why would you be least likely to choose (insert least preferred choice)?” |
| --- | --- |
| Privacy issues: | “Do you have any concerns about the privacy or safety of support offered through mobile phone applications or the internet?”  
**if yes – prompt:** “can you tell me a bit more about these concerns?”  
**if no – prompt:** “can you tell me a bit more about why you do not have any concerns about this?” |
| Symptom monitoring: | “There are now smartphone applications where you can receive alerts or prompts to complete questions on the application about your thoughts and feelings a few times day; for example your mood or anxiety, and you can then be sent graphs weekly, monthly and so on to show how you’re feeling over time. What are your thoughts about this?”  
**Prompt:** “What do you think might be the benefits of this type of application?”  
**Prompt:** “What concerns would you have about this type of application?” |
<table>
<thead>
<tr>
<th><strong>Probe:</strong> “How many times a day would you be willing to answer the questions?”</th>
</tr>
</thead>
<tbody>
<tr>
<td>“There has also been the suggestion that the information a person gives on this sort of smartphone application could then be sent to their healthcare professionals for example their psychiatrist or care coordinator for them to have to look over. What are your thoughts about this?”</td>
</tr>
<tr>
<td><strong>Prompt:</strong> “What do you think might be the benefits of you having this information?”</td>
</tr>
<tr>
<td><strong>Prompt:</strong> “What concerns would you have about you getting this information?”</td>
</tr>
<tr>
<td><strong>Probe:</strong> “Would you prefer to automatically receive this information or for clients to take the information on the smartphone directly to you themselves? Why?”</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Healthcare professionals on social media:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>“Some people have suggested that social media accounts contain a lot of information about a person’s daily life and could be used by a person’s psychiatrist or care coordinator to see how their doing. What are your thoughts about healthcare professionals looking at clients social media accounts?”</td>
</tr>
<tr>
<td><strong>Prompt:</strong> “What might be the benefits of you accessing this information?”</td>
</tr>
<tr>
<td><strong>Prompt:</strong> “What concerns would you have about accessing this information?”</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Researchers on social media:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>“What some researchers are now doing is automatically collecting mental health data for example tweets from people’s social media accounts for research if the account is not set to private. What are your thoughts about researchers using data from”</td>
</tr>
<tr>
<td>Topic</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>Future ideas for technology-delivered interventions:</td>
</tr>
</tbody>
</table>

**Interview closedown**

“Is there anything else that you would like to tell me that we haven’t discussed, but you think might be relevant when thinking about mental health and the internet and mobile phones?”

“How have you found this focus group today?”

“So I’ll also be interviewing other people about their experiences and thoughts about technology and mental health. How do you think this focus group could be improved for future participants?”

“Ok I’ll now switch off the audio recorder.”

**End of interview**

Thank the participants for taking part.

Explain what will happen with the information provided.

Ask whether it would be ok to contact the participant in a few months to double check they agree with the interpretation of their information.

Ask the participant whether they would like to receive a summary of the results.

Ask the participant whether they have any questions.
Appendix 9: Demographics Questionnaire for Study 2

Demographics Questionnaire – Service Users

Version 2: 12/02/16

Study Title: Interest and use of technology for self-management purposes by individuals experiencing serious mental health problems: Service user and clinician perspectives.

Participant ID Number: ……

Date: ………..

Please ask the researcher if you have any queries about the questionnaire or if you would like to receive help completing this questionnaire.

If there are any questions that you do not feel comfortable answering, please place a cross in the answer section.

1. How old are you? ………………….

2. What is your ethnicity? …………………………….....

3. What gender do you identify with? Please tick to indicate:

☐ Male
☐ Female

4. What is your employment status? Please tick to indicate:

☐ Working full-time
☐ Working part-time
☐ Self-employed
☐ Student
☐ Voluntary position
☐ Currently unemployed
5. What is the highest level of education you have attended? Please tick to indicate:

☐ High school/secondary school
☐ College/Sixth form
☐ Some University (degree not or not yet awarded)
☐ University (degree awarded)
☐ Postgraduate course

6. Living arrangements. Please tick to indicate:

☐ Private rental
☐ Local housing authority
☐ Home owner
☐ Living with family
☐ Other – please state: ..........................................................

7. What is your relationship status? Please tick to indicate:

☐ Single
☐ Married/civil partnership
☐ Cohabiting
☐ Divorced
☐ Widowed
☐ Other – please state: ..........................................................

8. What is your diagnosis?

..........................................................................................

9. Have you ever received psychotherapy (e.g. CBT)? Please tick to indicate:

☐ Yes
☐ No

10. Are you currently receiving psychotherapy? Please tick to indicate:

☐ Yes
☐ No
11. Are you currently in contact with mental health services? Please tick to indicate:

☐ Yes
☐ No

12. Do you have a social media account (e.g. Facebook, Twitter)? Please tick to indicate:

☐ Yes
☐ No

13. Do you own a mobile phone? Please tick to indicate:

☐ Yes
☐ No

14. Do you own a smartphone? Please tick to indicate:

☐ Yes
☐ No

15. If you own a smartphone, which make/model is it? ........................................

16. Do you own a tablet computer (e.g. IPad)? Please tick to indicate:

☐ Yes
☐ No

17. If you own a mobile phone/smartphone, what do you use it for? Please tick to indicate:

☐ Making/receiving calls
☐ Texting
☐ Sending/receiving emails
☐ Smartphone applications
☐ Games
☐ Accessing social media
☐ Other, please specify ....................
18. How comfortable would you say you feel using technology (mobile phones, internet)? Please tick to indicate:

☐ Extremely comfortable
☐ Moderately comfortable
☐ Mildly comfortable
☐ Mildly uncomfortable
☐ Moderately uncomfortable
☐ Extremely uncomfortable

Many thanks for completing this questionnaire. Please return to the researcher when you have finished.
Appendix 10: Demographics Questionnaire for Study 3

Demographics Questionnaire – Clinicians

Version 2: 12/02/15

Study Title: Use of technology for self-management purposes by individuals experiencing serious mental health problems: Service user and clinician perspectives.

Participant ID Number: ……

Date: ……….

If there are any questions that you do not feel comfortable answering, please place a cross in the answer section.

1. How old are you? ………………….

2. What is your ethnicity? ………………………………..

3. What gender do you identify with? Please tick to indicate:
   - Male
   - Female

3. What is your job title (e.g. GP, care coordinator, psychiatrist, psychologist, mental health nurse, support worker)? …………………………………………….

4. How long have you been working in clinical practice? ………… years …………… months

5. Do you have a social media account (e.g. Facebook, Twitter)? Please tick to indicate:
   - Yes
   - No

6. Do you own a mobile phone? Please tick to indicate:
   - Yes
   - No

7. Do you own a smartphone? Please tick to indicate:
   - Yes
   - No

8. If you own a smartphone, which make/model is it? ………………………………..
9. Do you own a tablet computer (e.g. iPad)? Please tick to indicate:

☐ Yes
☐ No

10. If you own a mobile phone/smartphone, what do you use it for? Please tick to indicate:

☐ Making/receiving calls
☐ Texting
☐ Sending/receiving emails
☐ Smartphone applications
☐ Games
☐ Accessing social media
☐ Other, please specify .....................

11. How comfortable would you say you feel using technology (mobile phones, internet)? Please tick to indicate:

☐ Extremely comfortable
☐ Moderately comfortable
☐ Mildly comfortable
☐ Mildly uncomfortable
☐ Moderately uncomfortable
☐ Extremely uncomfortable

Many thanks for completing this questionnaire. Please return to the researcher when you have finished.
Appendix 11: Consent Form for Study 2

Consent Form – Version 2 (12/02/16)

Participant Identification Number:

**Project Title:** Use of technology for self-management purposes by individuals experiencing serious mental health problems: Service user and clinician perspectives.

**Chief Investigator:** Natalie Berry

Please write your initials in each box if you agree with the following statements:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Initials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I confirm that I have read and understood the participant information sheet dated 12/02/16 (version 2) for the study and that I have been given at least 24 hours to decide whether to take part.</td>
<td></td>
</tr>
<tr>
<td>2. I confirm that I have been given the opportunity to ask questions I had about the study and have received satisfactory answers.</td>
<td></td>
</tr>
<tr>
<td>3. I understand that my participation is voluntary and I may withdraw from the study at any time, without penalty, and without giving a reason.</td>
<td></td>
</tr>
<tr>
<td>4. I give my consent for the audio-recording of the focus group/interview.</td>
<td></td>
</tr>
<tr>
<td>5. I understand that the data collected during the study may be looked at by individuals from The University of Manchester, from regulatory authorities, or from the NHS Trust. I give my permission for these individuals to have access to my data.</td>
<td></td>
</tr>
<tr>
<td>7. I give consent for the quotes that I give during this interview to be included in research outputs (e.g. research papers, presentations). These quotes will be made anonymous.</td>
<td></td>
</tr>
<tr>
<td>8. I agree to take part in this study.</td>
<td></td>
</tr>
<tr>
<td>9. I give my consent to be contacted by members of the research team for possible participation in future studies <em>(optional)</em>.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Name of participant</th>
<th>Date</th>
<th>Signature</th>
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</table>

<table>
<thead>
<tr>
<th>Name of researcher</th>
<th>Date</th>
<th>Signature</th>
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</tbody>
</table>

*When completed: 1 copy for participant; 1 original for researcher site file.*
Appendix 12: Consent Form for Study 3

Consent Form – Version 2 (12/02/16)

Participant Identification Number:

Project Title: Use of technology for self-management purposes by individuals experiencing serious mental health problems: Service user and clinician perspectives.

Chief Investigator: Natalie Berry

Please write your initials in each box if you agree with the following statements:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Initials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I confirm that I have read and understood the participant information sheet dated 12/02/16 (version 2) for the study and that I have been given at least 24 hours to decide whether to take part.</td>
<td></td>
</tr>
<tr>
<td>2. I confirm that I have been given the opportunity to ask questions I had about the study and have received satisfactory answers.</td>
<td></td>
</tr>
<tr>
<td>3. I understand that my participation is voluntary and I may withdraw from the study at any time, without my medical care or legal rights being affected, and without giving a reason.</td>
<td></td>
</tr>
<tr>
<td>4. I give my consent for the audio-recording of this interview.</td>
<td></td>
</tr>
<tr>
<td>5. I understand that the data collected during the study may be looked at by individuals from The University of Manchester, from regulatory authorities, or from the NHS Trust. I give my permission for these individuals to have access to my data.</td>
<td></td>
</tr>
<tr>
<td>6. I understand that anything I say will remain confidential, unless I indicate that myself and/or others are at risk. The researcher has explained the limits of confidentiality.</td>
<td></td>
</tr>
<tr>
<td>7. I give consent for the quotes that I give during this interview to be included in research outputs (e.g. research papers, presentations). These quotes will be made anonymous.</td>
<td></td>
</tr>
<tr>
<td>8. I agree to take part in this study.</td>
<td></td>
</tr>
<tr>
<td>9. I give my consent to be contacted by members of the research team for possible participation in future studies (optional).</td>
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<tr>
<th>Name of participant</th>
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When completed: 1 copy for participant; 1 original for researcher site file; 1 copy for medical notes.
Appendix 13: Study Information Sheet for Study 4

#WhyWeTweetMH

Study Information: #WhyWeTweetMH

Thank you for taking interest in the #WhyWeTweetMH study.

