Developing a typology of mobile phone technology usage in social care settings: a critical review of the literature

ABSTRACT

The ways in which mobile phones have transformed the boundaries of time and space and the possibilities of communication have profoundly affected our lives. However there is little research on the use of mobiles in social care although evidence is emerging that mobile phones can play an important role in social care service delivery. This paper is based on a scoping review of the international literature in this area and a typology of mobile interventions is suggested. While most mobile phone interventions remain uni-directional and sit within traditional social care service provider-service user relationships, a minority are bi- or multi-directional and contain within them the potential to transform these traditional relationships by facilitating a collective development of social networks and social capital. Such transformations are accompanied by a range of issues and dilemmas that have made many service providers reluctant to engage with new technologies. We suggest that our typology is a very useful model to draw on when researching the use of mobile phones in social care settings to support and empower Isolated, marginalised and vulnerable service users.

Funding sources:
This work was supported by seed funding from the School of Healthcare at the University of Leeds.

What is known about this topic:

- Mobile phones, which have achieved very widespread use in many societies have, by creating new spaces for communication that transcend spatial and temporal locations, transformed many social practices including health and social care
- There is evidence of a digital divide with some social groups excluded from this communication revolution
- Mobile technologies have the potential to challenge traditional servicer user - service provider hierarchies and raise profound questions about how professionals manage their relationships with service users

What this paper adds:

- While the use of mobile technologies associated with some health outcomes has been relatively well researched this paper identifies a lack of robust knowledge about the use of such technologies in social care
- This paper suggests a typology of mobile phone use distinguishing between uni-, bi- and multi-directionality highlighting the potential for bi- and multi-directional use to transform traditional service provide/service user relationships and providing a model for future research
- This typology highlights the considerable potential for mobile technologies to enhance the social capital of isolated or marginalised service users and develop more empowering social networks

Introduction: the rise of mobile technologies

The mobile phone is ‘arguably the most rapidly diffused technological artefact in history’ (Wajcman, 2008, p.68). The most recent data suggested that over 90% of adults in the UK had a mobile though only 66% had a smartphone – a phone powerful enough to access the internet and act as a pocket computer (Ofcom, 2015). In some countries, including the UK, it has been suggested that there are rates of mobile phone ownership *higher* than 100% (Bittman et al., 2009). Mobile phones have collapsed boundaries between work and leisure, between our public and our private lives. Because mobile phones operate anywhere (provided there is a signal) they create spaces for communication that are not tied to physical locations and so many activities have been displaced from their traditional locations in time and space: they are ‘without borders’ (Wajcman et al., 2008) particularly those between work/public time and private/leisure time. How people manage these increasingly blurred boundaries and use their mobile phones to negotiate social relationships, social roles and personal identity is the subject of a burgeoning literature almost all of which has been written since 2000 (Green & Haddon, 2009). The dizzyingly rapid and transformative developments in mobile technology and the sophisticated and creative ways users adapt the technology to their social needs make this an emergent and rapidly evolving field. These transformations permeate the “empirically specific social practices through which time and space are framed and apprehended on an everyday basis” (Green, 2002, p.281).

Despite the figures cited above there is evidence of a digital divide in the UK: the most recent data suggests that mobile phone usage ranges from 90% of 16-24 year olds to just 18% of those aged 65 and over (Ofcom, 2015). Similarly, while 11% of all UK adults had never used the internet, 24% of those aged 65-74 and 61% of those aged 75 and over had never used it. 27% of disabled people (based on self-assessment against the Equality Act definition) also reported never using the internet. These data suggest that a significant minority of the population may be excluded from internet-based interventions which can be accessed with a smartphone (for example messaging services such as Whatsapp and social media sites like Twitter and Facebook which are increasingly used for communication and group “chat”). The blurring of space-time boundaries and expectations of constant availability are not socially neutral: they affect people differently depending on their degree of control over their time and their social and professional status (Green, 2002).

The area of everyday social practice forming the focus of this paper is the use of mobile phones in social care. There have been overlapping developments in internet-based interventions but the focus here is mobile phone activities involving calls, Short Message Service (SMS) texts and messaging services. It should be noted however that insights from internet-based interventions may have relevance for mobile phone interventions and some studies group internet *and* mobile

technologies under a broad ‘Information and Communications Technology’ (ICT) label, meaning some joint consideration is both necessary and useful.

There is now a body of research on the potential for mobile phone technology to improve preventative care and illness management in health-related fields, but much less on the use of mobiles in social work and social care and very little on the perspectives of service users, how the relationship between service provider and service user might be altered, or any different implications for the practice of professional social workers and third sector volunteers.

Background and research question

The genesis of this paper was a piece of research undertaken by a Social Work MA student and supervised by one of this paper’s authors of the befriending relationships between volunteers for a local family support agency and their service users (Lawton, 2014). It became clear that the use of mobile phones played a great part in developing these negotiated friendships which were based on the service users’ perceptions that befrienders were available, reliable and non-judgemental. Particularly important was the use of SMS texts which enabled service users to communicate and share information without having to speak to the volunteer when disclosing information they felt unable to share in face-to-face or telephone dialogue.

Funding was secured to explore the use of mobile communication technology in negotiating support relationships with service users through the following research questions:

- How are these relationships changing?
- What are the benefits and risks of mobile phone use in these relationships?
- What policies do agencies have to regulate their use?
- How effective are these policies?

This paper is based on the systematic scoping review of the literature which was undertaken as part of the study.

