Experiences of the Elderly, their Relatives, and Volunteers of a Social Media Application in Monitoring of Wellbeing

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Abstract— **In the spring of 2013, we conducted a qualitative field study where elderly people, their relatives, and volunteering friends used a new social media application (Comcare) that runs in an Android tablet computer, for a period of two months. Comcare makes it possible to communicate with one's own social circle. In addition, it enables relatives to monitor the everyday routines of the elderly. The research material consists of five circles, each one of which includes an elderly person, his relative, and a volunteer friend. The material was gathered in eight group interviews before and after the field study, and 15 personal interviews during the testing period. This article concentrates on results of the evaluation period by reporting experiences of using the application, social support and feelings of safety.**

Keywords–elderly; social media; user experience

I. INTRODUCTION

Social media has made a breakthrough among the young, working age, and partly also among pensioners. Social interaction has transferred more and more to the Internet and concurrently the time used with a computer has grown significantly in the time span 1999–2009 among the age group 10–64 [1]. Social media continues to expand its popularity among all age groups. Even though young adults (18–29 years) remain to be social network mass users, it is notable that the rate of usage growth has been faster in older age groups in recent years. For example, in the past two years, social media use among Internet users age 65 and older has grown 150 % between April 2009 and May 2011. Also during this same period social media use by 50–64 year-old Internet users doubled from 25 % to 51 % [2].

Use of social media can improve the quality of life in many ways as the psychological well-being and perceived well-being do not necessarily require professional help, it also can be achieved through the support given by friends and other related parties. Social support is found to have an indirect link to the subjective health experience through psychological effects. [3]. Sense of community is based on a membership i.e. the feeling that one belongs to a group and a shared faith that commitment on togetherness is given by the group [4]. Social support and connections to the community are important as loneliness forms an important health and safety risk for the elderly. Thus, interaction with other people has an increasing role in preventing loneliness [5].

Although high degree of acceptance concerning the ambient assisted living (AAL) has been found, and the system would likely make elderly people feel safer and more secure in their homes, the main concern still is how it will impact their daily lives [6]. It is suggested that relevant factors to the use of in-home monitoring technologies are where, when and in which situations user is monitored. Also seniors' perceptions of privacy related to these technologies are highly contextual, and influenced by psychosocial motivations [7]. There is some evidence that physical spaces and environments affect the acceptance of monitoring technologies [8][9].

Motivation for this study are findings of problems caused by the loneliness of the elderly, the breakthrough of social media, pressure to rise costs of social and health related services, and the need to add to collaboration between operators in the third sector and public sector, home care services. Third sector volunteer work e.g. friend services, play a significant role as a support to other home care services. In addition, new operational models are needed for volunteer work, in order to attract the younger generation, spending much of their time with the social media, to act as a supporting group for the elderly, and to direct some of the time they spend in the social media also towards taking care of the elderly.

Inspired by the aforementioned challenges a social media application (Comcare) was developed and tested for a period of two months. In this article the attitudes and experiences of the elderly of the first test period and user experiences are assessed from the perspective of the elderly, their relatives, and volunteer support persons. Extra attention is paid to the experiencing of benefits, feeling of safety, communality, and social support.

II. COMCARE SYSTEM

The main idea of the Comcare system is to form a bi-directional and equal care-giving community to take care of an elderly person. Comcare is a system and an application of social media working in an Android tablet computer [10], that is primarily meant for daily contacts and relaying of images and for monitoring of everyday routines (Figure 1).
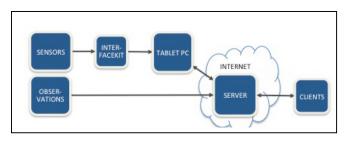

Figure 1.   Comcare system architecture.