Purpose of the study:

Research has found the use of social media websites could impact both positively and negatively on a person’s mental health. People with mental health problems often use social media websites to discuss their mental health experiences. Additionally, clinicians, campaigners, charities, carers, and members of the general public also discuss mental health online. This research aims to explore why people write about mental health on the social media website Twitter.

What will this study involve?

The hashtag #WhyWeTweetMH is currently being circulated in the following tweet on the social media website Twitter:

“Why do you tweet about mental health. Use #WhyWeTweetMH to discuss. Research study. Over 16s only…”

Through tweet circulation, Twitter users over the age of 16 will be asked to use the hashtag #WhyWeTweetMH to details their reasons for tweeting about mental health. This research is exploratory in nature and we welcome people expressing a range of reasons for Twitter use.

Why Twitter?

Rather than using traditional questionnaires or interviews, we decided to utilise Twitter because it provides the unique opportunity to explore reasons for use in the environment where this use actually takes place. Furthermore, using Twitter could enable us to reach individuals who may ordinarily be unable to participate in mental health research.

Ethical considerations

This study was developed in accordance with guidelines stipulated by the University of Manchester (2015), Association for Internet Researchers (AoIR, 2012), and INVOLVE (2014). The study has been approved by the University of Manchester ethics committee (Ref: 15347).
The circulated tweet contains the disclaimer that this is a research study out of common courtesy to the users who tweet using the hashtag.

Tweets will be password protected on an excel file, which will not contain any identifiable information. Any publications that result from this study will contain anonymised paraphrased versions of the tweets collected to help prevent individual Twitter users being identified.

**Available Support**

The link below has details about mental health helplines you can contact if you would like any information or support relating to mental health:


**Further information**

Any questions can be directed to:

Natalie Berry (PhD Student);
email: natalie.berry@manchester.ac.uk;
Twitter: @natberry1990

Dr Sandra Bucci (Senior Lecturer; PhD Project Supervisor);
email: sandra.bucci@manchester.ac.uk
Participant Information Sheet

Study Title: Investigating the relationship between personality, mood, self-esteem and paranoia in individuals experiencing severe mental health problems: An ESM study.

You are invited to take part in a research study, which forms part of a PhD Psychology project at the University of Manchester. This study will investigate the relationship between social media use, personality and different experiences associated with mental health problems. Before you decide whether or not you would like to take part, it is important for you to read the following information carefully. If you would like to go through the information in more detail, then we can either meet in person or discuss the study over the phone. Please contact the researcher using the contact details at the bottom of this information sheet if you have any questions or would like to participate.

Who will conduct the research?

The study is being conducted by Natalie Berry, a PhD researcher based in the Division of Psychology and Mental Health at the University of Manchester. Dr Sandra Bucci (Division of Psychology and Mental Health, University of Manchester), Professor Fiona Lobban (Spectrum Centre for Mental Health Research, Lancaster University) and Professor Richard Emsley (Centre for Biostatistics, University of Manchester) are supervising this project.

Purpose of the study

The purpose of the study is to explore the use of social media websites (e.g. Facebook, Twitter) by people with and without severe mental health problems and to investigate whether personality, thoughts and feelings are associated with this use.

Who will be taking part?

We are hoping to recruit 80 people to take part in this study. 40 of the participants will have a diagnosis of bipolar disorder or psychosis and the other 40 will have no experience of mental health problems. All participants must be over the age of 18 to take part and access social media websites at least three times a week.

Why have I been asked to take part?

We are inviting you to take part because you have either expressed an interest in taking part or your care team have felt you would be interested in participating in the study.
Do I have to take part?

It is entirely up to you whether you decide to take part or not. If you decide that you would not like to take part, this will not affect any treatment or care that you receive. If you would like to take part, you will be asked to sign a consent form and will be able to withdraw from the study at any time without giving a reason, this will also not affect any treatment or care that you receive.

What will taking part involve?

If you agree to take part, you will be asked to provide details of a designated health contact (e.g. care coordinator) who we may contact when planning study visits. This is to make sure that we can take your needs into consideration when making the arrangements for the study visit. You will also be asked to provide consent for the designated health contact providing the researcher with information about diagnosis and/or risk that is relevant to the study. You will then be asked to meet with the researcher at a time and place that is convenient for you. At this meeting you will be asked to complete several questionnaires about your social media use, personality, mood, self-esteem and thoughts you have about other people. You will then be asked to complete short assessments 6 times a day for a period of 6 days on your own smartphone or one that we will let you borrow for the study. Links to the assessments will be sent via text message and you will be asked to complete the assessments on the mobile phone internet browser. These short assessments will take around 5 minutes to complete and will ask about your social media use and how you are currently feeling. The researcher will also telephone you on Day 1 and Day 3 of assessments to check how you’re feeling about the study, make sure that the mobile phone text alerts and assessments are working correctly and answer any questions or concerns. After the assessments have been completed, the researcher will meet with you again and a time or place convenient for you to complete a final short questionnaire about how you have found taking part in the study. You will receive £20 in ‘Love to Shop’ vouchers as a thank you for your time. If you decide to use your own phone for the study you will also receive a maximum of £3 for data costs.

Benefits and Risks

By taking part, you will help us to explore the potential benefits and drawbacks of social media use, which will help inform future interventions delivered on social media for people who experience mental health problems. Some people also find that answering questions about their thoughts and feelings over time can be helpful for them. We do not expect any risks for participants in the study, but it is possible that answering questions about how you are feeling may cause some distress. If you do have concerns and wish to speak with someone, you can contact us during office hours and we can signpost you to support that is available. The researcher will also telephone you on Day 1 and Day 3 of the assessments to
make sure that you are comfortable with the assessments. If you do not feel comfortable speaking on the telephone, the researcher will text you on a study mobile phone.

**Confidentiality**

If you agree to take part in the study, all the information you provide will remain confidential. Information you give will not be passed to staff without your consent. The only exception is if the researcher feels that yourself or others may be at risk, in which case this information will need to be passed on. Where possible, the researcher will always inform you beforehand who the information will be passed to and what information the researcher needs to pass on.

Your name will not appear on any of the forms collecting the data and you will instead be given a participant number. Answers on the questionnaires and assessments will be transferred to an encrypted, password protected file on a secure University of Manchester computer. Consent forms will be kept in a locked filing cabinet at the University and stored separately from other data. Study data will be kept for a period of 10 years and held securely at the University of Manchester. Only members of the research team will have access to this data. After a period of 10 years, all data will be destroyed. Contact details will be destroyed once the study has been completed, unless you wish to be contacted about future research opportunities.

The only other time that someone else might need to look at the study information is during an audit or monitoring visit. This is when people from the University of Manchester, NHS Trust or regulatory authorities review all the data to make sure the study is being carried out as planned. If you agree, they will include your identifiable data when doing the checks (they will see it belongs to you). Anyone that does look at the data will also have the duty to keep it confidential.

On the consent form you will be given the option to consent to being contacted about future research by members of the research team. This is entirely optional and whether or not you consent to being contacted in the future about research studies will not affect your participation in this research.

**What will happen to the results from the study?**

It is hoped that the results from this study will help us understand how people with and without experience of severe mental health problems use social media and explore whether support could be offered using social media in future programmes. We also aim to publish results in a scientific journal and will provide you with information about the results.

We may also wish to use the data you have provided for future research. In this instance, only anonymised data will be made available for this purpose and to other researchers.
What do I do if something goes wrong?

If you have any concerns about this study, please contact the researcher using the contact details listed at the end of this information sheet.

What if I want to make a complaint?

Minor complaints

If you have a minor complaint, then you need to contact the researchers in the first instance using the details below:

Researcher: Natalie Berry  
Email: natalie.berry@manchester.ac.uk  Telephone: 0161 3060428  Or

PhD Supervisor: Dr Sandra Bucci  
Email: sandra.bucci@manchester.ac.uk  Telephone: 0161 3060422

Formal complaints

If you wish to make a formal complaint or if you are not satisfied with the response that you have received from the researchers in the first instance then please contact: the Research Governance and Integrity Manager, Research Office, Christie Building, University of Manchester, Oxford Road, Manchester M13 9PL by emailing research.complaints@manchester.ac.uk or by telephoning 0161 2752674 or 0161 2752046

Who is organising and funding the research?

This study is part of a PhD Psychology project, undertaken in the Division of Psychology and Mental Health and the Health eResearch Centre (HeRC) at the University of Manchester, and funded by the Medical Research Council Health eResearch Centre.

What should I do now?

If you would like any further information, have any additional questions about the study or wish to participate, please contact the researcher:

Natalie Berry  
Email: Natalie.berry@manchester.ac.uk  Telephone: 0161 3060428

Address: Room S42, 2nd Floor, Zochonis Building  
University of Manchester  
Brunswick Street  
Manchester  
M13 9PL
All research which involves NHS patients has to be reviewed by the National Health Service Research Ethics Committee (REC). This study has been reviewed by North West – Greater Manchester East Research Ethics Committee (REF: 16/NW/0821).
Do you experience psychosis or bipolar disorder?

Do you go on Facebook or Twitter at least 3 times a week?

If so, you may be eligible to take part in a new research study!

Study Title: Social media use in severe mental health problems.

You are invited to take part in a study looking at social media use and mental health.
You will first be asked to complete a number of questionnaires assessing social media use, personality and your thoughts and feelings. You will then be asked to complete daily assessments about your use of social media and your current feelings on a mobile phone over a 6-day period.

You will receive compensation for your time

We are interested in talking to you if you:

* Experience psychosis or bipolar disorder
* Over the age of 18
* Access social media 3 or more times a week
* Available for 1 week

Please contact Natalie Berry if you are interested in taking part:

Email: Natalie.berry@manchester.ac.uk

Telephone: 0161 306 0428

This study has received ethical approval from North West - Greater Manchester East Research Ethics Committee (REF: 16/NW/0821)
Appendix 16: Study advertisement (poster) for Clinical Group Study 5

Do you experience psychosis or bipolar disorder?
Do you go on Facebook or Twitter at least 3 times a week?
If so, you may be eligible to take part in a new research study!

Study Title: Social media use in severe mental health problems.

You are invited to take part in a study looking at social media use and mental health. You will first be asked to complete a number of questionnaires assessing social media use, personality and your thoughts and feelings. You will then be asked to complete daily assessments about your use of social media and your current feelings on a mobile phone over a 6-day period.

You will receive compensation for your time

We are interested in talking to you if you:

* Experience psychosis or bipolar disorder
* Over the age of 18
* Access social media 3 or more times a week
* Available for 1 week

This study has received ethical approval from North West - Greater Manchester East Research Ethics Committee (REF: 16/NW/0821)

If you would like more information about this study or if you would like to take part, please call:

Natalie Berry on 0161 3060428, or email: natalie.berry@manchester.ac.uk
Appendix 17: Study advertisement (online) for Clinical Group Study 5

Study advertisement: Version 1; 04/10/2016 IRAS: 213727

Study Title: Social media use in severe mental health problems.

The aim of this research is to find out about how people with and without experiences of psychosis or bipolar disorder use social media (e.g. Facebook, Twitter) and how this use might relate to personality and thoughts and feelings about the self and others.

Who can take part in this research?

- Adults experiencing psychosis (e.g. first episode psychosis, schizophrenia, schizoaffective disorder) or bipolar disorder.
- Use social media at least 3 times a week.

We are also recruiting:

- Adults with no previous or current experience of mental health problems.
- Use social media at least 3 times a week

What will the research involve?

