

# The development and implementation of a mobile application in human services

**Author(s)**

Ben Allouch, Somaya; Boonstra, Judith

**DOI**

[10.1080/15228835.2019.1626788](https://doi.org/10.1080/15228835.2019.1626788)

**Publication date**

2019

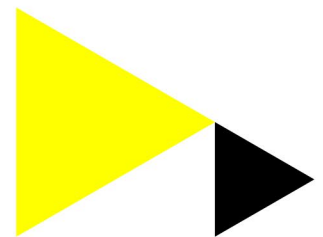
**Published in**

Journal of Technology in Human Services

[Link to publication](#)

**Citation for published version (APA):**

Ben Allouch, S., & Boonstra, J. (2019). The development and implementation of a mobile application in human services. *Journal of Technology in Human Services*, 37(2-3), 159-183.  
<https://doi.org/10.1080/15228835.2019.1626788>

**General rights**

It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

**Disclaimer/Complaints regulations**

If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please contact the library: <https://www.amsterdamuas.com/library/contact>, or send a letter to: University Library (Library of the University of Amsterdam and Amsterdam University of Applied Sciences), Secretariat, P.O. Box 19185, 1000 GD Amsterdam, The Netherlands. You will be contacted as soon as possible.

# The development and implementation of a mobile application in human services

S. BEN ALLOUCH AND J. BOONSTRA

JOURNAL OF TECHNOLOGY IN HUMAN SERVICES

[AQ0]

Somaya Ben Allouch<sup>1</sup> and Judith Boonstra<sup>1</sup>

<sup>1</sup>. Amsterdam University of Applied Sciences, Amsterdam, The Netherlands

[AQ1]

**CONTACT** Somaya Ben Allouch [s.ben.allouch@hva.nl](mailto:s.ben.allouch@hva.nl) Digital Life Research Group, Amsterdam University of Applied Sciences, Wubaustraat 2-4, Amsterdam, 1091 GM, The Netherlands.

Received: 2018-07-27

Revised: 2019-05-24

Accepted: 2019-05-30

---

## ABSTRACT

Information and communications technologies (ICTs) in human services are on the rise and raise concerns about their place and impact on the daily activities of professionals and clients. This article describes a study in which a social mobile application was developed for job coaches and employees and implemented in a pilot phase. The aim of the mobile application was to provide a better communication between employees and their job coaches and to provide more up-to-date information about the organization. The application consisted of a personal web environment and app with vacancies, personal news, events, tips, and promotions. A qualitative methodology was used in the form of focus groups and in-depth interviews. The results of this study show that the participants are partly positive about the social mobile application. It can be concluded that the use of mobile technologies can be beneficial in a range of human services practice settings for both professionals and clients and, therefore, requires more attention from the academic field to focus on this relatively new but promising theme.

---

**Keywords:** Mobile technology ; social work ; mobile human services ; digital human services ; information and communication technology ; mobile computing ; technology training

## Introduction

More and more mobile applications and online interventions are available for social workers. The potential of information and communications technology (ICT) and, thus, also mobile technology, creates unforeseen opportunities for the social work practice, both for social workers as for their clients. The ever-expanding facilities for communication via a mobile phone have become, as Wei (2001) stated, more than just a talking device on the move. It represents a converged new communication and information technology with a variety of extensive interpersonal and mass communication services such as voicemail, news updates, e-mail, and Internet access. Nowadays, all kinds of applications can be downloaded and run on our smart phone devices which means that the smart phone is being used less and less as a traditional phone but more and more as a laptop on the go.

However, the adoption and implementation process of these mobile technologies is still a complex undertaking not only in the academic debate but also among practitioners. In this article, we will describe the implementation of a newly developed mobile application aimed to enhance the support of both clients and their social workers in a Dutch employment program.

## Theoretical background

From the 1990s on, there is an academic debate going on about the dominance of what is called “managerialism of ICT use” (Garrett, 2004; [AQ2]Parton, 2006; Parrott & Madoc-Jones, 2008). This debate has been partly instigated by the complex development and use of ICT in social work which has been proven to be complex and slow (Carrilio, 2005). Reamer (2013, (Ryan and Bernard, 2003)) provides an overview in which he discusses the ethical and risk issues many social workers encounter when using ICTs during their daily practice. What is interesting to note is that in many studies concerning ICT and social work, the predominant view is on social media (Ben Allouch & Boonstra, 2017). Chan (2016, p. 263) also emphasizes this “In social work, the dominant research concern in social media is more about professional ethics than their application in intervention.” Goldkind, Wolf, and Jones (2016) notes that social work as a field has an “uncertain attitude towards technology” which elicits that digitalization is not seen as a part of the social work professionalization.

In the health care domain, the use of a wider range of ICTs is noticeable and is still growing rapidly. In the social work domain, there seems to be a stronger preference and usage of social media above other types of ICTs to be used as part of an intervention. Specifically, the use of innovative mobile applications to address health issues has seen a rise in the last decade. This has evolved in a new field of mobile health applications or m-health. The World Health Organization (WHO) defines m-health as medical and public health practice supported by mobile devices, patient monitoring devices, personal digital assistants (ODAs), and other wireless devices (World Health Organization, 2011). [AQ6] A growing body of literature concerning various types of mHealth applications (aapplications) [AQ7] is being established, which results in several classifications and taxonomies (Gagnon, Ngangue, Payne-Gagnon, & Desmarts, 2016; Ozdalga, Ozdalga, & Ahuja, 2012; Plachkinova, Andres & Chatterjee, 2015). These mobile health applications are nowadays more and more embraced as part of an intervention to treat people and evidence is needed on how well these interventions actually work (Baskerville et al., 2015; Fuller-Tyszkiewicz et al., 2018, Leung et al., 2016). However, even though in the medical field we see a rise of mobile applications, this trend is not clearly visible in the human services domain and it seems as if the professionals are not swiftly translating one of the biggest changes in societies, namely the digitalization of our society, into their daily work practices. This could mean that the multiple worlds, in which their clients operate, namely both online and offline, are not adequately addressed by professionals. The current state-of-the-art regarding ICT use in human services prompts the need for more clarification about the whats, whys, and hows regarding the digitalization of human services and the potential shifts this causes. This is not only important for the professionals working in the human services domain but also for their clients.

The aim of this article is to shed more insight on how social workers adopt, implement, and use a mobile application which supports them and their clients in an employment program. We used a social constructivists approach (or mutual shaping perspective) in this study in which social processes are understood to mutually influence and shape technology and technology influences and shapes social structures and actors.