Comcare mediates updates written by the elderly themselves, through sensors by a door of restroom and door of bedroom, or members of the circle. Hence, the system enables the monitoring of everyday routines through the sensor-relayed data and by relatives belonging to the circle. The elderly can switch off the sensors at any time by pressing a button on user interface kit (Figure 2). The system shows all the output information to the elderly in the same way it is shown to the recipients. However, the updates are shown in different manners to the members of the circle depending on if the member belongs to the relative or the volunteer's circle. Relatives are shown the messages the way they have been written, but volunteers only receive the activity information. The sending rate of activity information depends on the setting of the monitoring mode. The settings choices are: once a day, four times a day, or continuously in real time. All members of the circle are able to send messages with the elderly, and also send images through private messages. The application did not include talk or video connection.

Figure 2.   Comcare application and user interfacekit for sensors

III. MATERIAL AND METHODS

Five elderly people (three females and two males), five relatives, and three volunteer friends took part in the study. One volunteer was involved in two circles as volunteer friend. Table 1 shows the data of the partaking people. Emphasis in the qualitative analysis of the material was put on the experiences of the elderly, but also views of the relatives and the volunteers have been taken into account. The mean age of the elderly was 75.6 years. The elderly were volunteered customers of local voluntary friend service. The material consists of eight group conversations and fifteen individual interviews. The five first group conversations were held before the test period with the participation of an elderly person, a relative, and a volunteer. The three group conversations after the testing gathered together the elderly, the relatives and the volunteers, all in their own group conversations. The interview material was transcribed and the contents were analyzed by grouping the findings according to themes. In this article the attitudes towards, thoughts and experiences of the Comcare system before, during and after the test period are examined.

TABLE I.   THE DATA OF PARTICIPANTS

Comcare Circle	Participants			
	Number of participants	Gender	Age range	Mean age
Elderly	5	3 women 2 men	73–78	75.6
Relatives	5	3 women 2 men	25–52	35.4
Volunteers	3	3 women	58–66	61.3
All	13	9 women 4 men	25–78	60.8

IV. RESULTS

A. Stance on technology and social media

The elderly had little experience of computers and the Internet. Social media as a term was familiar to only one elderly person. The interview cast light on the term, telling them that it means communication through the Internet, where people share e.g. the newest everyday goings-on in their lives or images etc., and Facebook was mentioned as an example. After the description, social media was treated somewhat skeptically, and when talking about the pros and cons thereof, four elderly people introduced threats in the utilization of social media. Data security problems and straight scams were causes of concern.

"Remember that there (in social media) can be nothing shown about me" (K3H1, 234)

The attitude towards monitoring technologies, such as surveillance cameras and movement sensors, ranged from a defensive attitude to approval. Especially surveillance cameras raised a conversation for and against. The target group for safety technologies was estimated to be people living alone and who are in a bad condition. The attitude towards one's own video monitoring was negative, or positive but reserved. Movement sensors and live camera with blurred images containing little information were more readily approved of than monitoring cameras relaying sharp images. Accommodation to the existence of monitoring cameras was seen as being possible, but at the same time it was emphasized that the location of monitoring technology

has meaning in the action of being approved of. Monitoring cameras were not desired in e.g. in the bedroom. The overall costs of safety technology and services were also considered to be a factor in their approval.

"In the beginning it might be a little bit like, that you are being stared at, but well you get used everything you know, it will go away by time then, from your mind, so then you won't mind at all, because it is like for example the tolling of the clock on the wall, so if you haven't heard it, it takes time to get used to it, and then it fades to the background there" (K5H1)

B. First impressions and trial period experiences

The participants got the first contact to the Comcare system in the initial group conversation where it was introduced to them. After the introduction they were asked for a first impression, and they ranged from interested and excited anticipation, to an attitude of questioning one's own abilities of learning. The relatives and the volunteers considered Comcare to be at first sight simple and easy to use. The elderly were not confident of their own memory, or their own learning capabilities. In the preconceived evaluations Comcare was seen as beneficial means for communicating and bringing change into one's life.

"You have to say that in a way this was such a nice little thing and you play ((laughs)) play with these but when it comes down to a real situation then I think that you can get used to it little by little." (K3RK1)

At the beginning of the trial period two of the elderly people experienced the use of the system as an interesting adventure. The technical problems confronted diminished this excitement. Comcare also caused extra attention and trouble that one did not always want to commit to. On the other hand, through visits of friends and relatives the interaction was sufficient even without communicating through Comcare and for that reason, one of the elderly people experienced Comcare as being somewhat useless.