You will be required to meet with the researcher at a time and place convenient for you where you will be asked to complete a number of questionnaires assessing social media use, personality and your thoughts and feelings. You will then be asked to complete daily assessments about your social media use and your current feelings on a mobile phone over a 6 day period. You will receive compensation for your time.

Study contacts

For more information, please contact:

Natalie Berry
Telephone: 0161 306 0428
Email: natalie.berry@manchester.ac.uk

Study references

This study has received ethical approval from North West – Greater Manchester East Research Ethics Committee (REF: 16/NW/0821)

Affiliations
Appendix 18: Study advertisement (online) for Non-clinical Group

Study 5

Study advertisement: Version 1; 04/10/16 IRAS: 213727

Study Title: Social media use in severe mental health problems.

The aim of this research is to find out about how people with and without experiences of psychosis or bipolar disorder use social media (e.g. Facebook, Twitter) and how this use might relate to personality and thoughts and feelings about the self and others.

Who can take part in this research?

- Adults with no previous or current experience of mental health problems.
- Use social media at least 3 times a week

We are also recruiting:

- Adults experiencing psychosis (e.g. first episode psychosis, schizophrenia, schizoaffective disorder) or bipolar disorder.
- Use social media at least 3 times a week.

What will the research involve?

You will be required to meet with the researcher at a time and place convenient for you where you will be asked to complete a number of questionnaires assessing social media use, personality and your thoughts and feelings. You will then be asked to complete daily assessments about your social media use and your current feelings on a mobile phone over a 6 day period. You will receive compensation for your time.

Study contacts

For more information, please contact:

Natalie Berry
Telephone: 0161 306 0428
Email: natalie.berry@manchester.ac.uk

Study references

This study has received ethical approval from North West – Greater Manchester East Research Ethics Committee (REF: 16/NW/0821)

Affiliations
Do you go on Facebook or Twitter at least 3 times a week?

Do you have no history of mental health problems?

If so, you may be eligible to take part in a new research study!

Study Title: Social media use in severe mental health problems.

You are invited to take part in a study looking at social media use and mental health. You will first be asked to complete a number of questionnaires assessing social media use, personality and your thoughts and feelings. You will then be asked to complete daily assessments about your use of social media use and your current feelings on a mobile phone over a 6 day period.

You will receive compensation for your time

We are interested in talking to you if you:

- Do not experience mental health problems
- Available for 1 week
- Access social media 3 or more times a week
- Over the age of 18

Please contact Natalie Berry if you are interested in taking part:

Email: Natalie.berry@manchester.ac.uk

Telephone: 0161 306 0428

This study has received ethical approval from North West - Greater Manchester East Research Ethics Committee (REF: 16/NW/0821)
Appendix 20: Study advertisement (poster) for Non-clinical Group

Study 5

Do you go on Facebook or Twitter at least 3 times a week?

Do you have no history of mental health problems?

If so, you may be eligible to take part in a new research study!

Study Title: Social media use in severe mental health problems.

You are invited to take part in a study looking at social media use and mental health/wellbeing. You will first be asked to complete a number of questionnaires assessing social media use, personality and your thoughts and feelings. You will then be asked to complete daily assessments about your use of social media and your current feelings on a mobile phone over a 6 day period.

You will receive compensation for your time

We are interested in talking to you if you:

* Do not experience mental health problems
* Over the age of 18
* Access social media 3 or more times a week
* Available for 1 week

This study has received ethical approval from North West - Greater Manchester East Research Ethics Committee (REF: 16/NW/0821)

If you would like more information about this study or if you would like to take part, please call:

Natalie Berry on 0161 3060428, or email: natalie.berry@manchester.ac.uk
Appendix 21: Participant Information Sheet for Non-clinical Group

Study 5 - Students

Participant Information Sheet

Study Title: Social media use in severe mental health problems.

You are invited to take part in a research study, which forms part of a PhD Psychology project at the University of Manchester. This study will investigate the relationship between social media use, personality and different experiences associated with mental health problems. Before you decide whether or not you would like to take part, it is important for you to read the following information carefully. If you would like to go through the information in more detail, then we can either meet in person or discuss the study over the phone. Please contact the researcher using the contact details at the bottom of this information sheet if you have any questions or would like to participate.

Who will conduct the research?

The study is being conducted by Natalie Berry, a PhD researcher based in the Division of Psychology and Mental Health at the University of Manchester. Dr Sandra Bucci (Division of Psychology and Mental Health, University of Manchester), Professor Fiona Lobban (Spectrum Centre for Mental Health Research, Lancaster University) and Professor Richard Emsley (Centre for Biostatistics, University of Manchester) are supervising this project.

Purpose of the study

The purpose of the study is to explore the use of social media websites (e.g. Facebook, Twitter) by people with and without severe mental health problems and to investigate whether personality, thoughts and feelings are associated with this use.

Who will be taking part

We are hoping to recruit 80 people to take part in this study. 40 of the participants will have a diagnosis of bipolar disorder or psychosis and the other 40 will have no experience of mental health problems. All participants must be over the age of 18 to take part and access social media websites at least three times a week.

Why have I been asked to take part?

We are inviting you to take part because you have expressed an interest in taking part and do not experience mental health problems.
Do I have to take part?

It is entirely up to you whether you decide to take part or not. If you would like to take part, you will be asked to sign a consent form and will be able to withdraw from the study at any time without giving a reason.

What will taking part involve?

If you agree to take part in the study, you will be asked to meet with the researcher at a time and place that is convenient for you. At this meeting you will be asked to complete several questionnaires about your social media use, personality, mood, self-esteem and thoughts you have about other people. You will then be asked to complete short assessments 6 times a day for a period of 6 days on your own smartphone or one that we will let you borrow for the study. Links to the assessments will be sent via text message and you will be asked to complete the assessments on the mobile phone internet browser. These short assessments will take around 5 minutes to complete and will ask about your social media use and how you are currently feeling. The researcher will also telephone you on Day 1 and Day 3 of assessments to check how you’re feeling about the study, make sure that the mobile phone text alerts and assessments are working correctly and answer any questions or concerns. After the assessments have been completed, the researcher will meet with you again and a time or place convenient for you to complete a final short questionnaire about how you have found taking part in the study. You will receive 11 course credits for taking part. If you decide to use your own phone for the study you will also receive a maximum of £3 for data costs.

Benefits and Risks

By taking part, you will help us to explore the potential benefits and drawbacks of social media use, which will help inform future interventions delivered on social media for people who experience mental health problems. Some people also find that answering questions about their thoughts and feelings over time can be helpful for them. We do not expect any risks for participants in the study, but it is possible that answering questions about how you are feeling may cause some distress. If you do have concerns and wish to speak with someone, you can contact us during office hours and we can signpost you to support that is available. The researcher will also telephone you on Day 1 and Day 3 of the assessments to make sure that you are comfortable with the assessments.

Confidentiality

If you agree to take part in the study, all the information you provide will remain confidential. Your name will not appear on any of the forms collecting the data and you will instead be given a participant number. Answers on the questionnaires and assessments will be transferred to an encrypted, password protected file on a secure University of Manchester computer. Consent forms will be kept in a locked filing cabinet at the University and stored.
separately from other data. Study data will be kept for a period of 10 years and held securely at the University of Manchester. Only members of the research team will have access to this data. After a period of 10 years, all data will be destroyed. Contact details will be destroyed once the study has been completed, unless you wish to be contacted about future research opportunities.

The only other time that someone else might need to look at the study information is during an audit or monitoring visit. This is when people from the University of Manchester, NHS Trust or regulatory authorities review all the data to make sure the study is being carried out as planned. If you agree, they will include your identifiable data when doing the checks (they will see it belongs to you). Anyone that does look at the data will also have the duty to keep it confidential.

On the consent form you will be given the option to consent to being contacted about future research by members of the research team. This is entirely optional and whether or not you consent to being contacted in the future about research studies will not affect your participation in this research.

**What will happen to the results from the study?**

It is hoped that the results from this study will help us understand how people with and without experience of severe mental health problems use social media and explore whether support could be offered using social media in future programmes. We also aim to publish results in a scientific journal and will provide you with information about the results.

We may also wish to use the data you have provided for future research. In this instance, only anonymised data will be made available for this purpose and to other researchers.

**What do I do if something goes wrong?**

If you have any concerns about this study, please contact the researcher using the contact details listed at the end of this information sheet.

**What if I want to make a complaint?**

**Minor complaints**

If you have a minor complaint, then you need to contact the researchers in the first instance using the details below:

Researcher: Natalie Berry

Email: natalie.berry@manchester.ac.uk  Telephone: 0161 3060428  Or

PhD Supervisor: Dr Sandra Bucci
Email: sandra.bucci@manchester.ac.uk Telephone: 0161 3060422

**Formal complaints**

If you wish to make a formal complaint or if you are not satisfied with the response that you have received from the researchers in the first instance then please contact: the Research Governance and Integrity Manager, Research Office, Christie Building, University of Manchester, Oxford Road, Manchester M13 9PL by emailing research.complaints@manchester.ac.uk or by telephoning 0161 2752674 or 0161 2752046

**Who is organising and funding the research?**

This study is part of a PhD Psychology project, undertaken in the Division of Psychology and Mental Health and the Health eResearch Centre (HeRC) at the University of Manchester, and funded by the Medical Research Council Health eResearch Centre.

**What should I do now?**

If you would like any further information, have any additional questions about the study or wish to participate, please contact the researcher:

**Natalie Berry**

Email: Natalie.berry@manchester.ac.uk

Telephone: 0161 3060428

Address: Room S42, 2nd Floor, Zochonis Building

University of Manchester

Brunswick Street

Manchester

M13 9PL

This study has received ethical approval from North West - Greater Manchester East Research Ethics Committee (REF: 16/NW/0821)
Appendix 22: Participant Information Sheet for Non-clinical Group

Study 5 - Non-students

Participant Information Sheet

Study Title: Social media use in severe mental health problems.

You are invited to take part in a research study, which forms part of a PhD Psychology project at the University of Manchester. This study will investigate the relationship between social media use, personality and different experiences associated with mental health problems. Before you decide whether or not you would like to take part, it is important for you to read the following information carefully. If you would like to go through the information in more detail, then we can either meet in person or discuss the study over the phone. Please contact the researcher using the contact details at the bottom of this information sheet if you have any questions or would like to participate.

Who will conduct the research?

The study is being conducted by Natalie Berry, a PhD researcher based in the Division of Psychology and Mental Health at the University of Manchester. Dr Sandra Bucci (Division of Psychology and Mental Health, University of Manchester), Professor Fiona Lobban (Spectrum Centre for Mental Health Research, Lancaster University) and Professor Richard Emsley (Centre for Biostatistics, University of Manchester) are supervising this project.

Purpose of the study

The purpose of the study is to explore the use of social media websites (e.g. Facebook, Twitter) by people with and without severe mental health problems and to investigate whether personality, thoughts and feelings are associated with this use.

Who will be taking part

We are hoping to recruit 80 people to take part in this study. 40 of the participants will have a diagnosis of bipolar disorder or psychosis and the other 40 will have no experience of mental health problems. All participants must be over the age of 18 to take part and access social media websites at least three times a week.

Why have I been asked to take part?

We are inviting you to take part because you have expressed an interest in taking part and do not experience mental health problems.
Do I have to take part?

It is entirely up to you whether you decide to take part or not. If you would like to take part, you will be asked to sign a consent form and will be able to withdraw from the study at any time without giving a reason.

What will taking part involve?