## Information and communication technologies in human services

In the field of social work, Hutchby (2001, 2003) investigated why social workers take up specific aspects of technologies and how these aspects can be aligned with their work practice. It is important to include the work context when studying ICTs, especially for social workers who can have a diversity of work contexts.

With regard to the usage of mobile applications by social workers, technologies need to be adopted and implemented in specific contexts for effects both desired and undesired to happen and become visible. From a technology acceptance perspective (Davis, Bagozzi, & Warshaw, 1989; Yi, Jackson, Park, & Probst, 2006) different factors are known to influence the technology acceptance process of individuals in different contexts. Zhang and Gutierrez (2007) have adapted these factors specifically for the use of ICT in human services settings. These factors are: (a) the “attitudes of practitioners” which encompasses the personal usefulness of the ICT, the organizational usefulness of the technology and the benefits brought to service users; (b) “subjective norms,” or social pressure to use ICT by people of influence in welfare agencies such as peers and management staff, and (c) “perceived behavioral control,” which is defined as the worker’s confidence in the feasibility of ICT implementation. These beliefs are related to the perception of social workers that they have the competency, time, funds, equipment, technological support, and training to use ICT.

Scholars such as [AQ3](#) White, Hall, and Peckover (2009) who also embrace the social shaping of technology perspectives, describe how professionals make their own strategic and moral decisions concerning ICT implementations based on their competence and domain specific knowledge. Recent work from Tregeagle (2016) also supports this line of thinking and has applied this idea specifically to the field of child welfare. She affirms the importance of the social shaping of technology, but she also stresses that factors such as the organizational supports and a shared language between ICT professionals and practitioners are needed.

The mobile application in this study aimed to specifically complement the face-to-face contact between job coaches and employees and to empower employees and facilitate job coaches in their daily work activities. In order to be able to take the end-users' experiences into account, in this case both the job coaches and the employees, the development of the mobile application was divided into different development phases. This was to ensure that the developers and end-users created a more shared language with regard to the mobile application. The step-wise development process also supported a better understanding of each other's needs, wishes, and roles as two different user groups used the same mobile application.

Based on the previous literature review, the main research questions of this study were twofold. The first one was concerned with what the implementation process of a newly developed mobile application in a Dutch social work context looked like and how it developed over time within this specific context. The second research question was focused on the initial user experiences of the job coaches and the employees with regard to the mobile application specifically designed for a social work context. A "job coach" in the Netherlands (also known as a work coach or work supervisor) is a social worker who provides support in finding work for people with disabilities. The objective is always to find and keep a suitable job depending on the specific needs and capabilities of the client.

This article describes the pilot study in which a mobile application for a social work organization was developed and tested by a small group of people within the organization with the possibility that positive results would lead to a broader implementation of the mobile application in the rest of the organization.

## Method

### Research design

To study the implementation process of the mobile application in the supporting employment program, a phenomenographic approach was chosen (Marton, 1981). The aim of following this approach was to describe the qualitatively different ways people perceive, experience, and understand the same phenomena in the world of which they are part. In order to grasp the variation in how the job coaches and employees experience the use of the mobile application in the pilot phase, we wanted to study their differences in experiences. From a phenomenographical standpoint, there are two perspectives to perceive reality, the first-order describes what something is and the second-order focuses on how something is perceived to be. In this study we will follow the second-order perspective and focus on the description of the individual's manner to perceive any aspect of the world (Marton, 1981).

It is important to note that prior to this pilot study, the developer of the mobile application held a number of exploratory talks with a number of social workers of the specific Dutch social work organization in order to obtain their input for the mobile application. The pilot started in April 2017. A kickoff event was organized by the app developer in collaboration with the job coaches, for participants and social workers. During this event an information meeting was held to launch the app and install it on the mobile devices of a group of preselected participants consisting of employees (n = 18) in the pilot group. The participants of the pilot group were selected via the innovation/communication department of the social work organization.

Five social workers participated in this study and were selected based on being part of the pilot work group within the organization. The idea was that first a small number of social workers and employees would be introduced to the mobile application and after the pilot study a broader implementation would take place within the organization.

The social workers selected the employees (n = 18) who participated in this study. Their choice was mainly driven by pragmatic reasons. All social workers have a group of employees for whom they are the main reference point. These employees can work at different locations in the region, depending on the sort of work they perform. In this study, the employees were working as mail carriers for a postal company [B](#) and [S](#) employees working at a metals company [E](#). [AQ8](#) The job coaches asked their employees who was willing to participate in the study and then they could register. The coaches also specifically asked employees who were available at the end of the day and location

of work setting. The authors of this study were not involved in the selection of the participants. Information via the mobile application was sent to the employees at least weekly (one app message).

This pilot study consisted of three phases. The first phase focused mainly on the deployment of the app, informing the employees and social workers about the long term, iterative study design, and about the possibility to use the mobile application as a means to improve communication between the social workers and employees. The second phase was labeled “initial use and preliminary evaluation,” which was focused on the usability of the application and whether the initial expectations of the employees were met by the mobile application. Finally, the third phase was the “extended use, (re)design, and evaluation” phase which consisted among other things of adding multiple functionalities such as two-way communication (see [Table 1](#)).

Table 1. Overview of data collection rounds and participants.

Data collection	Method and participants
First phase = deployment of app April 18–21	Three focus groups with employees (n = 18; 11 female and 7 male). From n = 18, 6 employees are seconded at company A (2 male and 4 female), 3 at company B (1 male, 2 female), and 9 at company C (4 male and 5 female). Five in-depth interviews with the job coaches (n = 5; 3 male and 2 female)
Second phase = initial use and preliminary evaluation May 1–5	Three focus groups with employees (n = 14; 10 female and 4 male) four in-depth interviews with the job coaches (n = 4; 3 male and 1 female)
Third phase = extended use, (re)design and evaluation June 19–23	Three focus groups with the employees (n = 9; 4 female and 5 male) three in-depth interviews with the job coaches (n = 3; 2 male and 1 female)

## Data collection

Focus group interviews and individual in-depth interviews were held with both the social workers and employees. The semistructured interviews were recorded on video and audio, after having received a declaration of informed consent of the social workers and employees. The topics which were covered during the first round of focus groups and in-depth interviews consisted of *current mode of communication between social workers and employees, between the organization and employees and initial expectations, needs, and wishes of the employees towards the mobile application*. The topics of the subsequent rounds involved *current user experience and usability of the functionalities, content of the app, and barriers and opportunities*.