Methods

This study was informed by Arksey and O’Malley’s (2005) scoping review framework, as well as Levac et al.’s (2010) additional recommendations. An initial research question was developed based on the findings from the Masters study described in the introduction. Using this research question, search terms were developed from reading already-cited literature and following reference trails to relevant papers. Because of a diversity of terms used in different studies based in different fields (for example studies from healthcare versus those from psychology), as well as different

terms in US and UK English, search terms were deliberately broad (see Table 1). Initial database searches were run and search terms refined in consultation with team members. Initial inclusion criteria were selected:

- papers available in English

- peer-reviewed documents (including journal articles, book chapters, reviewed conference proceedings and theses).

- a date limit of 2005, given the rapid development of mobile technology and associated research in the ensuing years.

The full database searches were run 21-22 September 2015. The following databases were searched: Proquest (including ASSIA, IBSS, Proquest Dissertations and Theses, Social Services Abstracts and Sociological Abstracts); Ovid (including AMED, Global Health, HMIC, Medline and PsycINFO); Scopus; Web of Science; SCIE; and Science Direct. Additionally, three journals – British Journal of Social Work, Australian Social Work and Journal of Evidence Informed Social Work (previously Evidence Based Social Work) were searched directly.

Where the search engine allowed (in every case except Science Direct, SCIE and the individual journals) three sets of 'AND' criteria were applied: one for technology; one for relationship type; and one for service user type (see Table 1). Searches were made in Title, Abstract and Key Word fields where possible (as opposed to full text).

Technology	Relationship	Service User
"mobile phone" OR "mobile device" OR "mobile communication" OR "mobile technolog*" OR "mobile media" OR "cell* phone" OR "cell* device" OR "cell* communication" OR "communication technolog*" OR "cell* technolog*" OR "cell* media" OR smartphone OR "social media" OR "personal communication device"	"support relationship" OR "therapeutic relationship" OR "dual relationship" OR befriending OR mentoring OR "emotional support" OR "social support" OR companionship OR "mutual support" OR "peer support" OR "home visit"	"service user" OR client OR "vulnerable adult" OR "vulnerable group" OR patient OR disabled OR disabilities OR "young people" OR "looked after children" OR "mental health" OR psychiatric OR carers OR "older people" OR elderly OR "senior citizen"

Table 1: search terms used in the scoping review

All results – citations and abstracts – were imported into Endnote: a total of 1311. These were checked and 5 dated pre-2005 and 1 non-English language paper were removed (1305). A further 587 duplicates were identified (the majority using the

automatic duplicate identifier and the rest via a visual check of authors, year, title and journal title). 718 abstracts were eventually selected for review.

After initial abstract reading, key word searching using Endnote, and discussion with the research team, a further set of inclusion criteria was agreed:

- Referring to the use of (any) mobile/cell/smartphone
- Referring to emotional or social support service context *or* referring to relationships between service user and provider *or* support relationships facilitated by provider
- Referring to one-to-one support/relationship

This second criteria was further refined during the abstract reading to emphasise a focus on – rather than merely a mention of – social support. This meant a large number of healthcare studies where mobile interventions which focused predominantly on adherence to treatment or management regimes, but also noted some relevance of social support, could be excluded. Three researchers read through the abstracts and selected papers according to these further inclusion criteria. Once three provisional lists (one per team member) had been assembled, these were checked for agreement. Papers with two out of three and three out of three agreement were automatically selected for full text reading; papers with one out of three agreement were further checked (including in some cases referring to the full text) by two of the team.

Twenty-one papers (one Cochrane review, four doctoral theses, and 16 peer-reviewed journal articles) remained after this stage. Full texts were then sought and the 15 peer-reviewed journal articles and Cochrane review were successfully obtained. In the case of the doctoral theses, one was unobtainable. Another was found to be related to a more recent peer-reviewed journal article (Barlott et al., 2015) that addressed the same study, and so this thesis was excluded from the full text read. Similarly, another thesis requested from the original author resulted in the receipt of a more recently-published peer-reviewed academic journal article (Brown et al., 2014), and this was also used in place of the full thesis. The fourth thesis was received from the author and included in the full text read (Moon, 2013). One further paper (Walker et al., 2015) was added when journal articles reporting pilot studies were followed up to check if full trials had since been undertaken. Twenty papers (one Cochrane review, one doctoral thesis, and 18 peer-reviewed journal articles) were eventually taken forward for the full text read.

Two of the team then read and charted the full texts in Microsoft Excel. The following information was recorded:

- Author, date and title
- Location of study
- Research design/methodology
- Service user group

- Description of technology/mobile intervention
- Key findings – including positive and negative findings
- Other notes

A number of overlapping themes were identified across the different papers, as well as a typology of different relationship types addressed by the different studies. These were used to organise the literature findings that follow.

Findings

Theme 1: Intervention effects

Social support

Support experienced by those receiving interventions were broadly positive with a number of papers reporting positive benefits of mobile phone interventions for the therapeutic relationship (between service provider and service user). This included interventions where mobile phones provided two-way contact (Ben-Zeev et al., 2014) or contact additional to traditional contact (Johnson et al., 2015), as well as those where participants only received supportive messages (Agyapong et al., 2013, Brown et al., 2014, de Jongh et al., 2012, Rana et al., 2015). Similarly, interventions focusing on peer support reported positive benefits (Barlott et al., 2015, Hackett et al., 2005, Walker et al., 2015, Wollersheim et al., 2013). While there were examples in many of these studies of participants for whom the intervention was less effective, only Daker-White and Rogers (2013) reported overall negative results. In the three studies they reported on, the mobile phone interventions were automated and appeared not to be designed primarily for social support.