If you agree to take part in the study, you will be asked to meet with the researcher at a time and place that is convenient for you. At this meeting you will be asked to complete several questionnaires about your social media use, personality, mood, self-esteem and thoughts you have about other people. This meeting will last for approximately 40 minutes. You will then be asked to complete short assessments 6 times a day for a period of 6 days on your own smartphone or one that we will let you borrow for the study. Links to the assessments will be sent via text message and you will be asked to complete the assessments on the mobile phone internet browser. These short assessments will take around 5 minutes to complete and will ask about your social media use and how you are currently feeling. The researcher will also telephone you on Day 1 and Day 3 of assessments to check how you’re feeling about the study, make sure that the mobile phone text alerts and assessments are working correctly and answer any questions or concerns. After the assessments have been completed, the researcher will meet with you again and a time or place convenient for you to complete a final short questionnaire about how you have found taking part in the study. You will receive £20 in ‘Love to Shop’ vouchers as a thank you for your time. If you decide to use your own phone for the study you will also receive a maximum of £3 for data costs.

Benefits and Risks

By taking part, you will help us to explore the potential benefits and drawbacks of social media use, which will help inform future interventions delivered on social media for people who experience mental health problems. Some people also find that answering questions about their thoughts and feelings over time can be helpful for them. We do not expect any risks for participants in the study, but it is possible that answering questions about how you are feeling may cause some distress. If you do have concerns and wish to speak with someone, you can contact us during office hours and we can signpost you to support that is available. The researcher will also telephone you on Day 1 and Day 3 of the assessments to make sure that you are comfortable with the assessments.

Confidentiality

If you agree to take part in the study, all the information you provide will remain confidential. Your name will not appear on any of the forms collecting the data and you will instead be given a participant number. Answers on the questionnaires and assessments will be transferred to an encrypted, password protected file on a secure University of Manchester
computer. Consent forms will be kept in a locked filing cabinet at the University and stored separately from other data. Study data will be kept for a period of 10 years and held securely at the University of Manchester. Only members of the research team will have access to this data. After a period of 10 years, all data will be destroyed. Contact details will be destroyed once the study has been completed, unless you wish to be contacted about future research opportunities.

The only other time that someone else might need to look at the study information is during an audit or monitoring visit. This is when people from the University of Manchester, NHS Trust or regulatory authorities review all the data to make sure the study is being carried out as planned. If you agree, they will include your identifiable data when doing the checks (they will see it belongs to you). Anyone that does look at the data will also have the duty to keep it confidential.

On the consent form you will be given the option to consent to being contacted about future research by members of the research team. This is entirely optional and whether or not you consent to being contacted in the future about research studies will not affect your participation in this research.

What will happen to the results from the study?

It is hoped that the results from this study will help us understand how people with and without experience of severe mental health problems use social media and explore whether support could be offered using social media in future programmes. We also aim to publish results in a scientific journal and will provide you with information about the results.

We may also wish to use the data you have provided for future research. In this instance, only anonymised data will be made available for this purpose and to other researchers.

What do I do if something goes wrong?

If you have any concerns about this study, please contact the researcher using the contact details listed at the end of this information sheet.

What if I want to make a complaint?

Minor complaints

If you have a minor complaint, then you need to contact the researchers in the first instance using the details below:

Researcher: Natalie Berry

Email: natalie.berry@manchester.ac.uk Telephone: 0161 3060428 Or

PhD Supervisor: Dr Sandra Bucci
Formal complaints

If you wish to make a formal complaint or if you are not satisfied with the response that you have received from the researchers in the first instance then please contact: the Research Governance and Integrity Manager, Research Office, Christie Building, University of Manchester, Oxford Road, Manchester M13 9PL by emailing research.complaints@manchester.ac.uk or by telephoning 0161 2752674 or 0161 2752046

Who is organising and funding the research?

This study is part of a PhD Psychology project, undertaken in the Division of Psychology and Mental Health and the Health eResearch Centre (HeRC) at the University of Manchester, and funded by the Medical Research Council Health eResearch Centre.

What should I do now?

If you would like any further information, have any additional questions about the study or wish to participate, please contact the researcher:

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Manchester

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This study has received ethical approval from North West - Greater Manchester East Research Ethics Committee (REF: 16/NW/0821)
Appendix 23: Questionnaire Pack - Study 5

Study Title: Social media use in severe mental health problems.

Chief Investigator: Natalie Berry

Participant ID: …… Date: ……..

Questionnaire Pack
Version 3
04/10/16

Please complete the following set of questionnaires. If you have any queries or would like any help completing the questions then please let the researcher know.

If there are any questions that you do not feel comfortable answering, please leave the question blank.
Rosenberg Self-Esteem Scale

Instructions: Below is a list of statements dealing with your general feelings about yourself. If you strongly agree, circle **SA**. If you agree with the statement, circle **A**. If you disagree, circle **D**. If you strongly disagree, circle **SD**.

<table>
<thead>
<tr>
<th></th>
<th>Statement</th>
<th>SA</th>
<th>A</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>On the whole I am satisfied with myself</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>At times, I think that I am no good at all.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>I feel that I have a number of good qualities.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>I am able to do things as well as most other people.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>I feel I do not have much to be proud of.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>I certainly feel useless at times.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>I feel that I’m a person of worth, at least on an equal plane with others.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>I wish I could have more respect for myself.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>All in all, I am inclined to feel that I am a failure.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>I take a positive attitude toward myself.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Social Comparison Scale

Instructions: Please circle a number at a point which best describes the way in which you generally see yourself in comparison to others.

<table>
<thead>
<tr>
<th>Inferior</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>Superior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incompetent</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>Competent</td>
</tr>
<tr>
<td>Unlikeable</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>More likeable</td>
</tr>
<tr>
<td>Left out</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>Accepted</td>
</tr>
<tr>
<td>Different</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>Same</td>
</tr>
<tr>
<td>Untalented</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>More talented</td>
</tr>
<tr>
<td>Weaker</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>Stronger</td>
</tr>
<tr>
<td>Unconfident</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>More confident</td>
</tr>
<tr>
<td>Undesirable</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>More desirable</td>
</tr>
<tr>
<td>Unattractive</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>More attractive</td>
</tr>
<tr>
<td>An outsider</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>An insider</td>
</tr>
</tbody>
</table>

The Positive and Negative Affect Schedule (PANAS)

**Instructions:** This scale consists of a number of words that describe different feelings and emotions. Read each item and then list the number from the scale below next to each word. Indicate to what extent you feel this way **in general**.

<table>
<thead>
<tr>
<th></th>
<th>1 Very slightly or not at all</th>
<th>2 A little</th>
<th>3 Moderately</th>
<th>4 Quite a bit</th>
<th>5 Extremely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interested</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distressed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excited</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upset</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strong</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guilty</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scared</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hostile</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enthusiastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proud</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Irritable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alert</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ashamed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inspired</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nervous</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Determined</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attentive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jittery</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Afraid</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Paranoia Scale (PS)

Instructions: Please read each of the following statements carefully and indicate the degree to which each statement is a true characteristic of you (1 = not at all applicable; 2 = slightly applicable; 3 = moderately applicable; 4 = very applicable; 5 = extremely applicable).

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all applicable</td>
<td>Slightly applicable</td>
<td>Moderately applicable</td>
<td>Very applicable</td>
<td>Extremely applicable</td>
</tr>
</tbody>
</table>

__________ Someone has it in for me
__________ I sometimes feel as if I’m being followed
__________ I believe that I have often been punished without cause
__________ Some people have tried to steal my ideas and take credit for them
__________ My parents and family find more fault with me than they should
__________ No one really cares much what happens to you
__________ I am sure I get a raw deal from life
__________ Most people will use somewhat unfair means to gain profit or an advantage, rather than lose it
__________ I often wonder what hidden reason another person may have for doing something nice for you
__________ It is safer to trust no one
__________ I have often felt that strangers were looking at me critically
__________ Most people make friends because they are likely to be useful to them
__________ Someone has been trying to influence my mind
__________ I am sure I have been talked about behind my back
__________ Most people inwardly dislike putting themselves out to help other people
__________ I tend to be on my guard with people who are somewhat more friendly than I expected
__________ People have said insulting or unkind things about me
__________ People often disappoint me
__________ I am bothered by people outside, in cars, in stores etc. watching me
__________ I have often found people jealous of my good ideas just because they had not thought of them first

Facebook Use

**Instructions:** Below is a list of statements about your use of the social media website Facebook. If you strongly agree with the statement, circle 5. If you agree, circle 4. If you neither agree or disagree, circle 3. If you disagree, circle 2. If you strongly disagree, circle 1.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I feel disconnected from friends when I have not logged into Facebook</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I would like it if everyone used Facebook to communicate</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I would be disappointed if I could not use Facebook at all</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I get upset when I can’t login to Facebook</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I prefer to communicate with others mainly through Facebook</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Facebook plays an important role in my social relationships</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I enjoy checking my Facebook account</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I don’t like to use Facebook</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Using Facebook is part of my everyday routine</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I respond to content that others share using Facebook</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>


---

**Instructions:** Below is a list of questions about your Facebook privacy settings. Please circle to indicate which response you would choose to answer each question.

<table>
<thead>
<tr>
<th>Question</th>
<th>Only me</th>
<th>Only me and my friends</th>
<th>Public (anyone)</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who can see your Facebook profile?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Who can see your Facebook posts?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Instructions: Below are questions about your Facebook friends and the amount of time you spend on Facebook. Please circle to indicate which response you would choose to answer each question.

<table>
<thead>
<tr>
<th>Approximately how many Facebook friends do you have?</th>
<th>0</th>
<th>1-50</th>
<th>51-100</th>
<th>101-175</th>
<th>176-250</th>
<th>251-375</th>
<th>376-500</th>
<th>501-750</th>
<th>751 or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approximately how many of your Facebook friends do you know in person?</td>
<td>0</td>
<td>1-50</td>
<td>51-100</td>
<td>101-175</td>
<td>176-250</td>
<td>251-375</td>
<td>376-500</td>
<td>501-750</td>
<td>751 or more</td>
</tr>
</tbody>
</table>

Taken from: Rosen, L. D., Whaling, K., Carrier, L. M., Cheever, N. A., & Rokkum, J. (2013). The media and technology usage and attitudes scale: an empirical investigation,
**Instructions:** Below are questions about how often you do use different features on Facebook. Please circle to indicate which response you would choose to answer each question.