"Well, I wouldn't know, it is, in the beginning it was learning and exciting, and then in the end you felt a bit annoyed when you could not" (K1H3, 66)

An increase in communication, in addition to phone calls, was one of the things experienced as beneficial about Comcare. Some felt that communicating was more active through Comcare than earlier. Especially those of the elderly people, whose relatives did not live close by, and people that did not frequently communicate through phone calls, felt that Comcare was an easy-going way of communicating and share everyday matters. The elderly mentioned that Comcare had affected their wellbeing and made them feel good. In addition, Comcare was experienced as heightening the feelings of closeness and as cheering up everyday life.

"We talked quite a lot after all, in the morning, in the daytime and also the in the evening, what it was that popped into mind. It was nice tapping them and there it went and I for one liked it. It was really this like close communication, that you can't be bothered to make a call about every little thing." (K5KRK)

At the end of the trial period the sensors, and user experiences thereof, connected with Comcare were discussed with the elderly. All the elderly and their relatives and the volunteers thought that they enhanced feeling of safety. Somewhat surprisingly, none of the elderly partaking in the testing period did not feel that sensors were disturbing or stressing. Some of the elderly even completely forgot that the sensors existed. The elderly thought it was good that they could themselves control if the sensors were switched on or off. Disregarding this none of the elderly switched the sensors off during the testing period. Part of the elderly thought that the sensor in the refrigerator was useless, but especially sensors the outdoor and the hallway were regarded as important locations for the sensors. In the final group interview it was discovered that three of the five elderly had no notion where the sensor data is going, who deciphers it and who reacts, if there is an emergency.

"Well I didn't quite understand, that girl she said it many times that where this went when here there goes wires on the roof" (K3KRK)

The most active circles experienced most benefit form the testing period. Two of the most frequently communicating elderly-relative pairs told that using the system had brought about a refreshed mood and nice meaning to everyday life.

"So she might have been a bit more vital at that point ... that she wrote things like 'good morning' and 'I have eaten this and that' and 'now I'll go for the groceries'. But I think that in our family mother kind of liked it. (L1H1, 68)

Communicating and sharing everyday matters became an integral part of the daily rhythm that the ones using the system most became somewhat dependent on the application. After the test period this frequent messaging was missed.

C. Learning the use and some problems detected

Only one of the elderly felt that learning was easy without problems. The relatives' and volunteers' learning was quick because of their earlier experience of information technology, but the elderly being not used to using computers and touch screens, learning was more arduous and an ongoing personal support was longed for. Four out of five elderly people encountered various problems in learning the system. Although the system was designed as easy to use as possible, lack of prior information technology experience, the unfamiliarity of the Internet world, understanding the functioning logic of the system, and using the touch screen,

caused a lot of problems. A part of the elderly, however, overcame the problems and learned it successfully.

"As for myself, I can tell you that it was a bit hard at the beginning. But when I got to learning or knowing that compute, then I thought this is so nice." (K3KRK, 36)

Using Comcare was not an especially positive experience to everyone because of sparsity of messages, usability problems, and a closed circle. Nevertheless the possibilities of social media were recognized and it was felt that a similar system could be of use to them. Difficulties in learning the use were regarded as being due to, among other things, one's own health. Hence, rare messages were sent and the system was experienced as useless.

"I feel, that as I am sick, that I'm too tired for that." (K4H3)

The elderly doubted their own ability to learn and remember the use of the system, and felt insecure as users. Although clarity and big enough texts and icons were tried to achieve, some of the elderly people had trouble observing some elements in the interface. Inexperienced users were puzzled, frustrated, and insecure, when confronted with usability problems. Writing with the comparatively small keyboard or using the touch screen also caused a lot of problems. Finding letters was also difficult, because they had no prior experience where they keys are in a standard keyboard.

"Now that it has laid there on the table I have felt that I should know how to use it too so it has made me nervous that no (K4H3, 37)

The elderly had trouble distinguishing public updates and private messages. This could have been caused by a lack of prior models of this kind of sharing or graphic user interface related reasons.