Pre-existing support levels were associated with intervention outcome in two studies. Barlott et al. (2015) noted that one participant who had not met baseline criteria for social exclusion did not experience their intervention as useful. Guillory et al. (2015) noted that only participants with higher levels of existing support experienced lasting effects post-intervention. These results indicate the importance of considering the heterogeneity of service user characteristics beyond inclusion criteria when developing or evaluating interventions.

Other effects

Positive effects beyond social support were measured and reported by a number of studies. Two studies noted improvements in co-morbid mental health diagnoses and substance misuse (Agyapong et al., 2013, Johnson et al., 2015). Alvarez-Jimenez et al. (2014) and Hartzler and Wetter (2014) both described studies that reported mental health symptom improvement. Finally, Guillory et al. (2015) in their study of chronic pain patients noted various improvements in symptom severity compared to baseline. However, Hartzler and Wetter (2014) reported that SMS-based peer support among diabetes patients found no positive health or support effects. This

was hypothesised as being related to various logistical and culturally specific circumstances.

The experience of mobile phone interventions as empowering or as challenging traditional power relations was noted by a number of these studies (Agyapong et al., 2013, Ben-Zeev et al., 2014, Brown et al., 2014, Nolan et al., 2011, Wollersheim et al., 2013, Walker et al., 2015). This was attributed to having more control over the intervention or being empowered to take up a particular service beyond the intervention. For young people in particular, Yoo et al. (2015) noted that mobile phone messaging between adolescents and healthcare providers could enable young people to bypass parental 'gatekeeping' behaviour which restricted their access to information.

Information itself was another reported benefit. While one intervention was specifically designed to provide useful information to participants (Brown et al., 2014), four other studies reported information benefits, including using increased access or networks provided/enhanced by the interventions to gain helpful information (Barlott et al., 2015, Walker et al., 2015, Wollersheim et al., 2013, Yoo et al., 2015).

Theme 2: Accessibility

The accessibility of mobile phone technology and different demographics of use were key points raised in a number of the papers. Mobile phone technology was cited as positive for improving access to services, particularly for those who lived in remote or inaccessible locations and/or had limited mobility (Barlott et al., 2015, Daker-White & Rogers, 2013, Hartzler & Wetter, 2014, de Jongh et al., 2012, Norris et al., 2013). Barlott et al. (2015) noted the broader reach of mobile phone technologies compared with computers and broadband in low income countries, while a number of studies highlighted the relative low cost (in developed contexts) of SMS interventions. However, cost was an accessibility issue in other contexts (Norris et al., 2013, Rana et al., 2015, Walker et al., 2015). Furthermore, impairments related to vision, cognition, mobility or dexterity were cited as potential access issues (Ben-Zeev et al., 2014, de Jongh et al., 2012, Hartzler & Wetter, 2014, McColl et al., 2014).

Elsewhere, Alvarez-Jimenez et al. (2014) noted that intervention participants with more severe symptoms and poorer social skills were those most likely to drop out of text-based interventions. Other papers found accessibility issues including lack of relevant literacy skills and availability of interventions in local languages/dialects (Ben-Zeev et al., 2014, de Jongh et al., 2012, Hartzler & Wetter, 2014, Norris et al., 2013). In some low income contexts, phone sharing is common practice which may affect access (Ben-Zeev et al., 2014, Moyer, 2014, Rana et al., 2015). Few of the

studies in this review attempted to address these accessibility issues, except in terms of financial accessibility.

Some papers noted the usefulness of mobile phone interventions to young people as a demographic (de Jongh et al., 2012, Moon, 2013, Nolan et al., 2011) or conversely the barriers that an older demographic might face and the need for training in new technology for some users (McColl et al., 2014). Gender differences (more male than female participants) in engagement with and use of mobile phone technologies were found (Daker-White & Rogers, 2013, Nolan et al., 2011). Despite noting gender differences in their literature review and more male than female participants, Nolan et al. (2011), however, did not identify gender differences in the content of the messages analysed in their study.

Theme 3: Challenges

A number of challenges regarding the use of mobile phone technologies were found, in particular data protection, privacy, confidentiality and risk of loss or theft (Hartzler & Wetter, 2014, Johnson et al., 2015, de Jongh et al., 2012, McColl et al., 2014, Rana et al., 2015). In situations where phones are shared, privacy was a concern (Norris et al., 2013, Rana et al., 2015). Reamer (2013, 2015) highlights similar issues with regard to social workers' use of ICTs such as issues of informed consent. Johnson et al. (2015) reported that in some circumstances a lack of trust between service user and provider could lead to confidentiality concerns. The potential for misunderstandings via the use of SMS due to inaccurate typing or a lack of 'verbal and non-verbal cues' was reported (de Jongh et al., 2012, Moon, 2013).

Surveillance was discussed by Moyer (2014) and the way it was undertaken by peer mentors who are acting as intermediaries between service user and provider. Peer mentors in this study had to negotiate between formal and informal contact with service users where formal contact was more anonymous and one-way while informal contact involved "more socially embedded" exchanges (Moyer, 2014, p.158). However, Moyer observed a shift towards more formal methods and raised questions about how this might impact peer mentoring. Elsewhere, Johnson et al. (2015) described phones as potentially facilitating both empowerment and surveillance. If this type of intervention was mandatory in nature then the balance between empowerment and surveillance might shift. Similarly, moves towards more formal surveillance in Moyer's (2014) study suggest the potential for diminishing returns in terms of ability to build the social networks of service users.