<table>
<thead>
<tr>
<th>Activity</th>
<th>More than once a day</th>
<th>Once a day</th>
<th>2 or more times a week</th>
<th>Once a week</th>
<th>Twice a month</th>
<th>Less than once a month</th>
<th>A few times a year</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check my Facebook page</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post status updates</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post on other peoples’ walls</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post pictures of myself or others</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post videos of myself or others</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post links to other websites (e.g. news articles)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comment on other peoples’ statuses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communicate with Facebook friends on Facebook messenger</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

340
<table>
<thead>
<tr>
<th>Activity</th>
<th>More than once a day</th>
<th>Once a day</th>
<th>2 or more times a week</th>
<th>Once a week</th>
<th>Twice a month</th>
<th>Less than once a month</th>
<th>A few times a year</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>Look at my newsfeed for other peoples' statuses</td>
<td>More than once a day</td>
<td>Once a day</td>
<td>2 or more times a week</td>
<td>Once a week</td>
<td>Twice a month</td>
<td>Less than once a month</td>
<td>A few times a year</td>
<td>Never</td>
</tr>
<tr>
<td>Go on Facebook friends' profiles</td>
<td>More than once a day</td>
<td>Once a day</td>
<td>2 or more times a week</td>
<td>Once a week</td>
<td>Twice a month</td>
<td>Less than once a month</td>
<td>A few times a year</td>
<td>Never</td>
</tr>
<tr>
<td>Go on Facebook profiles of people I don't personally know</td>
<td>More than once a day</td>
<td>Once a day</td>
<td>2 or more times a week</td>
<td>Once a week</td>
<td>Twice a month</td>
<td>Less than once a month</td>
<td>A few times a year</td>
<td>Never</td>
</tr>
<tr>
<td>Post about my physical health on Facebook</td>
<td>More than once a day</td>
<td>Once a day</td>
<td>2 or more times a week</td>
<td>Once a week</td>
<td>Twice a month</td>
<td>Less than once a month</td>
<td>A few times a year</td>
<td>Never</td>
</tr>
<tr>
<td>Post about my mental health on Facebook</td>
<td>More than once a day</td>
<td>Once a day</td>
<td>2 or more times a week</td>
<td>Once a week</td>
<td>Twice a month</td>
<td>Less than once a month</td>
<td>A few times a year</td>
<td>Never</td>
</tr>
<tr>
<td>Post about how I’m feeling on Facebook</td>
<td>More than once a day</td>
<td>Once a day</td>
<td>2 or more times a week</td>
<td>Once a week</td>
<td>Twice a month</td>
<td>Less than once a month</td>
<td>A few times a year</td>
<td>Never</td>
</tr>
<tr>
<td>Check my Facebook page</td>
<td>More than once a day</td>
<td>Once a day</td>
<td>2 or more times a week</td>
<td>Once a week</td>
<td>Twice a month</td>
<td>Less than once a month</td>
<td>A few times a year</td>
<td>Never</td>
</tr>
<tr>
<td>Post status updates</td>
<td>More than once a day</td>
<td>Once a day</td>
<td>2 or more times a week</td>
<td>Once a week</td>
<td>Twice a month</td>
<td>Less than once a month</td>
<td>A few times a year</td>
<td>Never</td>
</tr>
<tr>
<td>Post on other peoples' walls</td>
<td>More than once a day</td>
<td>Once a day</td>
<td>2 or more times a week</td>
<td>Once a week</td>
<td>Twice a month</td>
<td>Less than once a month</td>
<td>A few times a year</td>
<td>Never</td>
</tr>
<tr>
<td>Activity</td>
<td>More than once a day</td>
<td>Once a day</td>
<td>2 or more times a week</td>
<td>Once a week</td>
<td>Twice a month</td>
<td>Less than once a month</td>
<td>A few times a year</td>
<td>Never</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>----------------------</td>
<td>------------</td>
<td>------------------------</td>
<td>------------</td>
<td>---------------</td>
<td>------------------------</td>
<td>--------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Post pictures of myself or others</td>
<td>More than once a day</td>
<td>Once a day</td>
<td>2 or more times a week</td>
<td>Once a week</td>
<td>Twice a month</td>
<td>Less than once a month</td>
<td>A few times a year</td>
<td>Never</td>
</tr>
<tr>
<td>Post videos of myself or others</td>
<td>More than once a day</td>
<td>Once a day</td>
<td>2 or more times a week</td>
<td>Once a week</td>
<td>Twice a month</td>
<td>Less than once a month</td>
<td>A few times a year</td>
<td>Never</td>
</tr>
<tr>
<td>Post links to other websites (e.g. news articles)</td>
<td>More than once a day</td>
<td>Once a day</td>
<td>2 or more times a week</td>
<td>Once a week</td>
<td>Twice a month</td>
<td>Less than once a month</td>
<td>A few times a year</td>
<td>Never</td>
</tr>
<tr>
<td>Comment on other peoples' statuses</td>
<td>More than once a day</td>
<td>Once a day</td>
<td>2 or more times a week</td>
<td>Once a week</td>
<td>Twice a month</td>
<td>Less than once a month</td>
<td>A few times a year</td>
<td>Never</td>
</tr>
<tr>
<td>Communicate with Facebook friends on Facebook messenger</td>
<td>More than once a day</td>
<td>Once a day</td>
<td>2 or more times a week</td>
<td>Once a week</td>
<td>Twice a month</td>
<td>Less than once a month</td>
<td>A few times a year</td>
<td>Never</td>
</tr>
<tr>
<td>Look at my newsfeed for other peoples' statuses</td>
<td>More than once a day</td>
<td>Once a day</td>
<td>2 or more times a week</td>
<td>Once a week</td>
<td>Twice a month</td>
<td>Less than once a month</td>
<td>A few times a year</td>
<td>Never</td>
</tr>
<tr>
<td>Go on Facebook friends' profiles</td>
<td>More than once a day</td>
<td>Once a day</td>
<td>2 or more times a week</td>
<td>Once a week</td>
<td>Twice a month</td>
<td>Less than once a month</td>
<td>A few times a year</td>
<td>Never</td>
</tr>
<tr>
<td>Go on Facebook profiles of people I don't personally know</td>
<td>More than once a day</td>
<td>Once a day</td>
<td>2 or more times a week</td>
<td>Once a week</td>
<td>Twice a month</td>
<td>Less than once a month</td>
<td>A few times a year</td>
<td>Never</td>
</tr>
<tr>
<td>Post about my</td>
<td>More than once a day</td>
<td>Once a day</td>
<td>2 or more times a week</td>
<td>Once a week</td>
<td>Twice a month</td>
<td>Less than once a month</td>
<td>A few times a year</td>
<td>Never</td>
</tr>
<tr>
<td>Physical Health on Facebook</td>
<td>More than once a day</td>
<td>Once a day</td>
<td>2 or more times a week</td>
<td>Once a week</td>
<td>Twice a month</td>
<td>Less than once a month</td>
<td>A few times a year</td>
<td>Never</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>----------------------</td>
<td>------------</td>
<td>------------------------</td>
<td>------------</td>
<td>--------------</td>
<td>----------------------</td>
<td>------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Post about my mental health on Facebook</td>
<td>More than once a day</td>
<td>Once a day</td>
<td>2 or more times a week</td>
<td>Once a week</td>
<td>Twice a month</td>
<td>Less than once a month</td>
<td>A few times a year</td>
<td>Never</td>
</tr>
<tr>
<td>Post about how I'm feeling on Facebook</td>
<td>More than once a day</td>
<td>Once a day</td>
<td>2 or more times a week</td>
<td>Once a week</td>
<td>Twice a month</td>
<td>Less than once a month</td>
<td>A few times a year</td>
<td>Never</td>
</tr>
</tbody>
</table>


**Twitter Use**

**Instructions:** Below is a list of statements about your use of the social media website Twitter. If you strongly agree with the statement, circle 5. If you agree, circle 4. If you neither agree or disagree, circle 3. If you disagree, circle 2. If you strongly disagree, circle 1.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I feel disconnected from friends when I have not logged into Twitter</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I would like it if everyone used Twitter to communicate</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I would be disappointed if I could not use Twitter at all</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I get upset when I can’t login to Twitter</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I prefer to communicate with others mainly through Twitter</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Twitter plays an important role in my social relationships</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I enjoy checking my Twitter account</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I don’t like to use Twitter</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Using Twitter is part of my everyday routine</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I respond to content that others share using Twitter</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>


**Instructions:** Below is a list of questions about your Twitter privacy settings. Please circle to indicate which response you would choose to answer each question.

<table>
<thead>
<tr>
<th>Question</th>
<th>Only me</th>
<th>Only me and my followers</th>
<th>Public (anyone)</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who can see your Twitter profile?</td>
<td>Only me</td>
<td>Only me and my followers</td>
<td>Public (anyone)</td>
<td>Don’t know</td>
</tr>
<tr>
<td>Who can see your Twitter posts?</td>
<td>Only me</td>
<td>Only me and my followers</td>
<td>Public (anyone)</td>
<td>Don’t know</td>
</tr>
<tr>
<td>Question</td>
<td>Yes</td>
<td>No</td>
<td>Don’t know</td>
<td></td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>-----</td>
<td>-----</td>
<td>------------</td>
<td></td>
</tr>
<tr>
<td>Do you use a blocked list to prevent certain people from contacting you on Twitter?</td>
<td>Yes</td>
<td>No</td>
<td>Don’t know</td>
<td></td>
</tr>
<tr>
<td>Do you provide your email address on your Twitter profile?</td>
<td>Yes</td>
<td>No</td>
<td>Don’t know</td>
<td></td>
</tr>
<tr>
<td>Do you provide your phone number on your Twitter profile?</td>
<td>Yes</td>
<td>No</td>
<td>Don’t know</td>
<td></td>
</tr>
<tr>
<td>Do you ever provide your location on your Twitter profile?</td>
<td>Yes</td>
<td>No</td>
<td>Don’t know</td>
<td></td>
</tr>
</tbody>
</table>


**Instructions:** Below are questions about your Twitter followers and the amount of time you spend on Twitter. Please circle to indicate which response you would choose to answer each question.

<table>
<thead>
<tr>
<th>Question</th>
<th>0</th>
<th>1-50</th>
<th>51-100</th>
<th>101-175</th>
<th>176-250</th>
<th>251-375</th>
<th>376-500</th>
<th>501-750</th>
<th>751 or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approximately how many Twitter followers do you have?</td>
<td>0</td>
<td>1-50</td>
<td>51-100</td>
<td>101-175</td>
<td>176-250</td>
<td>251-375</td>
<td>376-500</td>
<td>501-750</td>
<td>751 or more</td>
</tr>
<tr>
<td>Approximately how many people do you follow on Twitter</td>
<td>0</td>
<td>1-50</td>
<td>51-100</td>
<td>101-175</td>
<td>176-250</td>
<td>251-375</td>
<td>376-500</td>
<td>501-750</td>
<td>751 or more</td>
</tr>
<tr>
<td>Approximately how many of the people you follow on Twitter do you know in person?</td>
<td>0</td>
<td>1-50</td>
<td>51-100</td>
<td>101-175</td>
<td>176-250</td>
<td>251-375</td>
<td>376-500</td>
<td>501-750</td>
<td>751 or more</td>
</tr>
</tbody>
</table>

**Instructions:** Below are questions about how often you do use different features on Twitter. Please circle to indicate which response you would choose to answer each question.

<table>
<thead>
<tr>
<th>How often do you:</th>
<th>More than once a day</th>
<th>Once a day</th>
<th>2 or more times a week</th>
<th>Once a week</th>
<th>Twice a month</th>
<th>Less than once a month</th>
<th>A few times a year</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check my Twitter profile</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post tweets</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post re-tweets (share other peoples’ tweets)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Never</td>
</tr>
<tr>
<td>Post pictures of myself or others</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Never</td>
</tr>
<tr>
<td>Post videos of myself or others</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Never</td>
</tr>
<tr>
<td>Post links to other websites (e.g. news articles)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Never</td>
</tr>
<tr>
<td>Comment on other peoples’ tweets</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Never</td>
</tr>
<tr>
<td>activity</td>
<td>More than once a day</td>
<td>Once a day</td>
<td>2 or more times a week</td>
<td>Once a week</td>
<td>Twice a month</td>
<td>Less than once a month</td>
<td>A few times a year</td>
<td>Never</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>----------------------</td>
<td>------------</td>
<td>------------------------</td>
<td>------------</td>
<td>---------------</td>
<td>------------------------</td>
<td>--------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Communicate with Twitter users’ via private message</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Look at my Twitter feed for other peoples’ tweets</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Go on Twitter profiles of people I personally know</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Go on Twitter profiles of people I don’t personally know</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post about my physical health on Twitter</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post about my mental health on Twitter</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post about how I’m feeling on Twitter</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Appendix 24: Demographics Questionnaire - Study 5

Study Title: Social media use in severe mental health problems

Chief Investigator: Natalie Berry

Demographics Questionnaire

Version 3: 04/10/16

Participant ID: …… Date: ……..