The interviews lasted on average between 30 and 90 min. [Table 1](#) shows the characteristics of the data collection phases during the pilot.

[Table 1](#) also shows the characteristics of the participants and their work setting. The age of the participants, for both the job coaches and for the employees varied between 18 and 67 years.

## Data analysis

All interviews were transcribed, and a mixed-method coding approach was applied, meaning that some of the themes were based on prior knowledge from literature (deductive approach) and some themes emerged directly from the participants’ narratives (inductive approach; Ryan & Bernhard, 2003). Following the constant comparative method, we performed several rounds of coding to compare new codes to previous assigned codes to make sure the identified themes remained valid and to derive the final set of themes (Strauss & Corbin, 1990).

## Results

Before we provide the results of the three phases, first a description of the mobile application and its content will be given to better understand the results in this light.

### Mobile application and supportive job placement

The development of the mobile application was stimulated by the introduction of the Dutch Participation Act, which was introduced in the Netherlands in 2015. It presumes that every Dutch citizen has to make a contribution in the participatory society. The Participation Act describes aspects concerning income support, labor market (re)integration, and compulsory activities in return for income and benefits. The municipalities are mainly responsible for carrying out this Act. The municipalities have the imperative of helping their residents to achieve an independent (working) life as much as possible. Private employment agencies are contracted by municipalities to support them to find a fitting job for job-seeking citizens (with and without disabilities) on their path to paid employment. This can be realized by offering (sheltered) work and learning pathways to citizens who need this support. The cause of the need for this support can have many different reasons. This can be lack of the right education and training to perform a regular job or mental and physical disabilities which are causing a regular job to be too challenging. Offering job coaching at the workplace by social workers and, if necessary, a protected working environment can be an outcome to support citizens in their job reintegration process.

Recent figures from the Dutch Employee Insurance Agency shows what labor market participation looks like for the group of people with a disability. Within the group with a work-limiting disability, 33.8% has a job or is actively looking for work. This group of people can make use of three types of facilities: organizational (including job coaching, transport facilities), physical (facilities that are necessary to perform the work optimally such as computers or other resources), and financial provisions (such as wage dispensation). Every year municipalities finance 75,000–100,000 facilities for people with an occupational disability (Jongen, 2017; VU, 2018).

The developed social mobile application aims to enhance the support of the employees who are working in these facilitated jobs. The social workers are part of the main organization where the employees are clients of a supporting employment program. The organization where the social workers are employed is actually one of the subcontractors of the municipalities to provide different forms of job supportiveness for the different groups of job-seeking citizens.

## Content of the mobile application

The mobile application consists of a personal web environment and content about vacancies, personal news, events, tips and action, and promotions. The users go through an application program, consisting of themes and actions that help users to find a suitable job in a structured way. The social workers monitor all the actions of the users directly via their own environment. In addition, a profiling system is used to record a profile of the user with the aim of providing personalized content. Users can sign up for offline events, such as a photo shoot, “Pimp your CV,” “How to show yourself,” and so forth. The collected data via the application is used to detect usage patterns to make predictions about the users' behavior possible.

## Results first phase—Deployment mobile application

The first phase of the pilot study provides insight into the current communication structure and channels of the organization and how the employees and job coaches experience the (digital) communication prior to the start of the pilot and the expectations both have with regard to the app prior to the launch of the app. A total of 18 employees and five job coaches, respectively, participated in this round. First the results of the employees will be discussed, followed by the results of the job coaches.

### Current mode of contact

Most participants ( $n = 15$ ) indicate that they can contact their job coach or make an appointment with the job coach at any time. This happens on the shop floor, when the job coach is walking around, or they use telephone (calling) and WhatsApp, mail to make contact, and possibly a face-to-face appointment. A small number of the participants ( $n = 3$ ) are dissatisfied with the accessibility of the job coach (“it takes three days for the job coach to answer”). A number of employees ( $n = 3$ ) indicate that they usually call because they find that the easiest thing to do “you can then indicate in advance what the conversation will be about.” One participant mentions “sick leave” as a reason to call the job coach. Most participants ( $n = 15$ ) indicate that they regularly speak face-to-face with their job coach (at least once a week). Two participants indicate that they prefer this as well, at a location of the organization because it is more private than the workplace.

Two participants indicate that they are sending an e-mail to the job coach. The subject is, for example, the discussion of leave hours. According to the participants ( $n = 18$ ) there are no rules or agreements that indicate how often or

in what way the contact should take place. Participants (n = 5) also indicate that one job coach can reach up to half a dozen employees by telephone in the evening and request a call for the next day. This can be done (by phone) with the other job coach up to half past five in the afternoon. After these times, according to participants, a WhatsApp message can be sent or a voicemail, after which the job coach may contact them after “working hours.” A number of participants (n = 3) indicated that their job coach could no longer be reached after “office hours” (“could be reached with the previous job coach”).

### **Current use of mobile applications**

Various **appsapplications** are being used by the participants in their private lives. WhatsApp (n = 18) was mentioned by everyone as a mean of establishing contact with family and friends. In addition, also applications as were mentioned: YouTube, skype, Facebook, GPS/navigation, various radio stations, PSV, Instagram, Snapchat, Candy-Crush, Wordfeud, Messenger, games. Also, **appsapplications** which were used specifically in a work setting such as weather radar and ANWB (Dutch road assistance) were mentioned.

### **Involvement in deployment phase of the social mobile application**

Participants (n = 9) indicated that they have been informed in varying degrees about the arrival of the app: during a work meeting and via an information sheet. Three participants (n = 3) had not been informed or had not been informed until just before the app was installed. The information session was somewhat a disappointing experience by participants (n = 6): It was experienced as too short and little information about the app was given (“what you can actually do with it”). Some of the participants (n = 3) had not yet had an information meeting. This concerned the extra focus group added, the information meeting was planned after the interviews with the other groups.

### **Expectations regarding the social mobile application**

Many participants (n = 9) indicated that they expected it to be an informative app. That the app provides more information about the main organization, “that you learn a little more about < name organization>,” is what one participant (n = 1) calls information about the merger. They also expect the app to ensure that they receive information more quickly. The individual participants on secondment (n = 5) indicated that they are somewhat disappointed with the possibilities offered by the app: “the app is for < name organization and not for employees,” “the job coach can do anything in the next two weeks, and we have to wait.” The expectation was that employees would also be able to communicate with the job coach via the app at this stage.