In the case of smartphone apps, three papers noted a lack of regulation which meant that apps could be developed by unlicensed therapists or those seeking profit rather than offering an effective service (Guillory et al., 2015, McColl et al., 2014, Norris et al., 2013). Other concerns, such as using a phone while driving; being able to report misuse or abuse of mobile phone apps; or the potential for sensitisation to or

dependency on receiving regular SMS support, were found (de Jongh et al., 2012, McColl et al., 2014, Norris et al., 2013, Rana et al., 2015). The flexibility for participants to opt in or out of an intervention (Agyapong et al., 2013) and the need for interventions to be flexible and accommodate multiple users with different abilities (Alvarez-Jimenez et al., 2014) were noted.

Discussion: a potential typology of mobile phone interventions

The papers reviewed here explored different relationship formations between service providers and service users. These reflect, in part, the facilitation of particular relationships by mobile phone technologies – between service provider and service user, between service users themselves, or a mix of the two – as well as challenging the professional/client binary in the context of trained peer support. Here we suggest a typology of mobile phone interventions, based on the relationship types they utilise, as set out below. These different intervention styles facilitate different relationship types, and have various implications for changing relationships between service providers and service users, as well as potentially different risks and benefits for those involved.

Type 1: uni-directional and bi-directional interventions

By far the most common, featuring in 14 of the 21 papers, were interventions that may be categorised as uni-directional or bi-directional. Uni-directional interventions were those where automated SMS messages (with supportive/educative themes) were sent from the service provider to the service user, with no response facility arranged. Seven papers discussed this type of intervention (Agyapong et al., 2013, Alvarez-Jimenez et al., 2014, Brown et al., 2014, Chen et al., 2010, Daker-White & Rogers, 2013, Guillory et al., 2015, Rana et al., 2015). While many such interventions were excluded from this review, these were included because social support was either an intended or experienced element. Bi-directional interventions (between service provider and service user but with both parties having the ability to respond or initiate contact) were described in five papers (Ben-Zeev et al., 2014, Moon, 2013, Nolan et al., 2011, Norris et al., 2013, Yoo et al., 2015), and an additional two mentioned both types (Hartzler & Wetter, 2014, de Jongh et al., 2012), although in the latter paper the only communication made by the service user was the reporting of a medical monitoring reading.

Of these bi-directional papers, four (Ben-Zeev et al., 2014, Moon, 2013, Nolan et al., 2011, Yoo et al., 2015) considered the use of mobile phone technologies as additional to, or enhancing of, a therapeutic relationship. Moon (2013) and Nolan et al. (2011) explored text messaging between therapist and mental health service user beyond traditional face-to-face interactions. Moon (2013) focused on therapists' perception of the use of text messaging (convenient and client-centred but also raising challenges e.g. professional boundaries) while Nolan et al. (2011) investigated content of messages and noted practical as well as relational use

(arranging appointments as well as discussing condition management and progress). Yoo et al. (2015) also considered message content, in the context of messages between asthma patients and their nurse case managers. Messages were predominantly task-focused but a significant number also related to socio-emotional issues. Finally, Ben-Zeev et al.'s (2014) research trialled a new intervention, called "hovering" in the study, which aimed to monitor and support dual diagnosis (mental illness and substance use) patients via daily, two-way text messaging between them and a trained 'mobile interventionist'. This interventionist also reported on their progress to the community treatment team involved in the standard treatment/management of the patient.

Type 2: Bi-directional and multi-directional interventions

Three papers considered interventions that addressed bi-directional *and* multi-directional relationships – between service users themselves and/or trained peer supporters as well as between service users and providers (Barlott et al., 2015, Johnson et al., 2015, Moyer, 2014, Yoo, 2014). Each of these reported innovative interventions in three very different contexts. Barlott et al. (2015) used an SMS messaging 'hub' to facilitate two-way communication between caregivers of people with disabilities living in a low-income, mountainside community as well as between them and a community coordination team. Johnson et al. (2015) provided women 'with comorbid substance use and depressive disorders' (p.330), who were leaving prison and returning to their communities, restricted mobile phones with pre-paid minutes to maintain contact with prison counsellors as well as positive local networks (e.g. sober friends and family). Moyer (2014) reported on a peer mentor programme in a hospital-based HIV treatment centre which uses 'expert clients' to support newly diagnosed clients, both in person and by mobile phone. Yoo (2014) described a study where participants with alcohol use disorders were given a smartphone with an app facilitating forum communication with peers as well as direct links to professional service providers.

Type 3: Multi-directional interventions

Four papers focused specifically on interventions to develop multi-directional relationships (between service users themselves and/or trained peer supporters) in the context of a service provided to facilitate those relationships (Hackett et al., 2005, McColl et al., 2014, Walker et al., 2015, Wollersheim et al., 2013). McColl et al. (2014) reviewed the literature relating to peer support mobile phone applications for people experiencing mental distress, while Hackett et al. (2005) in the context of a wider intervention for young people with chronic rheumatic diseases noted that one benefit was the development of peer relationships maintained by text messaging. Wollersheim et al.'s (2013) pilot and Walker et al.'s (2015) subsequent study reported an intervention that provided peer support training and mobile phones with free calls to refugee women who had migrated to Australia.