Please ask the researcher if you have any queries about the questionnaire or if you would like any help completing the questionnaire.

If there are any questions that you do not feel comfortable answering, please place a cross in the answer section.

1. How old are you? ……

2. What is your ethnicity? ………………………..

3. What is your gender? ……………………..

4. What is your employment status? Please tick to indicate:

☐ Working full-time
☐ Working part-time
☐ Self-employed
☐ Student
☐ Voluntary position
☐ Currently unemployed
5. What is the highest level of education you have attended? Please tick to indicate:

- High school/secondary school
- College/Sixth form
- Some University (degree not or not yet awarded)
- University (degree awarded)
- Postgraduate course

6. What are your living arrangements? Please tick to indicate:

- Private rental
- Local housing authority
- Home owner
- Living with family
- Other – please state: ..................................................

7. What is your relationship status? Please tick to indicate:

- Single
- Married/civil partnership
- Cohabiting
- Divorced
- Widowed
- Other – please state: ..................................................

8. What is your diagnosis?

........................................................................................
9. What social media websites do you use? Please tick to indicate:

- [ ] Facebook
- [ ] Twitter
- [ ] Myspace
- [ ] Tumblr
- [ ] Flixr
- [ ] Google+
- [ ] PatientsLikeMe
- [ ] Instagram
- [ ] Other – please state: ........................................

10. What social media smartphone applications (“apps”) do you use? Please tick to indicate:

- [ ] Facebook
- [ ] Twitter
- [ ] Myspace
- [ ] Tumblr
- [ ] Flixr
- [ ] Google+
- [ ] PatientsLikeMe
- [ ] Instagram
- [ ] Snap Chat
- [ ] Whatsapp
- [ ] Other – please state: ........................................

11. What do you use to access social media? Please tick all that apply:

- [ ] Laptop
- [ ] Desktop computer
- [ ] Tablet (e.g. iPad)
- [ ] Smartphone application
- [ ] Smartphone internet browser
Appendix 25: ESM Assessments - Study 5

ESM Assessments
Version 2: 01/09/16

1. Have you been on social media since the last text alert?
   - Yes
   - No

   If yes branch to:

2. Which social media site did you use? (please select all that apply)
   - Facebook
   - Twitter
   - Instagram
   - Other, please specify ____________

3. What did you do when you last used social media? (please select all that apply)
   - Posted a status/tweet about my daily goings on
   - Posted a status/tweet about how I was feeling
   - Posted a “selfie”
   - Posted a status/tweet about my mental health
   - Used social media to vent
   - Expressed my opinion on social media
   - Commented on another person’s status/tweet/picture
   - Clicked the “like” button on another person’s status/tweet/picture
   - Shared another person’s status/tweet
   - Looked through my Facebook/Twitter/Instagram newsfeed
   - Looked at a Facebook/Twitter/Instagram's friend’s profile
   - Looked at the Facebook/Twitter/Instagram profile of someone who is not a friend/follower on social media.
4. (if participant has indicated social media use – if not skip to question 5).

Please indicate how you felt about yourself in comparison to others when you last used social media:

|   | Superior         |   | Competent       |   | Likeable        |   | Accepted       |   | Similar        |   | More talented  |   | Stronger       |   | Confident      |   | More desirable |   | More attractive|   | An insider     |
|---|------------------|---|-----------------|---|-----------------|---|----------------|---|----------------|---|----------------|---|----------------|---|----------------|---|----------------|---|----------------|
|4.a| Inferior         | 1 | 2               | 3 | 4               | 5 | 6               | 7 | 8               | 9 | 10             |     |                 |    |                 |    |                 |    |                 |    |                 |
|4.b| Incompetent      | 1 | 2               | 3 | 4               | 5 | 6               | 7 | 8               | 9 | 10             |     |                 |    |                 |    |                 |    |                 |    |                 |
|4.c| Unlikeable       | 1 | 2               | 3 | 4               | 5 | 6               | 7 | 8               | 9 | 10             |     |                 |    |                 |    |                 |    |                 |    |                 |
|4.d| Left out         | 1 | 2               | 3 | 4               | 5 | 6               | 7 | 8               | 9 | 10             |     |                 |    |                 |    |                 |    |                 |    |                 |
|4.e| Different        | 1 | 2               | 3 | 4               | 5 | 6               | 7 | 8               | 9 | 10             |     |                 |    |                 |    |                 |    |                 |    |                 |
|4.f| Untalented       | 1 | 2               | 3 | 4               | 5 | 6               | 7 | 8               | 9 | 10             |     |                 |    |                 |    |                 |    |                 |    |                 |
|4.g| Weaker           | 1 | 2               | 3 | 4               | 5 | 6               | 7 | 8               | 9 | 10             |     |                 |    |                 |    |                 |    |                 |    |                 |
|4.h| Unconfident      | 1 | 2               | 3 | 4               | 5 | 6               | 7 | 8               | 9 | 10             |     |                 |    |                 |    |                 |    |                 |    |                 |
|4.i| Undesirable      | 1 | 2               | 3 | 4               | 5 | 6               | 7 | 8               | 9 | 10             |     |                 |    |                 |    |                 |    |                 |    |                 |
|4.j| Unattractive     | 1 | 2               | 3 | 4               | 5 | 6               | 7 | 8               | 9 | 10             |     |                 |    |                 |    |                 |    |                 |    |                 |
|4.k| An outsider      | 1 | 2               | 3 | 4               | 5 | 6               | 7 | 8               | 9 | 10             |     |                 |    |                 |    |                 |    |                 |    |                 |

5.a. Since the last text alert, have you spoken to another person (e.g. face-to-face, online, telephone, text message)?

☐ Yes

☐ No
If yes branch to:

5.b. When you spoke to another person since the last text alert, was this face-to-face, online, text message, via telephone or on a messaging app (e.g. Whatsapp)? *(please select all that apply)*

- [ ] Face-to-face
- [ ] Online
- [ ] Text
- [ ] Telephone
- [ ] Messaging app (e.g. Whatsapp)

6. Please indicate to what extent you **currently** feel *(1 = not at all; 7 = very)*:

   6.a. Down

   6.b. Lonely

   6.c. Cheerful

   6.d. Anxious

   6.e. Satisfied

   6.f. Relaxed

   6.g. Guilty

   6.h. Insecure

   6.i. Happy

7. Please indicate to what extent you agree with the following statements about yourself **at the moment** *(1 = not at all; 7 = extremely)*:

   7.a. I am a good person

   7.b. I am a success
7.c. I am proud of myself

7.d. I like myself

8. Please indicate to what extent you agree with the following statements about others at the moment (1 = not at all; 7 = extremely):

8.a. I feel that others dislike me

8.b. I feel that others might hurt me

8.c. I feel suspicious

8.d. I feel safe
Appendix 26: Consent to contact form for Study 5

Study Title: Social media use in severe mental health problems

Chief Investigator: Natalie Berry

If you are interested in taking part in this study and would like the researchers to contact you please give your details below.

- Data will be held securely by the research team on behalf of the University of Manchester according to the University’s data protection and information security policies.
- Access to the data will be restricted to the research team for the sole purpose of contacting you about this study.
- Your data will not be shared with any third party without your written permission.
- The details collected will only be stored for as long as required to find out if you wish to take part in the study. Once no longer needed, that data will be destroyed securely.

Please complete the form below if you wish to be contacted by the researcher about the study. Alternatively, you may wish to contact the researcher directly using the following contact details:

Natalie Berry

Telephone: 0161 3060428

Email: natalie.berry@manchester.ac.uk

I am happy to provide/my health care professional to provide (delete as appropriate) my personal details so that I can be contacted about this study.

<table>
<thead>
<tr>
<th>Name</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Signature</td>
<td></td>
</tr>
<tr>
<td>Today’s date</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 27: Consent Form for clinical participants in Study 5

Consent Form – Version 3 (04/10/16)

Participant Identification Number:

Project Title: Social media use in severe mental health problems.

Chief Investigator: Natalie Berry

Please write your initials in each box if you agree with the following statements:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Initials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I confirm that I have read and understood the participant information sheet dated 04/10/16 (version 3) for the study and that I have been given at least 24 hours to decide whether to take part.</td>
<td></td>
</tr>
<tr>
<td>2. I consent to the researcher obtaining information relevant to the study (e.g. diagnosis) from my care team and understand that this information will remain confidential.</td>
<td></td>
</tr>
<tr>
<td>3. I confirm that I have been given the opportunity to ask questions I had about the study and have received satisfactory answers.</td>
<td></td>
</tr>
<tr>
<td>4. I understand that my participation is voluntary and I may withdraw from the study at any time, without my medical care or legal rights being affected, and without giving a reason.</td>
<td></td>
</tr>
<tr>
<td>5. I understand that the data collected during the study may be looked at by individuals from The University of Manchester, from regulatory authorities, or from the NHS Trust. I give my permission for these individuals to have access to my data.</td>
<td></td>
</tr>
<tr>
<td>6. I understand that anything I say will remain confidential, unless I indicate that myself and/or others are at risk. The researcher has explained the limits of confidentiality.</td>
<td></td>
</tr>
<tr>
<td>7. I agree to take part in this study.</td>
<td></td>
</tr>
<tr>
<td>8. I agree to my data being used in further related studies.</td>
<td></td>
</tr>
<tr>
<td>9. I give my consent to be contacted by members of the research team for possible participation in future studies (optional).</td>
<td></td>
</tr>
<tr>
<td>10. I would like to receive a summary of the results from the study and a copy of any papers that are produced based on the findings from the study (optional).</td>
<td></td>
</tr>
</tbody>
</table>

……………………………….....         ……………………        ……………………………
Name of participant                        Date                                    Signature
……………………………….....         …………………...        …………………………....
Name of researcher                          Date                                   Signature

When completed: 1 copy for participant; 1 original for researcher site file
Appendix 28: Consent Form for non-clinical participants in Study 5

Consent Form – Version 3 (04/10/2016)

Participant Identification Number:

**Project Title:** Social media use in severe mental health problems.

**Chief Investigator:** Natalie Berry

Please write your initials in each box if you agree with the following statements:

<table>
<thead>
<tr>
<th>Statement                                                                uditinal</th>
<th>Initials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I confirm that I have read and understood the participant information sheet dated 04/10/16 (version 3) for the study and that I have been given at least 24 hours to decide whether to take part.</td>
<td></td>
</tr>
<tr>
<td>2. I confirm that I have been given the opportunity to ask questions I had about the study and have received satisfactory answers.</td>
<td></td>
</tr>
<tr>
<td>3. I understand that my participation is voluntary and I may withdraw from the study at any time, without my medical care or legal rights being affected, and without giving a reason.</td>
<td></td>
</tr>
<tr>
<td>4. I understand that the data collected during the study may be looked at by individuals from The University of Manchester, from regulatory authorities, or from the NHS Trust. I give my permission for these individuals to have access to my data.</td>
<td></td>
</tr>
<tr>
<td>5. I agree to take part in this study.</td>
<td></td>
</tr>
<tr>
<td>6. I agree to my data being used in further related studies.</td>
<td></td>
</tr>
<tr>
<td>7. I give my consent to be contacted by members of the research team for possible participation in future studies (optional).</td>
<td></td>
</tr>
<tr>
<td>8. I would like to receive a summary of the results from the study and a copy of any papers that are produced based on the findings from the study (optional).</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name of participant</th>
<th>Date</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of researcher</td>
<td>Date</td>
<td>Signature</td>
</tr>
</tbody>
</table>

*When completed: 1 copy for participant; 1 original for researcher site file*
### Appendix 29: Paraphrased versions of tweets that included #WhyWeTweetMH.