Participants also mentioned the following concrete ideas to be included in the app: Pay slips via app, information about the main organization, the newsletter, personal information about colleagues such as birthdays and death (with photo added because: “Imagine that you die and put them (official name) in it yes then I don’t know who that is because I only know you as (nickname), then I don’t even come at your funeral”), news from the Works Council, information about holidays, days off and leave, and vacancies.

### **Results social workers first phase—Deployment mobile application**

Also, in the first phase of the pilot study, five social workers provided their needs and expectations with regard to the mobile social work app specifically developed for their organization.

### **Current mode of contact**

In general, the professionals indicate that they can always be reached by different communication channels, especially via smartphone (calling, texting and/or WhatsApp). In addition to the accessibility within office hours, most of them indicate that they can also be reached outside office hours. There are no rules or organizational policies regarding contact modes with employees. If participants contact us too often outside office hours, then they will discuss the issue with the specific employee, for example, “a question of raising children.” The majority of the social workers also responds to serious and urgent matters outside office hours, one job coach consistently does not with the reason “I am not a 24-hour shift, participants have a supervisor for that.” One job coach mentions that the participants sometimes use the telephone to stay attached to their work, for example, “some of them can’t cope with that freedom.”

In addition to the fact that the social workers also visit the workplace on a weekly or sometimes daily basis (face-to-face contact), most social workers make contact by telephone by calling (n = 5), texting (n = 2), using WhatsApp (n = 4), and e-mailing (n = 5) with their participants. Four job coaches express a preference for face-to-face above calling, for example, “more personal,” “see how someone is in his skin,” and “I have to look them in the eyes, do you speak the truth or not.”

One person calls it useful to send general information by e-mail or app so that everyone is reached (as a group secondment). WhatsApp is seen by social workers as an easy way to have a quick and short contact moment (“a joke,” “how’s it going”) and to maintain contact or to make appointments, confirm, or cancel. Just one professional uses text or e-mail for this purpose.

### **Involvement in pilot group**

The involvement of the social workers in the pilot group within the organization regarding the development and implementation of the mobile app differs. Two of them were asked to replace other social workers in the workgroup, one of which was not called in until after the start of the pilot. Three social workers mentioned being busy with other things at the moment and are “added” to the launch of the app. One indicated that there is little interest in the app and another one that they did not have time to go through everything properly. One indicated specifically that he is enthusiastic about taking part in the pilot.

The job coaches indicate that the information meeting did not meet their expectations. They missed structure, there was too little information about the app, and the connection of the developer with the participants (their employees) was mediocre. One job coach illustrated it as follows: “You have to make it a little fun for the people, it’s a favor that they participate in the pilot.”

### **Expectation towards the social mobile application**

All social workers expect to inform the participants faster and to communicate more information from the main organization to their team members, such as new developments (e.g., the bicycle plan). A job coach indicated that lack of information often raises questions and also means more work for the job coach. Another one indicated precisely that reporting via the app would ease the workload because the job coach would no longer have to “alert and inform the participants about the Christmas package.” In addition, one mentioned that more regular contact can be maintained with the participant. Ideas mentioned by social workers for the content of the social app are communicating new developments within the organization, information about collective labor agreement increases, changes in rules, entertainment (videos, etc.). Also, advice on lifestyle or information about health and sports clubs were mentioned.

### **Current use of mobile applications**

A number of job coaches (social workers) described themselves as “not so active,” “I am not so digital,” “I let it come to me.” The following **appsapplications** are used privately: WhatsApp, sports **appsapplications**, a spirit level app, GPS/navigation, trip planner, rain radar, televisions and radio **appsapplications**, and marketplace. One social worker tweets and uses Facebook, although not very active and one noted that “They are time takers” who distract you from the work.

### **Conclusion first phase**

In general, the participants are satisfied with the current channels of getting in touch with their social workers (calling, WhatsApp, e-mail). Participants are less satisfied with the amount of face-to-face time with their job coach. There is also dissatisfaction regarding communication, specifically general information from the main organization.

The social workers indicate that they experience a lack of time in their communication contact with the participants: caseload is large, **AQ9** face-to-face contact is minimal, difficult to keep equally well in touch with everyone. WhatsApp is experienced as a pleasant mean of contact. The social workers express a preference for face-to-face. **AQ10** There is regular contact with participants via WhatsApp, telephone or mail and this is experienced as a pleasant means of communication. In addition, accessibility is an issue, as is the demarcation between work and home: whether or not to contact participants outside working hours? Job coaches also mention the fact that participants experience a lack of information (newsletter) and/or that reporting from the main organization is slow.

## Results second phase—Initial use and preliminary evaluation

The second round of data collection took place 2 weeks after the information meeting and the request to install the social app on the phones of the participants. Table 2 shows the composition of the total participants in this round. These are the same participants (employees) which were also involved in the first phase. From the 14 participants included in the focus groups of the second phase, eight people installed the app on their phone. Of these, seven participants regularly reviewed the app. One participant did not use the app because the app icon could not be found on the smartphone. Reasons for not installing the app of the other six participants were: no motivation (meaning no interest, no will not try), no time (n = 1), and not having a suitable smartphone (n = 3).

Table 2. Total study participants second phase.

Round	Participants (employees)	Participants (job coaches)
Two	Focus group 1: n = 6; 4 female and 2 male Focus group 2: n = 3; 2 female and 1 male Focus group 3: n = 5; 4 female and 1 male	n = 4; 1 female and 3 male
Total		14

In this stage of the usage of the mobile application, only unilateral communication—job coaches have the possibility to send messages to their team members—and messages from the main organization can be sent to the participants. First the results of the participants, in this case the employees, will be presented followed by the results of the social workers.

### User experience mobile app

Participants experienced that the app provides more information from the main organization (n = 6) and provides faster information (n = 2). Previously, they had to wait for the job coach to come along, “you no longer have to follow it yourself.” Participants indicate that it is useful (n = 2) to get messages through the app, such as information about a day off. Participants also mentioned that they like it that they are not “forgotten,” referring to the information that they now receive.

Out of the eight participants, two participants who have installed the app indicated having no added value in using the app “I get the information through other channels as well,” and “I can reach the job coach well through WhatsApp.”

### Ease of use and the appearance of the app

Individually seconded users experience the app as simple and easy to operate (n = 3).

A number of participants experience little ease of use because they have to scroll too much through the app (n = 2). They also mention the disadvantage that messages cannot be deleted and logging is cumbersome: “... still more than half an hour each time the user name and password must be entered.” Participants indicate that they find the icon difficult to find (n = 2).