The different intervention types have implications for power relations between service providers and users. While some uni-directional (Type 1) interventions were experienced as empowering by service users, this model also most closely resembles a traditional professional-client hierarchy, raising questions about the extent to which this empowerment is emancipatory or normative (Rivest & Moreau, 2015). While bi-directional (Type 1) interventions also carry this risk (particularly those set in more medicalised contexts), they also have the potential to realign (at least to some extent) power relations between service provider and user.

Although interventions of types 2 and 3 – involving multi-directional relationships – were in the minority among the papers included, they may offer the most potential for communications and interventions that resist current hierarchical and linear tendencies of service provision (Rogowski, 2011, Rivest & Moreau, 2015). We might hypothesise that in these interventions communication is enriched and empowerment increased in comparison to type 1 interventions and therefore represent a potentially transformative approach to using mobile phone technologies with service users by facilitating a collective development of networks and social capital. A dilemma for service providers is that these forms of intervention make it much harder, if not impossible, for them to control the communications that occur.

Types 2 and 3 interventions have potential for developing service users' social capital. While only one paper (Wollersheim et al., 2013) specifically used the concept of social capital, a similar approach could be identified in all 7 papers covering these intervention types: one fitting the Organisation for Economic Co-operation and Development (OECD) (2001) definition of social capital: 'networks together with shared norms, values and understandings that facilitate co-operation within or among groups'. This is also the definition underlying the UK's official measurement of social capital (Office for National Statistics, 2014) and draws on the work of a number of prominent social capital theorists including Putnam (1995, 2001). These approaches tend to be used to highlight the positive aspects of social capital – for example the sense of community derived from robust social networks and shared values. However, other understandings of social capital focus on its role in reproducing (and being produced by) social inequalities (e.g. Bourdieu, 1986). While studies such as Wollersheim et al. (2013) and Walker et al. (2015) look at increasing social capital in the sense of developing broad social networks and increasing community cohesion, the more critical perspective of scholars such as Bourdieu should not be overlooked.

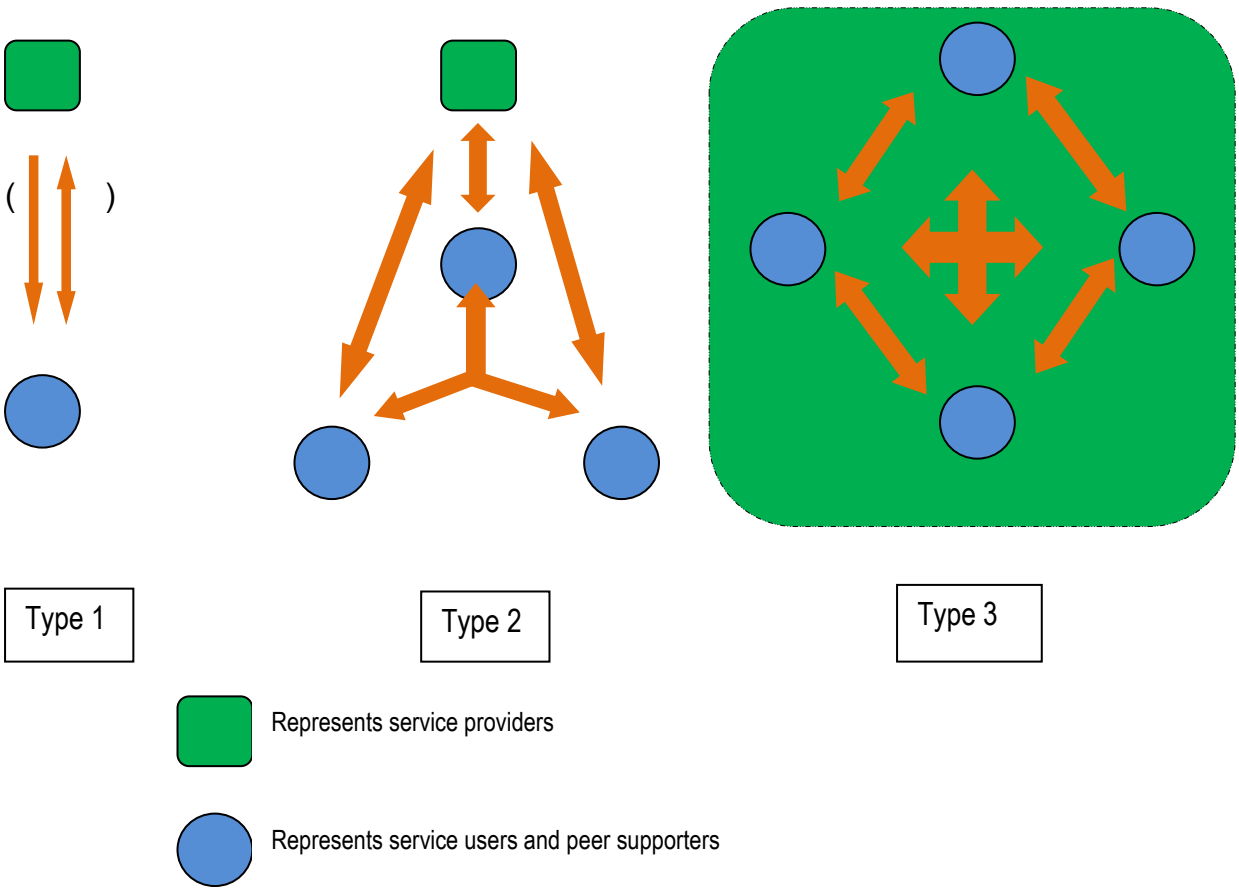

Figure 1 represents the different intervention types. In Type 1, the arrow pointing to the service provider is bracketed to indicate that this relationship may be uni-directional or bi-directional. In Type 3, the service provider is positioned behind the service user/peer supporter relationships to indicate facilitation rather than direct involvement.