<table>
<thead>
<tr>
<th>User</th>
<th>User Location</th>
<th>Experience</th>
<th>Paraphrased Tweets</th>
<th>Re-tweet frequency</th>
<th>‘like’ frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>United Kingdom</td>
<td>Personal experience</td>
<td>I use Twitter as a place to vent, let go of worries &amp; share with similar people. It provides a feeling of a community, which is great #WhyWeTweetMH I like to tweet when I am angry at mental health services, so that even if nothing is resolved, my complaint is still public. #WhyWeTweetMH Mainly I use Twitter as a soapbox so I am able to avoid burdening my friends #WhyWeTweetMH</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>United Kingdom</td>
<td>Personal experience</td>
<td>Twitter helps me realise that I am not alone with my diagnoses #WhyWeTweetMH</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>United Kingdom</td>
<td>Unknown</td>
<td>Nobody's alone!</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>United Kingdom</td>
<td>Personal experience</td>
<td>On Twitter I don't have to conceal or censor how I am feeling. It's okay to not be all right #WhyWeTweetMH</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>United Kingdom</td>
<td>Personal experience</td>
<td>I tweet about mental health problems, information and feelings because no one judges me on Twitter, unlike other social networking sites #WhyWeTweetMH</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>6</td>
<td>Unknown</td>
<td>Personal experience</td>
<td>I tweet because I am able to be anonymous so honest. I am able to communicate with other people with the same experiences,</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Country</td>
<td>Experience</td>
<td>Tweeting Reason</td>
<td>Score</td>
<td>Photo Score</td>
</tr>
<tr>
<td>---</td>
<td>----------</td>
<td>------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>-------</td>
<td>-------------</td>
</tr>
<tr>
<td>7</td>
<td>United Kingdom</td>
<td>Personal experience</td>
<td>I tweet for precisely the same reasons as any other person. I am not defined by my mental health #WhyWeTweetMH</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>
| 8 | United Kingdom | Personal experience | I tweet because, like the majority of people, I enjoy being able to connect and socialise. #WhyWeTweetMH  
I enjoy supporting people and receiving support from them. #WhyWeTweetMH  
I also tweet so that I am able to say to people how adorable their pets are & obtain more pictures of pets to satisfy my obsession with pets! #WhyWeTweetMH | 1     | 1           | 2     | 3           |
| 9 | Unknown   | Personal experience | #WhyWeTweetMH because it is the one space I feel safe to & it is the one space I can speak with people | 2     | 4           |
| 10| United Kingdom | Personal experience | I tweet because I have spent way too long staying quiet about my battles and successes. #WhyWeTweetMH | 1     | 2           |
| 11| United Kingdom | Personal experience | Because on Twitter I do not have to see the "successful" personal narratives of other people. #WhyWeTweetMH | 1     | 1           |
| 12| Canada    | Unknown     | I tweet to terminate stigmatising views. #WhyWeTweetMH | 1     | 1           |
| 13| United Kingdom | Personal experience | I am able to get fast, insightful and appreciated support in a way that’s meaningful for me. I'm especially fond of virtual hugs #WhyWeTweetMH  
My Twitter timeline performs as a sort of mood monitor for myself and those who personally know me #WhyWeTweetMH  
It's a space I can go to when I am unable or reluctant to go | 2     | 4           | 1     | 1           |
<p>| 14 | United Kingdom | Personal experience | To distract myself from my mental health. I enjoy being able to laugh and joke on Twitter - that's the part of me that I like #WhyWeTweetMH | 0 | 0 |
|    |                |                    | #WhyWeTweetMH…I am really chatty, enjoy speaking with people with the same interests. | 0 | 1 |
|    |                |                    | #WhyWeTweetMH When I tweet about mental health it's a release… I also want the world to see how rubbish I feel…but I use Twitter to support me &amp; try &amp; forget | 0 | 1 |
|    |                |                    | #WhyWeTweetMH interrupt my irrational obsessive thoughts - it does work. | 0 | 1 |
| 15 | United Kingdom | Unknown             | The use of social media when experiencing MH problems can help people escape | 0 | 1 |
| 16 | United Kingdom | Personal experience | Facebook is the sparkly sunny version of people, Twitter is the authentic version #WhyWeTweetMH | 1 | 7 |
|    |                |                    | I began tweeting so that I will someday be able to look back at how bad things have been, as blogging was too much for me #WhyWeTweetMH | 0 | 1 |
|    |                |                    | #WhyWeTweetMH - I can see that I can share my reality and | 0 | 0 |</p>
<table>
<thead>
<tr>
<th>#</th>
<th>Location</th>
<th>Experience Type</th>
<th>Response</th>
<th>/Tweet Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>United Kingdom</td>
<td>Unknown</td>
<td>Because why should I not? Because people are able to tweet about whatever so why not something significant? #WhyWeTweetMH</td>
<td>2</td>
</tr>
<tr>
<td>18</td>
<td>Unknown</td>
<td>Personal experience</td>
<td>#WhyWeTweetMH. A space to express, vent, share experiences, learn, to not feel isolated, take part in wider peace</td>
<td>1</td>
</tr>
<tr>
<td>19</td>
<td>Unknown</td>
<td>Personal experience</td>
<td>Need, awareness, understanding, outreach, exasperation, loneliness. #WhyWeTweetMH</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Six months since a couple of decent people committed suicide, in those six months, basically no checkins from people #WhyWeTweetMH</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>#toryconference Mental health only related to criminality? Mental health problems only related to poor education? #WhyWeTweetMH</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>In spite of my erudition, dealing with blackouts, intense GAD, depression &amp; dissociation, on my own, Trying to learn &amp; retain. #WhyWeTweetMH</td>
<td>0</td>
</tr>
<tr>
<td>United States</td>
<td>Personal experience</td>
<td>#WhyWeTweetMH for support, so I do not feel that I am the only person with MH concerns</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>---</td>
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<tr>
<td></td>
<td></td>
<td>#WhyWeTweetMH so others can know that they are not alone. To take away the stigma about getting help for mental health</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>United States</td>
<td>Personal experience</td>
<td>To share, to find out about resources. To be heard. To realise 'you are not alone' #WhyWeTweetMH Number One: To release and let it be. …sometimes venting on Twitter is better than any other space. #lifehack #WhyWeTweetMH</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>Personal experience</td>
<td>#WhyWeTweetMH because it feels safe to reveal honest thoughts and emotions on here. People choose to follow you, not because they are your ‘friend’</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>United States</td>
<td>Personal experience</td>
<td>#WhyWeTweetMH I am able to connect with friends, acquaintances &amp; other people even when I can’t get out of the house.</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Unknown</td>
<td>Personal experience</td>
<td>There’s no one who can appreciate my mental health problems like other Trans people. I am connected to lots of Trans People via Twitter. #WhyWeTweetMH</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>Personal experience</td>
<td>#WhyWeTweetMH - honest self-expression, seek &amp; receive support, begin a dialogue, represent ourselves</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>United States</td>
<td>Personal experience</td>
<td>#WhyWeTweetMH because I’m never dismissed by my Twitter friends as being over sensitive, needing attention or not</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>#</td>
<td>Country</td>
<td>Experience</td>
<td>Statement</td>
<td>Votes</td>
</tr>
<tr>
<td>-----</td>
<td>---------------</td>
<td>---------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>27</td>
<td>United States</td>
<td>Personal experience</td>
<td>Connecting with other people with similar experiences and feelings makes me feel less alone, more certain I am able to survive #WhyWeTweetMH</td>
<td>1</td>
</tr>
<tr>
<td>28</td>
<td>United Kingdom</td>
<td>Personal experience</td>
<td>Because when I am feeling down, my Twitter friends never tell me to get over it. #WhyWeTweetMH</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>So I can see that I am not alone. #WhyWeTweetMH</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>So that, perhaps, my tweets and experiences may help others. Even if it's only one person. #WhyWeTweetMH</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Because Twitter is the only place where I feel I can honestly talk about my mental health without being judged. #WhyWeTweetMH</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Because tweeting about my thoughts and feelings helps me to make sense of them, when nobody in real life will listen. #WhyWeTweetMH</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Because I am with friends even when I am unable to go out. #WhyWeTweetMH</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Because my Twitter friends extend support, guidance and virtual hugs if I need them instead of dismissing me as being moody and over emotional #WhyWeTweetMH</td>
<td>2</td>
</tr>
</tbody>
</table>