### Functionalities and content of the app

News items are viewed the most, where participants (n = 5) notice that nothing is written at events and messages. In terms of content, participants experience the film about the theme “respect” as childish “we also have brains,” does not meet the expectation “it has to be about work, if I want yoga then I look it up myself.” In addition, the lifestyle message is not consistent (n = 3): “we do enough cycling and walking to deliver mail.” Only one participant is concerned about privacy when messages are sent by the job coach (“does everyone see this?”). The participants (n = 8) indicate that they are (still) communicating with the job coach via WhatsApp and not via the app.

### Barriers regarding social mobile application

Participants indicated the following barriers for not using the app. These were: no WIFI at home, old mobile phones on which you cannot install an app, too little memory on the phone, login codes are cumbersome, unattractive because there is not a lot of content in the app, only one-sided communication is available, WhatsApp is experienced as a good app (n = 14) for communication with the job coach, existing health **apps/applications** which are already on the phone of some participants (“so why look at the app”), not having an e-mail address, and having preference for face-to-face contact with the job coach.

Having experienced these barriers, the participants also had a couple of recommendations for the app such as being able to respond to the messages again; receive more messages from the social worker but “if he has nothing meaningful to say then it doesn’t have to be,” login codes valid for more than half an hour, simpler login code, work information, agenda of events not related to work, ideas for content, and anniversaries of participants in the app. Many of these recommendations have been added to the mobile application so that the participants could test how the improved version would work.

### **User experience social workers**

Two of the five social workers had installed the app on their phone, one of them indicated that the content is only partially visible, which means that the job coaches viewed the app via the laptop/computer just like the two other social workers. Due to problems installing the app on the phone, they also looked at the app via their laptop/computer. Most of the social workers indicate that they are still searching and that they experience a lack of time to try out the app, that they indicate that there is no support (in the form of time) from their organization, and that the pilot must be run alongside the ongoing activities.

### **Ease of use and the appearance of the app**

None of the social workers experienced added value in the app because WhatsApp is experienced as easier, more convenient, and as a quicker contact “with those check marks you know they have read it.” Or because the participants are visited every day at the workplace, which casts doubt on the usefulness of the app. Most of them also encountered technical problems. The app could not be opened, or the content is half displayed on the screen (n = 1), which is perceived as a disadvantage. Social workers also indicated that the login is cumbersome “that keeps me from starting it up every time.” The appearance of the app is rated as boring “I would have preferred it to be a little more cheerful.” The items are easy to find and the app is basic/easy and clear which according to one job coach is an advantage for her team members.

### **New functionalities and content of the app**

All social workers indicate that it is important to communicate news items via the app (“because that gives me time”) but these messages must be correct for every participant. A message which was sent centrally to all participants, caused confusion. As a result of which the job coaches lost time in correcting the information and answering questions from participants. According to one job coach it is important for certain participants that the information is presented more visually (images or icons) and less text. Sending messages to participants is not done (for the reason that WhatsApp is more convenient as mentioned previously).

### **Barriers regarding social mobile application**

The job coaches mentioned a couple of barriers with regard to the app, such as the availability of the app. One job coach also wants to keep in touch on the road in the car, but that is not possible via the current version since you have to download it via the laptop, this is experienced as a disadvantage. In addition to the app, most social workers (n = 4) would like to continue using WhatsApp. It is also mentioned that it is a disadvantage that different information flows run alongside each other (his own mail contact and the new app). A job coach indicates that the app is not suitable for all employees because they have an older mobile phone and the inability to cope with the stimuli provided by the app (e.g., beeps at reports).

The social workers also provided a couple of recommendations such as providing participants with correct, accurate information quickly and immediately (with a check by job coaches); the possibility of “customized” messages, sent centrally from the main organization, aimed at part of the participants (e.g., events that are linked to the participant’s environment such as location of the participant); and the last one refers to adding more visual information in-

stead of textual information, this fits better with the participants. Some of the recommendations were added to the mobile application.

## Results of third phase—Extended use, (re)design, and evaluation

The final round took place approximately 2 months after the start of the pilot study (the information meeting). In this round fewer employees participated in the focus groups, nine in total (instead of the 14 intended) and three (instead of the five intended) social workers.

### Employees' experience mobile app

Of the five participants who had installed the app on their telephone, four of them used the app. The main reason for using the app is that the participants indicated that they regularly view the app because they are curious about the messages, and because you can play games. One participant rarely looks (no relevant news, no time) at the app and one participant no longer looked at it after the installation of the app. This technical problem was solved during the pilot project.

### Ease of use and the appearance of the app

After 2 months of use of the social mobile app, the main advantage of the app is, according to four participants, that it is nice to be kept informed about issues regarding their main organization. This is something which they always missed. An added value would be that the paper newsletter would be replaced by the app. However, three participants still preferred to use WhatsApp “when it comes to the coach, I prefer to app.” According to one participant it is not easier to get in touch with the job coach. Some participants indicate that the app does not yet have any added value, not even in the contact with the job coach, “after the pilot, the app will soon be off my phone” and that the provided news items are not interesting or relevant to them personally.

The usability of the app is not very high according to most participants, they find it “annoying” that you have to scroll through down all the news items and that old messages remain. Also forgetting your password is not that easily fixed in this pilot phase. According to the participants, the app must function well, and the job coach must also be able to handle the app well, however, it is experienced that the app “is still in its infancy today.” One of the participants worried about “people in green” who cannot read and write, that they are left out when the app becomes the main mode of communication.

### New functionalities and content of the app

The overall idea is still, also after 2 months of reading the content of app, that the news items are experienced as childish or superficial “they do not always know what to put on it.” Also, the functionality or information does not always match with the employees “I am not waiting for a puzzle if you have just worked in the heat.” The main content of interest is specific work-related information: holidays and days off and, for example, weather and outdoor working tips. One participant indicates that he clicks on the news items just to have it signed as read in the app.

The main disadvantages are also still that the communication with their job coaches is not run smoothly. The “send messages” functionality does not seem to be working properly yet. It also seems that the messages from the job coach are standard and not aimed at specific communication “that way we can keep in touch via the app.” Two participants indicated that the job coach himself does not seem to know very well how to use the app either.

One participant experienced the app as friendly “they speak to you with your name,” which creates motivation to start viewing the app.

The main recommendations after the pilot phase the participants have for the app concern the following: a button/button **AQ11** with which you can reply to messages from job coach; to be able delete older messages; no more cartoons, just important things such as work-related matters (collective bargaining, days off, etc.); discussing important themes which happen on the work floor such as bullying, since the job coach does not currently have time to discuss these matters; and not bringing a new theme everyday but maybe once a week or once in 2 weeks so that a theme can be discussed more in-depth.