Several papers note the potential for mobile phones to help develop social networks for people isolated by geography, disability or other social circumstances. Walker et al. (2015) described their intervention as providing a welfare service tailored to the needs of the refugee population, based around the provision of mobile phones and free calls, highlighting the unique contribution mobile phone technologies can make to communication networks offering support. These studies highlight the potential of interventions which unlock potential and increase social capital among service users directly – reducing the service provider's direct influence on communication. This is potentially transformational in terms of its approach to using mobile phone technology in service delivery, and could be significant in resource-limited contexts.

A number of important implications emerged from the papers. Several note the need for staff training, new policies and new procedures and the concerns of service providers - risks of crossing work/private-personal boundaries, texts or calls out of hours reporting self-harm or suicidal thoughts for example - which have made some reluctant to engage with mobile phone communication. Ben Zeev et al. (2014) notes

the importance of service users receiving training in using mobile phones in these contexts and the need for accountability and confidentiality. Issues such as whether written consent is needed for saving peoples' contacts and texts will need careful exploration.

An issue raised in several papers, and noted by Lawton (2014) in her original study, is that professionals and volunteer peer mentors/supporters may be viewed differently and may have different training needs. Peer mentors may be seen as more approachable, flexible and non-judgemental by service users and this raises implications about how boundaries are negotiated and the potential for tension and conflict between professionals and peer mentors. The way mobile phones blur or collapse boundaries between work and private spaces has already been noted.

A question raised in several papers and also noted by Lawton (2014) was whether calls and texts serve different purposes with some communications being more amenable to texts which allow people to say things they may not feel able to say in a call.

Concluding remarks

This scoping review has covered a number of topics and raised some significant questions and areas for future research. In particular, a lack of any really definitive literature beyond that closely associated with health outcomes means much of the evidence is not yet robust. The difficulty in distinguishing the specific effect of the mobile phone intervention (as opposed to simultaneous non-mobile phone interventions) is another concern. Alvarez-Jimenez et al.'s (2014) review concluded that mobile phone interventions should offer rich possibilities for their sample population but these remain potential rather than actual as yet. This conclusion seems suitable to draw more widely across the various service user populations considered in the papers in this scoping review.

The need for appropriate training of service providers regarding the delivery of mobile phone interventions appears significant, both in terms of new technology and in relation to expectations of confidentiality and data protection. The reluctance of some service providers to engage with new technologies was noted in some of the studies in this review, and has also been discussed in the wider literature relating to technology and social work practice. The lack of concrete guidance, even where professional standards do exist, is a key concern (Mattison, 2012). This places the onus on individual practitioners in terms of operationalising conceptual standards into practical, specific policies. Reamer's (2015) consideration of social workers' use of ICTs addressed similar issues, also including discussion of boundaries, dual relationships and conflicts of interest, and the need for practitioners to develop specific protocols for these issues. However, the risks of this in terms of leading to potentially harmful practices are noted by Mattison (2012); similarly, Chan (2015)

draws attention to work that indicates practitioners relying largely on their own discretion. This means there may be a risk of at best inconsistent, and at worst unsafe and potentially harmful, practice where appropriate guidance is not in place.

This training is particularly relevant given the changes that mobile phone technologies inevitably bring to a service provider-service user relationship. For example, the work by Wajcman et al. (2008) cited at the start of this review suggests that mobile phones are reducing or removing boundaries between the personal and professional. While none of the studies in this review explicitly investigated changing relationships, concern around boundaries was a key issue for practitioners in a number of the studies (e.g. Ben-Zeev et al., 2014; Moon, 2013). This raises questions about the specific implications of these changes – perhaps even more pertinently for volunteers and peer mentors who already transcend traditional professional-client binaries. Professionals and peer mentors may differ in their roles but may have similar training needs in many respects. Commonalities would include issues of staff exploitation and burnout, of boundaries and confidentiality, of the implications of surveillance of service users and the unequal power relationships between professionals and peer mentors.

There is also growing evidence that many service users wish to use these technologies in the context of service provision (see for example Mattison, 2012). That service users themselves may also need training is another issue. Greater accessibility for remotely-located service users or those with limited mobility are both potential benefits of mobile phone interventions, but accessibility of services for those who struggle to access mobile phone technology (due to cost, literacy or impairment) also needs to be taken into account.

The role of mobile phones in developing social networks and increasing social capital seems particularly significant. There are similarities between some of the findings of these studies and other research examining mobile phones as ‘network capital’ in everyday life (Rettie, 2008). Rettie follows Larsen et al.’s definition of network capital as ‘access to communication technologies, affordable and well-connected transport, appropriate meeting places and caring significant others that offer their company and hospitality’ (2006, in Rettie, 2008, p292). Some have drawn on Castell’s network society thesis to describe the role of social workers in modern society (Baker et al., 2014, Smith, 2012) as ‘network-makers’, for example assisting service users to change and develop their networks and mobile phones may play an increasingly important role here.