363
<table>
<thead>
<tr>
<th>No.</th>
<th>Country</th>
<th>Source of Experience</th>
<th>Personal Experience</th>
<th>Tweeting for the Correction and Open the Barriers</th>
<th>Support to the Affected &amp; Those Affected</th>
<th>Tweeting for the Correction and Open the Barriers</th>
<th>Support to the Affected &amp; Those Affected</th>
<th>The Inspirational and Encouraging Tweets Should Continue Every Day - Not Only for This Weekend</th>
<th>They Have Definitely Provided Me With Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>29</td>
<td>Canada</td>
<td>Personal experience</td>
<td>#WhyWeTweetMH it prevents isolation, it is cheaper than therapy, followers carry out genuine acts of kindness, I can relax my sleepy bones whilst doing it</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>30</td>
<td>Unknown</td>
<td>Personal experience</td>
<td>to vent &amp; dodge the drama of Facebook. #WhyWeTweetMH</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>31</td>
<td>United States</td>
<td>Personal experience</td>
<td>vent &amp; to deal with and make sense of my thoughts. #WhyWeTweetMH</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>32</td>
<td>Canada</td>
<td>Personal experience</td>
<td>Because on here people get me and do not make judgments about me. I do not have to explain things and the support is incredible! #WhyWeTweetMH</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>33</td>
<td>United States</td>
<td>Unknown</td>
<td>I use Twitter to help and educate others about mental health plus more things #WhyWeTweetMH</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>34</td>
<td>United Kingdom</td>
<td>Personal experience</td>
<td>To begin the conversation and open the barriers. To offer support to the affected &amp; the affected. #WhyWeTweetMH</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>35</td>
<td>United Kingdom</td>
<td>Personal experience</td>
<td>To advise, support &amp; ask questions…every so often to say that I feel rubbish today as well! #WhyWeTweetMH</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>United Kingdom</td>
<td>Professional experience</td>
<td>#WhyWeTweetMH - to increase awareness that, like physical health, help should be received for mental health</td>
<td>#WhyWeTweetMH - to attempt to battle stigma; to share information or signpost helpful resources</td>
<td>#WhyWeTweetMH - to give people the chance to take part in research when they might not usually hear about opportunities via more traditional avenues</td>
<td>0</td>
<td>0</td>
<td></td>
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<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>United Kingdom</td>
<td>Personal experience</td>
<td>To raise awareness, fight stigma &amp; show myself and other people that we're not on our own #WhyWeTweetMH</td>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>United Kingdom</td>
<td>Personal experience</td>
<td>I tweet about my work, life &amp; God. To not tweet about mental health would be excluding crucial elements of my relationship with all three! #WhyWeTweetMH</td>
<td></td>
<td></td>
<td>0</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>United States</td>
<td>Unknown</td>
<td>To inform, empower and inspire. We must advocate for and show others how to advocate for themselves. #WhyWeTweetMH</td>
<td></td>
<td></td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>United Kingdom</td>
<td>Unknown</td>
<td>To raise awareness of the knock-on-effect of PTSD for families of the UK forces #WhyWeTweetMH</td>
<td></td>
<td></td>
<td>8</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>United Kingdom</td>
<td>Unknown</td>
<td>We do not only need to challenge stigma we have to eliminate stigma! Stigma is a social construct and so it is in our gift to influence #WhyWeTweetMH</td>
<td>Suicide might be complicated but extending a hand to someone is simple and it may save their life #ConnectingwithTwitter and share hope #WhyWeTweetMH #spsm</td>
<td></td>
<td>12</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>United Kingdom</td>
<td>Unknown</td>
<td></td>
<td></td>
<td></td>
<td>11</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Country</td>
<td>Source</td>
<td>Tweet</td>
<td>Reply Count</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>42</td>
<td>United Kingdom</td>
<td>Personal experience</td>
<td>I tweet about my daily life #WhyWeTweetMH</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>43</td>
<td>United Kingdom</td>
<td>Personal experience</td>
<td>If it helps even one person recognise they aren’t alone in their pain #WhyWeTweetMH</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>44</td>
<td>United Kingdom</td>
<td>Unknown</td>
<td>#WhyWeTweetMH to give hope of recovery, confront stigma, influence improvement in services.</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>United Kingdom</td>
<td>Personal experience</td>
<td>#WhyWeTweetMH support &amp; awareness is vital. I was previously given a diagnosis of M.A.D.D, which is not a constructive term. #Menhavetotalkmore #WhyWeTweetMH there are too many people who view it as a flaw and punish themselves or other people. #PrejudiceIsAnIssue #WhyWeTweetMH Strongly believe in being upfront about it because it's normal and is similar to lots of other illnesses, comes in lots of forms</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>46</td>
<td>Canada</td>
<td>Unknown</td>
<td>#WhyWeTweetMH to obliterate stigma and provide people with hope</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>47</td>
<td>United States</td>
<td>Professional experience</td>
<td>#WhyWeTweetMH share resources with professionals and advocates for suicide prevention, young people and healthcare integration</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>48</td>
<td>United Kingdom</td>
<td>Unknown</td>
<td>#WhyWeTweetMH ignorance &amp; silence lets stigma grow and we can do so much more as a community</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>49</td>
<td>South Africa</td>
<td>Unknown</td>
<td>#WhyWeTweetMH to show people that they're not on their</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Country</td>
<td>Experience</td>
<td>#WhyWeTweetMH</td>
<td>Text</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>---</td>
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<td>----------------------------------------------------------------------</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>Australia</td>
<td>Unknown</td>
<td>#WhyWeTweetMH</td>
<td>vast range of resources &amp; numerous sources. Mental health - we need to talk</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>51</td>
<td>United States</td>
<td>Personal experience</td>
<td>#WhyWeTweetMH</td>
<td>An advocate told me that my voice was required on here to confront the ‘Master Narratives’ about mental health, trauma and suicide</td>
<td>3</td>
<td></td>
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<tr>
<td>52</td>
<td>United States</td>
<td>Personal experience</td>
<td>#WhyWeTweetMH</td>
<td>because you cannot tell just by looking at me and by tweeting about it perhaps another person will know that they are not on their own</td>
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<td>Because I want my school, doctors, community and society to realise that they will not be able to dismiss us</td>
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<td></td>
<td>#WhyWeTweetMH</td>
<td>0</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>53</td>
<td>Unknown</td>
<td>Unknown</td>
<td>#WhyWeTweetMH</td>
<td>To share, learn and flourish for patients, friends and families. Talking destroys stigma</td>
<td>0</td>
<td></td>
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<tr>
<td>54</td>
<td>United States</td>
<td>Personal experience</td>
<td>#WhyWeTweetMH</td>
<td>Because seeing another person is feeling the same helps me.</td>
<td>0</td>
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<tr>
<td>55</td>
<td>Unknown</td>
<td>Professional experience</td>
<td>#WhyWeTweetMH</td>
<td>To connect people and share resources, ideas and research that improve care for people with mental health disorders</td>
<td>0</td>
<td></td>
<td></td>
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<tr>
<td>56</td>
<td>United Kingdom</td>
<td>Unknown</td>
<td>Interesting concept</td>
<td>#WhyWeTweetMH - emerging platform facilitating unique construction of shared understanding in mental health problems</td>
<td>0</td>
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<tr>
<td>57</td>
<td>Unknown</td>
<td>Personal</td>
<td>#WhyWeTweetMH</td>
<td>sharing collective experiences is the</td>
<td>0</td>
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</tbody>
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367
<p>| United States | Personal experience | reason I tweet. Mental illness regrettably thrives on isolation #Community | 0 | 0 |
| United States | Unknown | To share my experiences &amp; help other people | 1 | 2 |
| United States | Unknown | to increase awareness, to inform, to lessen stigma, to show that we care! #WhyWeTweetMH | 0 | 0 |
| United States | Unknown | It's time to tell people that you can have a mental illness and still have a productive life #endstigma #WhyWeTweetMH | 1 | 0 |
| United States | Unknown | Completely! Twitter is also fantastic for creating mental health communities &amp; meeting people! :) #WhyWeTweetMH | 0 | 0 |
| United States | Unknown | I tweet about suicide prevention and mental health because it effects everybody, but it is underfunded in the United States #WhyWeTweetMH | 0 | 0 |
| United States | Personal experience | I tweet &amp; blog about mental health to combat stigma and tell my story to (hopefully) inspire other people #WhyWeTweetMH | 3 | 4 |
| United States | Unknown | #susocialwork Build awareness!! | 0 | 1 |
| Unknown | Personal experience | I tweet humour to show people that there is light at the end of the dark tunnel. And I try my hardest to #EndTheStigma #WhyWeTweetMH | 1 | 1 |
| Unknown | Unknown | Brilliantly summed up! #Recognise #Reeducate #Reduce #Drinkwiseagewell | 0 | 1 |
| United States | Professional experience | #WhyWeTweetMH: Because we want teenagers to understand that there are non-judgmental, supportive services that are available | 0 | 1 |
| United States | Professional experience | Because I work with people with mental health diagnosis &amp; appreciate its impact #SUSocialWork #WhyWeTweetMH | 1 | 1 |
| United States | Unknown | For resources! #SuicidePrevention #HealthcareIntegration | 4 | 3 |
| Unknown | Unknown | To raise awareness, stop stigma, create networks &amp; build empathy &amp; compassion is #WhyWeTweetMH | 0 | 1 |
| Unknown | Unknown | #WhyWeTweetMH So that people know that they are not on their own #ShareInspireConquer | 0 | 0 |
| Unknown | Unknown | #WhyWeTweetMH to help people see that #suicide is not the answer | 0 | 0 |
| Unknown | Personal experience | It is a method to support myself &amp; other people who experience the same, in an attempt to overcome how we are seen #WhyWeTweetMH | 0 | 0 |
| United Kingdom | Personal experience | Because it is too easy to place us in boxes; it is an element of me, but it doesn't define who I am #WhyWeTweetMH | 1 | 0 |
| United Kingdom | Personal experience | #WhyWeTweetMH to remember that I am not the only person who feels this way, to help people think differently about what people with mental health problems look like, to assist others in finding information about mental health concerns, to raise awareness | 0 | 1 |</p>
<table>
<thead>
<tr>
<th></th>
<th>United Kingdom</th>
<th>Personal and professional experience</th>
<th>#WhyWeTweetMH Because I've got 1st &amp; 2nd hand experience &amp; I also work in mental health. More empathy is needed</th>
<th>1</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>76</td>
<td>United Kingdom</td>
<td>Unknown</td>
<td>#WhyWeTweetMH To attempt to fight stigma and demonstrate to others battling mental health concerns that they are not on their own</td>
<td>1</td>
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<tr>
<td>77</td>
<td>United Kingdom</td>
<td>Professional experience</td>
<td>It is my job, but it is additionally a passion. On Twitter I can blur boundaries &amp; keep it real. Twitter also saves lives. #WhyWeTweetMH Isolation and loneliness follow people who are set aside to live in poverty &amp; with no hope. Twitter can connect those who are disconnected #WhyWeTweetMH</td>
<td>2</td>
<td>3</td>
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<tr>
<td>78</td>
<td>Unknown</td>
<td>Unknown</td>
<td>#WhyWeTweetMH Because #MentalHealthWeek2015 should not end after only 1 week. It is permanently time to talk about mental health. Because we have to stop stigma &amp; begin speaking about what's actually important #WhyWeTweetMH Because my children, all children, are entitled to a better health care system for the future. #WhyWeTweetMH</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>79</td>
<td>Unknown</td>
<td>Unknown</td>
<td>#WhyWeTweetMH Because I might not know the storms my friends that have it experience but I am happy to offer my heart</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>80</td>
<td>United</td>
<td>Unknown</td>
<td>#WhyWeTweetMH to eliminate the stigma that still impacts</td>
<td>1</td>
<td>0</td>
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<tr>
<td>Kingdom</td>
<td>people in 2015</td>
<td></td>
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<td>--------------</td>
<td>-------------------------------------------------------------------------------</td>
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</tbody>
</table>
| 81 United Kingdom  | Personal experience  | To share my experiences with others and communicate with an amazing support network which is crucial in my continuing recovery #WhyWeTweetMH | 2 1  
| 82 United Kingdom  | Professional experience  | Discuss your experiences with mental health services to aid improvements in the care provided for others #WhyWeTweetMH | 5 1  
| 83 United Kingdom  | Professional experience  | To lessen stigma, circulate research & speak with people about their experiences of mental health #WhyWeTweetMH | 0 0  
| 84 United Kingdom  | Unknown  | For myself, it is to circulate info. & thoughts with people who care. Why do you tweet? #WhyWeTweetMH | 1 1  
| 85 United Kingdom  | Personal experience  | #WhyWeTweetMH Twitter is a way to escape from the real world. You are able to communicate with lots of people who you don’t know | 0 0  
| 86 United Kingdom  | Unknown  | #WhyWeTweetMH Tweeting about mental health helps people obtain helpful info. that they would not normally hear about | 0 0  
| 87 United Kingdom  | Personal experience  | I have been bereaved by suicide and have tried #WhyWeTweetMH - to campaign, learn, educate, communicate with people with similar experiences and beyond | 0 1  
| 88 United Kingdom  | Personal experience  | The reasons why people tweet about mental health are: 1. to increase awareness, 2. to educate, 3. to share their experiences. #WhyWeTweetMH | 1 0  
| 89 Unknown  | Unknown  | #WhyWeTweetMH #MHawareness | 0 0  

*Kingdom* refers to the country where the person is located. *People in 2015* indicates the number of people who tweeted about mental health in 2015.
<table>
<thead>
<tr>
<th>#</th>
<th>Unknown</th>
<th>Unknown</th>
<th>To being buried, misjudged and shameful disorders out of the darkness. To relieve the struggle of those still to come.</th>
</tr>
</thead>
<tbody>
<tr>
<td>90</td>
<td>Unknown</td>
<td>Unknown</td>
<td>#WhyWeTweetMH</td>
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</table>