## Conclusion use of social mobile application employees

The motivation for participating in the pilot seems to have diminished among the participants after 2 months. Participants are somewhat disappointed with the possibilities of the app, especially communication with the social worker (Participants expected to be able to communicate directly with the social worker.). It is also striking that the content of the news items does not always match well. On the other hand, participants do also indicate that they appreciate the work-related information on collective agreements and days off. The added value of the app is not yet clear to the majority of participants WhatsApp and other contact devices such as calls, and face-to-face contact are experienced as easier.

## Social workers' experience mobile app

It was interesting to see that the results regarding the use of the mobile application did not change for the job coaches during the 2-month pilot. What was emphasized still was the lack of time to actually use the app. They experienced a very high work load and that this reason caused them to not yet having embraced the app.

## Final conclusions

The aim of this study was to gain insights in the pilot implementation of a social mobile app in a supporting employment program before the app will be implemented on a broader scale in the organization. We also gained insight into how a social work organization adopts a mobile application in practice. It provides general lessons for implementation processes technology in the social domain/human services. Several main conclusions can be drawn based on the results and these concerns the resistance and motivation toward the mobile app, interest of the target group toward the app, and opportunities and constraints.

## Attitude, resistance, and motivation

It is important to pay attention to the resistance which appears to exist in relation to the use of the app. During the interviews, the picture emerges that all study participants, both employees and social workers can influence each other negatively when it comes to interest in and use of the app. For the potential roll-out of the app regarding the employees, the social workers can play a stimulating motivating role here and be used as key figures in the group of participants who can take a leading role in making their employees enthusiastic for using the app.

Social workers can play a pioneering role in using the app, but foremost they must also want to do this themselves and experience its usefulness, be given time and space and be able to use and deploy the app properly themselves. The organization should be very keen to facilitate their professionals otherwise the implementation of the app is not going to be a successful one.

Paying close attention to existing communication structures and preferences of people is also very important. These were insufficiently taken into account as a starting point at the start of the pilot project.

## Interest of the target group

This study shows that employees have their own ideas about which themes they would like to see as content in the app. Only the social workers were asked about which themes they think their employees would prefer and not the employees themselves. From a user perspective it is much more valuable to ask the target group directly and, thus, to involve this target group also more closely in developing and choosing the content of the app. This can result in a better alignment of news, events, and themes included in the app. Halfway during the pilot the developer already used the input of the interviews to improve the app for the employees. Vigilance is required to ensure that the content does not become too childish for this specific target group.

## Facilitating conditions

Support from the organization during the pilot period consisted of appointing a working group and information meetings for participants and social workers. In addition, a technical consultation was possible during the pilot period for questions about the app. The organization made devices available (smartphone, tablet, laptop) for social workers. [AQ12]What was missing according to the social workers was specific Preconditions that were missed concerned especially time allocation to learn how the application worked and to understand how the clients experience the new ap

**plication.** The social workers had to realize the pilot within their current working hours, which caused resistance. Participants do not all have good smartphones or outdated mobile phones on which the app could not be installed and/or do not have Wi-Fi at their disposal on the shop floor. Participants indicate that they do not have the money for a new smartphone (which is not surprising since this is a target group that lives on the level of assistance). It is important to gain a better understanding of the mental and physical abilities and limitations of participants (reading, ICT skills). There are opportunities for the organization to facilitate the resources and training of ICT skills of both the social workers and the employees.

Based on these conclusions, we would recommend in general that when developing mobile applications for the human services domain close attention needs to be paid to the specific target group the app is intended for. As we have seen in this study, clients in human services can have their specific needs and wishes (e.g., ICT skills, mental capability) and only by carefully translating these needs and wishes into specific requirements for a mobile app a successful usage for the long-term can be achieved. On the side of the professionals, we would recommend that their specific work context is very important to consider when introducing mobile applications and that the professionals experience a direct advantage of the usage of the mobile app for their daily work activities. As this study shows, the mobile app was not really embraced by the social workers because they were too busy with their daily tasks which did not necessarily require the usage of the app.

In conclusion, the aim of the organization was to develop a mobile application with the assumption that the mobile app will support the well-being of employees, which in the long-term would have a positive effect on labor participation. The pilot phase (April to July 2017) was a very valuable period in which the social mobile app could be implemented on a small scale among important stakeholders, namely the users: the employees and social workers. By implementing the app on a larger scale within the organization in the future, new insights can be gained that can ensure a more successful uptake and sustainable use of the app due to the involvement of all stakeholders in various phases of the development and implementation of the app. Even though in this small pilot phase there was no room for an effect study, based on the results it can be concluded that the majority of the participants at least feel more involved and recognized by their organization because they receive more information about the organization. This is a first step in supporting the well-being of citizens when aiming for a reintegration process in the work force.

## Study limitations

Despite the results indicating that the majority of the employees and social workers are reasonably positive about the implementation and usage of the mobile application, also some limitations of the study can be mentioned. First, the employees were chosen by the job coaches and were asked to participate in a pilot study. Second, we do not know how representative the social workers are who participated in this study with regard to the overall pool of social workers working in the organization. We were told that the specific social workers were chosen based on pragmatic reasons, e.g., availability, location, and so forth. Third, in the last phase of the study only nine of the initial 18 employees participated and three of the initial five social workers. The main reason for not attending was that it did not fit their schedule, however, this does mean that half of the participant's information could not be taken into account into this last round of evaluation.

## Discussion

The set-up of this pilot implementation of a social mobile application targeted at a specific and complex user group with the aim to have an organization-wide implementation of the app showed that not everything is in place yet for this broader implementation. Goldkind and colleagues (2016) noted that social work as a field has an "uncertain attitude towards technology." Digitalization is not seen as a part of the social work professionalization and it is also not (yet) progressively being taken into account from a professional perspective.

Social work as a field seems to be not embracing the reflective nature it usually has regarding all kinds of other issues it is actively involved in. Social work is "staying behind" if we look at the reflection on ICT use on both an individual level of the professional, specifically also reflection on which technology is suitable for their clients and on a broader organization level, thus both on a microlevel and meso-level. The conducted study also shows this very clearly: job coaches are not actively taking up their role as advocates or pioneers in this pilot of the social mobile application and the organization wants to use a technology to be seen in the external world (in this case specifically,

the organization wants to show it to the municipalities which they are hired by) as an organization which is “innovative,” but lacks the proper creation of the right conditions for the job coaches. The results also showed that there are no consistent policies or guidelines regarding the use of e-communication from the organization and that there are concerns among job coaches about the blurring of boundaries between work and private life. Ryan and Garret (2018) call this “the gains may be at the cost of blurring professional boundaries.” This blurring of boundaries is of course not only specific to social workers but to many professionals nowadays which are all struggling with the boundaries between a healthy work-life balance.