In the UK, current government-led austerity measures mean finding efficiencies and reducing costs is a necessity for many service providers. This suggests a need to explore the cost-effectiveness of different intervention types. The findings of several papers in this review emphasise the importance of face-to-face contact before or alongside interventions involving bi-directional interventions, suggesting that mobile phone interventions enhance more traditional service-user relationships rather than

replacing them in a bid to reduce costs (Ben-Zeev et al., 2014, Moon, 2013, Nolan et al., 2011, Yoo et al., 2015). The importance of technological interventions adding to, rather than substituting for, face-to-face work is also highlighted in other sources (e.g. Dodsworth et al., 2013; Mattison, 2012).

By contrast, some interventions were potentially designed to replace face-to-face services (e.g. Brown et al., 2014; McColl et al., 2014) while others aimed to offer a new service where none had previously existed (e.g. Barlott et al., 2015; Chen et al., 2010; Rana et al., 2015). The relatively low cost and wide reach of mobile phone interventions may thus be a positive first step for developing services in some contexts. Further potential for cost-efficiency and continued service quality is suggested by being able to offer alternative service provision in interventions involving bi-directionality, such as the 'hovering' described by Ben Zeev et al. (2014). Such potential is also suggested where participants experienced social support from uni-directional interventions (Agyapong et al., 2013, Brown et al., 2014, de Jongh et al., 2012, Rana et al., 2015). The work undertaken by Walker et al. (2015) and Wollersheim et al. (2013) suggests potential for cost-effective service provision by developing the self-efficacy and social capital of service users and training them to support each other to increase social support may reduce reliance on other services. However none of these studies were undertaken in the UK context, however. The lack of UK studies – and the way that phone use is socially constructed – means further UK-specific research is particularly needed to test the applicability of these types of interventions to British communities.

We suggest that the typology of mobile phone interventions outlined here may be a very useful model for future research to draw on in exploring the advantages, limitations and dilemmas of using mobile phone technology in social care settings to support and empower isolated and vulnerable service users. This remains an under-researched area and the development of a robust knowledge base is essential as mobile phone technologies come increasingly to shape and transform the ways we live our lives both in private and professionally.

References

Agyapong, V. I. O., Milnes, J., McLoughlin, D. M. & Farren, C. K. (2013) Perception of patients with alcohol use disorder and comorbid depression about the usefulness of supportive text messages. *Technology and Health Care,* **21,** 31-39.

Alvarez-Jimenez, M., Alcazar-Corcoles, M. A., González-Blanch, C., Bendall, S., McGorry, P. D. & Gleeson, J. F. (2014) Online, social media and mobile technologies for psychosis treatment: A systematic review on novel user-led interventions. *Schizophrenia Research,* **156,** 96-106.

Arksey, H. & O'Malley, L. (2005) Scoping studies: towards a methodological framework *International Journal of Social Research Methodology,,* **8,** 19-32.

Baker, S., Warburton, J., Hodgkin, S. & Pascal, J. (2014) Reimagining the Relationship between Social Work and Information Communication Technology in the Network Society. *Australian Social Work,* **67,** 467-478.

Barlott, T., Adams, K., Díaz, F. R. & Molina, M. M. (2015) Using SMS as a tool to reduce exclusions experienced by caregivers of people with disabilities in a resource-limited Colombian community. *Disability and Rehabilitation: Assistive Technology,* **10,** 347-354.

Ben-Zeev, D., Kaiser, S. M. & Krzos, I. (2014) Remote "hovering" with individuals with psychotic disorders and substance use: feasibility, engagement, and therapeutic alliance with a text-messaging mobile interventionist. *Journal of dual diagnosis,* **10,** 197-203.

Bittman, M., Brown, J. E. & Wajcman, J. (2009) The mobile phone, perpetual contact and time pressure. *Work, Employment & Society,* **23,** 673-691.

Bourdieu, P. (1986) The Forms of Capital. IN J. G. Richardson (Ed.) *Handbook of Theory and Research for the Sociology of Education.* Greenwood Press, New York and London.

Brown, S., Hudson, D. B., Campbell-Grossman, C. & Yates, B. C. (2014) Health Promotion TEXT BLASTS for Minority Adolescent Mothers. *The American Journal of Child/Maternal Nursing***,** 357-362.

Chan, C. (2015) A Scoping Review of Social Media Use in Social Work Practice. *Journal of Evidence-Informed Social Work***,** 1-14.

Chen, H., Mishara, B. L. & Liu, X. X. (2010) A pilot study of mobile telephone message interventions with suicide attempters in China. *Crisis,* **31,** 109-112.

Daker-White, G. & Rogers, A. (2013) What is the potential for social networks and support to enhance future telehealth interventions for people with a diagnosis of schizophrenia: A critical interpretive synthesis. *BMC Psychiatry,* **13**.

de Jongh, T., Gurol-Urganci, I., Vodopivec-Jamsek, V., Car, J. & Atun, R. (2012) Mobile phone messaging for facilitating self-management of long-term illnesses. *Cochrane Database of Systematic Reviews* Wiley-Blackwell Publishing Ltd.

Dodsworth, J., Bailey, S., Schofield, G., Cooper, N., Fleming, P. & Young, J. (2013) Internet Technology: An Empowering or Alienating Tool for Communication between Foster-Carers and Social Workers? *British Journal of Social Work,* **43,** 775-795.

Green, N. (2002) On the move: Technology, mobility, and the mediation of social time and space. *The information society,* **18,** 281-292.

Green, N. & Haddon, L. (2009) *Mobile communications: An introduction to new media,* Berg.

Guillory, J., Chang, P., Henderson, C. R., Jr*., et al.* (2015) Piloting a text message-based social support intervention for patients with chronic pain: Establishing feasibility and preliminary efficacy. *Clinical Journal of Pain,* **31,** 548-556.

Hackett, J., Johnson, B., Shaw, K. L. & McDonagh, J. E. (2005) Friends united: an evaluation of an innovative residential self-management programme in adolescent rheumatology. *British Journal of Occupational Therapy,* **68,** 567-573.

Hartzler, A. & Wetter, T. (2014) Engaging Patients through Mobile Phones: Demonstrator Services, Success Factors, and Future Opportunities in Low and Middle-income Countries. *Yearbook of medical informatics,* **9,** 182-194.
Johnson, J. E., Williams, C. & Zlotnick, C. (2015) Development and Feasibility of a Cell Phone-Based Transitional Intervention for Women Prisoners With Comorbid Substance Use and Depression. *Prison Journal,* **95,** 330-352.
Lawton, H. (2014) The voluntary befriending relationship in a home-visiting service for women subject to social work pre-birth assessments. *School of Healthcare.* University of Leeds.
Levac, D., Colquhoun, H. & O'Brien, K. K. (2010) Scoping studies: advancing the methodology. *Implement Sci,* **5,** 69.
Mattison, M. (2012) Social Work Practice in the Digital Age: Therapeutic E-Mail as a Direct Practice Methodology. *Social Work,* **57,** 249-258.
McColl, L. D., Rideout, P. E., Parmar, T. N. & Abba-Aji, A. (2014) Peer support intervention through mobile application: An integrative literature review and future directions. *Canadian Psychology/Psychologie canadienne,* **55,** 250-257.
Moon, K. M. (2013) Texting between client and therapist: An ethical dilemma or an effective tool? Capella University, Ann Arbor.
Moyer, E. (2014) Peer mentors, mobile phone and pills: collective monitoring and adherence in Kenyatta National Hospital's HIV treatment programme. *Anthropology & Medicine,* **21,** 149-161.
Nolan, C., Quinn, S. & MacCobb, S. (2011) Use of text messaging in a mental health service for university students. *Occupational Therapy in Mental Health,* **27,** 103-125.
Norris, L., Swartz, L. & Tomlinson, M. (2013) Mobile phone technology for improved mental health care in South Africa: Possibilities and challenges. *South African Journal of Psychology,* **43,** 379-388.
Ofcom (2015) The Communications Market Report.
Office for National Statistics (2014) Measuring Social Capital.
Organisation for Economic Co-operation and Development (2001) *The Well-being of Nations: The Role of Human and Social Capital,* OECD Publications, Paris, France.
Putnam, R. D. (1995) Bowling Alone: America's Declining Social Capital. *Journal of Democracy,* **6,** 65-78.
Putnam, R. D. (2001) Social Capital: Measurement and Consequences. IN J. F. Helliwell (Ed.) *The Contribution of Human and Social Capital*

to Sustained Economic Growth and Well-being: International Symposium Report. Human Resources Development Canada and OECD.
Rana, Y., Haberer, J., Huang, H.*, et al.* (2015) Short Message Service (SMS)-based intervention to improve treatment adherence among HIV-positive youth in Uganda: Focus group findings. *PLoS ONE,* **10**.
Reamer, F. G. (2013) Social work in a digital age: ethical and risk management challenges. *Social Work (NASW),* **58,** 163-172.
Reamer, F. G. (2015) Clinical Social Work in a Digital Environment: Ethical and Risk-Management Challenges. *Clinical Social Work Journal,* **43,** 120-132.
Rettie, R. (2008) Mobile Phones as Network Capital: Facilitating Connections. *Mobilities,* **3,** 291-311.
Rivest, M.-P. & Moreau, N. (2015) Between Emancipatory Practice and Disciplinary Interventions: Empowerment and Contemporary Social Normativity. *British Journal of Social Work,* **45,** 1855-1870.
Rogowski, S. (2011) Social Work with Children and Families: Challenges and Possibilities in the Neo-Liberal World. *British Journal of Social Work,* **42,** 921-940.
Smith, R. (2012) Castells, Power and Social Work. *British Journal of Social Work,* **43,** 1545-1561.
Wajcman, J. (2008) Life in the fast lane? Towards a sociology of technology and time. *Br J Sociol,* **59,** 59-77.

Wajcman, J., Bittman, M. & Brown, J. E. (2008) Families without Borders: Mobile Phones, Connectedness and Work-Home Divisions. *Sociology,* **42,** 635-652.

Walker, R., Koh, L., Wollersheim, D. & Liamputtong, P. (2015) Social connectedness and mobile phone use among refugee women in Australia. *Health Soc Care Community,* **23,** 325-336.

Wollersheim, D., Koh, L., Walker, R. & Liamputtong, P. (2013) Constant connections: Piloting a mobile phone-based peer support program for Nuer (southern Sudanese) women. *Australian Journal of Primary Health,* **19,** 7-13.

Yoo, W. (2014) Communicating Social Support in Smartphone-Based Addiction Support Groups: Seeking, Giving, and Receiving Emotional Support and their Effects on Alcoholism Treatment. The University of Wisconsin - Madison, Ann Arbor.

Yoo, W., Kim, S. Y., Hong, Y., Chih, M. Y., Shah, D. V. & Gustafson, D. H. (2015) Patient-clinician mobile communication: Analyzing text messaging between adolescents with asthma and nurse case managers. *Telemedicine and e-Health,* **21,** 62-69.