Reamer (2013) mentions risks and advantages of using e-communication and mentions the advantage that clients who need help outside office hours can contact the care provider more easily (in this study the job coach). According to Reamer, a risk in online communication is miscommunication due to the loss of nonverbal information. This is clearly reflected in this study: job coaches in particular and some of the employees prefer face-to-face contact above electronic contact via the app or other electronic communication.

However, a difference is also visible here between participants. Reamer specifically mentions clients with mental disabilities who may not be able to be served properly when a social worker provides help remotely. This can also be seen with some of the employees in this study. Because too little attention was paid to the characteristics of the target group (the nature and severity of the occupational disability varied), we see that the pilot partly failed because of the simple fact that there were participants who did not have a mobile phone which supports the use of **apps applications**. In addition, it was decided from an organizational level (HR department in collaboration with the job coaches) which health themes would be introduced via the app. The information in the app was not properly aligned to the thinking and reading level of the participants. Only involving end users in the pilot phase of the app can be regarded as insufficient, end users should be involved in the development of a technological development from the start (Ben Allouch, van Dijk, & Peters, 2009).

This study also showed that a longer-term pilot phase is very usable to show different patterns in the expectations and usages regarding the social mobile application. Palen, Salzman, and Youngs (2001) showed that novice users tend to rapidly modify their perceptions of social appropriateness around mobile phone use, and that actual nature of use frequently differs from initial predictions. They closely tracked new mobile phone users for the first 6 weeks after service acquisition. Leung and Wei (2000) found that instrumental uses of the mobile phone are more frequent and instrumental motives are much stronger than the social or intrinsic uses of the mobile phone. Their result is in line with the results of the current study in which the participants clearly stated that they wanted work-related information and news.

Furthermore, it is important to create awareness that when investigating the use and implementation of a social mobile application, that at the same time you should not lose sight of the ethical side of these pilot studies. In this study too much emphasis was placed on the implementation of the app while not taking into account what the implementation meant for the participants not only in the short term, but also in the medium term and even in the long term. Whether the organization is indeed doing well by putting the mobile app in a new communication structure and supply while the current communication structures seem to work for the participants is an important question. Another important question is, whether it is ethically justified to present participants with self-conceived themes from job coaches and managers which are regarded as childish by the specific end users themselves. Ryan and Garrett (2018) call it an “unsteady and constantly shifting ethical terrain.” We would advocate for a constant monitoring and assisting or translating between the perspectives of the important stakeholders and especially monitoring and translating needs, wishes, and the perspective of (vulnerable) groups in human services with regard to the development, implementation, and use of (mobile) innovative technologies.

Even though the pilot implementation of the social mobile application can be regarded as only partly successful, this study showed that mobile applications can support human services professionals and their clients in their own specific way with increased opportunities and independence. Furthermore, this study showed that before an organization-wide implementation of a mobile app for human services purposes will be successful, more sensitivity from the organization should be developed among its key stakeholders. The use of mobile technologies can be beneficial in a range of human services practice settings for both professionals and clients and, therefore, requires more attention from the academic field to focus on this relatively new but promising theme of mobile social work (m-Social Work).

**IAQ4**

## References

- Baskerville, N.B., Struik, L.L., Hammond, D., Guindon, G.E., Norman, C.D., Whittaker, R., ... Brown, K.S. (2015). Effect of a mobile phone intervention on quitting smoking in a young adult population of smokers: Randomized controlled trial study protocol. *Journal of Medical Internet Research Protocol*, 4(1), e10. doi:10.2196/resprot.3823
- Ben Allouch, S., & Boonstra, J. (2017). Ook online een professional. De toekomstige social worker en communicatietechnologie. [Being a professional online too. The future social worker and communication technology]. *Vakblad Sociaal Werk*, 18(2), 28–30. doi:10.1007/s12459-017-0030-9
- Ben Allouch, S., van Dijk, J. A. G. M., & Peters, O. (2009). The acceptance of domestic ambient intelligence appliances by prospective users. In H. Tokuda, M. Beigl, A. Friday, A.J.B. Brush, & Y. Tobe (Eds.), *Pervasive 2009*, LNCS (vol. 5538, pp. 77–94). Heidelberg, Germany: Springer.
- Carrilio, T. (2005). Management information systems: Why are they underutilized in the social services. *Administration in Social Work*, 29(2), 43–61. doi:10.1300/J147v29n02\_04
- Chan, C. (2016). A scoping review of social media use in social work practice. *Journal of Evidence-Informed Social Work*, 13(3), 263–276. doi:10.1080/23761407.2015.1052908
- Davis, F., Bagozzi, R., & Warshaw, P. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science*, 35(8), 982–1003. doi:10.1287/mnsc.35.8.982
- Fuller-Tyszkiewicz, M., Richardson, B., Klein, B., Skouteris, H., Christensen, H., Austin, D., ... Ware, A. (2018). A mobile app-based intervention for depression: End-user and expert usability testing study. *JMIR Mental Health*, 5(3), e54. doi:10.2196/mental.9445
- Gagnon, M.P., Ngangue, P., Payne-Gagnon, J., & Desmartis, M. (2016). m-Health adoption by healthcare professionals: A systematic review. *Journal of the American Medical Informatics Association*, 23(1), 212–220. Epub 2015 Jun 15. doi:10.1093/jamia/ocv052
- Garrett, P.M. (2004). The electronic eye: Emerging surveillant practices in social work with children and families. *European Journal of Social Work*, 7(1), 57–71. doi:10.1080/136919145042000217401
- Goldkind, L., Wolf, L., & Jones, J. (2016). Late adapters? How social workers acquire knowledge and skills about technology tools. *Journal of Technology in Human Services*, 34(4), 338–358. doi:10.1080/15228835.2016.1250027
- Hutchby, I. (2001). Technologies, texts and affordances. *Sociology*, 35(2), 441–456. doi:10.1177/S0038038501000219
- Hutchby, I. (2003). Affordances and the analysis of technologically mediated interaction. *Sociology*, 37(3), 581–589. doi:10.1177/00380385030373011
- Leung, R., Hastings, J.F., Keefe, R.H., Brownstein-Evans, C., Chan, K.T., & Mullick, R. (2016). Building mobile apps for underrepresented mental health care consumers: A grounded theory approach. *Social Work Mental Health*, 14(6), 625–636. doi:10.1080/15332985.2015.1130010
- Leung, L., & Wei, R. (2000). More Than Just Talk on the Move: Uses and Gratifications of the Cellular Phone. *Journalism & Mass Communication Quarterly*, 77(2), 308–320. <https://journals.sagepub.com/doi/10.1177/107769900007700206>
- Ozdalga, E., Ozdalga, A., & Ahuja, N. (2012). The smartphone in medicine: A review of current and potential use among physicians and students. *Journal of Medical Internet Research*, 14(5), e128. doi:10.2196/jmir.1994
- Parrott, L., & Madoc-Jones, I. (2008). Reclaiming information and communication technologies for empowering social work practice. *Journal of Social Work*, 8(2), 181–197. doi:10.1177/1468017307084739
- Parton, N. (2006). Changes in the form of knowledge in social work: From the “social” to the “informational”. *British Journal of Social Work*, 38(2), 253–269. doi:10.1093/bjsw/bcl337

- Plachkinova, M., Andres, S., & Chatterjee, S. (2015). *A taxonomy of mHealth apps applications—Security and privacy concerns*. 48th Hawaii International Conference on System Sciences, 5-8 January, Kauai, HI, Hawaii, pp. 3187–3196.
- Reamer, F.G. (2013). Social work in a digital age: Ethical and risk management challenges. *Social Work*, 58(2), 163–172.
- Ryan, G. W., & Bernard, H. R. (2003). Techniques to Identify Themes. *Field Methods*, 15(1), 85–109. doi:10.1177/1525822X02239569.
- Ryan, D., & Garrett, P.M. (2018). Social work ‘logged on’: Contemporary dilemmas in an evolving ‘techno-habitat’. *European Journal of Social Work*, 21(1), 32–44. doi:10.1080/13691457.2016.1278520
- Strauss, A., & Corbin, J. (1990). *Basics of qualitative research: Grounded theory procedure and techniques*. Newbury Park, CA: Sage.
- Tregeagle, S. (2016). Heads in the cloud: An example of practice-based information and communication technology in child welfare. *Journal of Technology in Human Services*, 34(2), 224–239. doi:10.1080/15228835.2016.1177479
- Wei, R. (2001). From luxury to utility: A longitudinal analysis of cell phone laggards. *Journalism & Mass Communication Quarterly*, 78(4), 702–719. doi:10.1177/107769900107800406
- World Health Organization. (2011). *mHealth: New horizons for health through mobile technologies—Based on the findings of the second global survey on eHealth—(Global Observatory for eHealth series)*. WHO Library Cataloguing-in-Publication Data: Geneva, Switzerland. [https://www.who.int/goe/publications/goe\\_mhealth\\_web.pdf](https://www.who.int/goe/publications/goe_mhealth_web.pdf)[AQ5]
- Yi, M.Y., Jackson, J.D., Park, J.S., & Probst, J.C. (2006). Understanding information technology acceptance by individual professionals: Toward an integrative view. *Information and Management*, 43(3), 350–363. doi:10.1016/j.im.2005.08.006
- Zhang, W., & Gutierrez, O. (2007). Information technology acceptance in the social service sector context: An exploration. *Social Work*, 52(3), 221–231. doi:10.1093/sw/52.3.221

## AUTHOR QUERIES

**Query:** AQ0: Please review the table of contributors below and confirm that the first and last names are structured correctly and that the authors are listed in the correct order of contribution. This check is to ensure that your names will appear correctly online and when the article is indexed.

Sequence	Prefix	Given name(s)	Surname	Suffix
1		Somaya	Ben Allouch	
2		Judith	Boonstra	

**Response:** Ok

**Response:** Ok

**Query:** AQ1: Please confirm whether the author names and their affiliation are OK as typeset.

**Response:** Please add Digital Life Research Group below the names at number 1. And Judit Boonstra is NOT affiliated with Amsterdam but with Saxion University of Applied Sciences, please change this.

**Query:** AQ2: The year for “Parton (2008)” has been changed to 2006 to match the entry in the references list. Please provide revisions if this is incorrect.

**Response:** Ok

**Response:** Ok

**Query:** AQ3: The references “White et al., 2009, Marton, 1981, Ryan and Bernhard, 2003, VU, 2018, Ryan and Garrett, 2017, Palen et al. 2001, and Leung & Wei, 2000” are cited in the text but are not listed in the reference list. Please either delete the in-text citations or provide full reference details following journal style.

**Response:** I could not find White et al, Palen et al., and in the text. The others have been added to the refs list.

**Query:** AQ4: Please provide “Notes on contributors” section for this article.

**Response:** Somaya Ben Allouch, is an associate professor and her main research interests involve acceptance, (long term) use, implementation, and evaluation of innovative technologies, specifically social robotics, (mobile) ubiquitous technologies, assistive technologies and wearables in the health and wellbeing domain. Judith Boonstra is a researcher interested in social work and the influence of technology in this field.

**Query:** AQ5: Please provide the missing publisher name for the “World Health Organization (2011)” references list entry.

**Response:** has been added to the refs list.

**Query:** AQ6: Acronyms WHO and ODAs are not necessary because this is the only time that they are used in this article.

**Response:** Ok

**Response:** Ok

**Query:** AQ7: Please use either “applications” or “apps” throughout article, not both as is being used now.

**Response:** I have changed them all in applications now

**Query:** AQ8: What is the purpose of (B), 3), and (C)?

**Response:** Answered within text

**Query:** AQ9: Changed FtF to face-to-face. OK?

**Response:** Ok

**Response:** Ok

**Query:** AQ10: Changed FtF to face-to-face. OK?

**Response:** Ok

**Response:** Ok

**Query:** AQ11: Is “button/button” correct?

**Response:** there is one button too much, only one times button should be mentioned there.

**Query:** AQ12: Is something missing from sentence starting with “Preconditions that were missed”?

**Response:** Answered within text

## COMMENTS

**C1** Author: Judith is affiliated with Saxion University of Applied Sciences so this should be number 2. ; ;

**C2** Author: Please add Digital Life Research Group here, before the name of the university. ; ;

**C3** Author: This should be 2018 to be correct and to match the reference in the list. ; ;

**C4** Author: Marton has been added to the refs list. ; ;

**C5** Author: ; ;

**C6** Author: this should be applications and not app, this is straight from the citation. ; ;