D. Experiencing sense of communality and a feeling of safety

Deterioration of moving ability had restrained everyday activities. When getting out of one's home had been hindered, many hobbies and keeping up a social network were abandoned. For this reason it was seen that Comcare offered a new possibility for social interaction.

"It is a form of socializing when you really can't get out of here. It is like you're under house arrest. I have to say it is like I'm under house arrest here." (K1H3, 19)

The difficulty of learning how the system works and technical problems had their influence on the fact that it did not add to the sense of safety with everybody. One elderly person suffering from recurrent loneliness got relief to his loneliness by using the system; another one could not overcome the problems in learning the system, and thus was not able to benefit from the system. Nevertheless some felt,

that a communication channel like Comcare adds to the feeling of safety. Most of the users were ready to use Comcare or a similar system also in the future.

"So that you can contact already right away these ones close to you that this computer has connected with, yes that gives a certain sense of safety." (K5H3, 294)

Those of the elderly that used the system actively told that communicating with it had made them closer to their relatives. The relatives had similar experiences. Frequent communicating and sharing one's own matters kept up the sense of community. According to active users of the system, sharing small matters of everyday life increased communality. The threshold to write a message seemed to be lower than e.g. making a phone call, so even small daily matters were shared more.

"So well but it was so nice in the morning when you could tap good morning get up to your daughter and then again so like I am going for groceries now and now I am going out to look for some company though she then answered really what she wanted. (K1KRK, 40)

Only one of the elderly was satisfied with the number of people belonging to the circle, others would have more members to be involved. Communication possibilities were craved towards one's own family and friends, as well as being ready to make new acquaintances via the Internet.

"Yes and maybe meet new people. Think about me for example, I have been here since 56 and well, most of my generation are already there underground, underground. (K1H3, 129:130)

In addition to the sense of communality, the elderly who actively used the system, felt that they also get social support through the system. During the test period also the less active participants saw the system as a possible aid in giving and receiving social support.

"It would be quite handy for you, too, this kind of a gadget and I know, it is me after all who takes these gadgets, because I am forced to be alone somewhat much (K3KRK, 467)

More frequently contacting participants told of a rise in spirits and feeling more cheerful and vital. Although many elderly people would want and need to keep in contact frequently, many of them told that they do not want to be a nuisance. They did not want to bother family, neighbors' or friends with their own troubles or their need for company. Although the testing period was short, a part of the relatives nevertheless told that they were better informed of the everyday situations of their elderly next of kin. A frequent contacting rate was assessed to lower the threshold for asking for support and help.

"I would believe that when that, the using, the threshold of using, lowers then well, the asking for help or things like that, is much more easier and quicker" (L5H1, 134).

E. The amount and nature of communication

The elderly testing the system actively experienced that keeping in contact with relatives and volunteers had been facilitated during the test period. The threshold of writing a message was lower than that of making a phone call, because the sender did not need to fear he was disturbing the recipient. You could send a message as quick as a thing to be shared sprang to mind.

"I thought it was good in a way that I could be straight (in contact) like this with him so I didn't always have to take the phone in my hand" (K3KRK, 75)

There was a wide variety in the rate of activity between the circles. The three most active circles read and sent messages several times a day. Between the other two circles the messaging was less frequent (Table 2).

TABLE II.   NUMBER OF SENT MESSAGES

Messages	Circle 1	Circle 2	Circle 3	Circle 4	Circle 5
Elderly	197	189	16	23	96
Relatives	305	270	12	10	171
Volunteers	30	-	13	11	16
Total	*532*	*459*	*41*	*44*	*283*

Reasons for rate of activity were slow learning of the system and less interaction and slow answering. Some case everyday life was otherwise full of social contacts, so that the usage of the gadget was scarce. Most participants felt that the utilization of the system added to the overall amount of communicating, because it did not replace other means of interaction but supplemented them as an equal means of communication. An interesting observation is that problems in using the system also added to the amount of communication. Problems in use were discussed on the telephone of face-to-face with relatives. On the other hand Comcare had reduced the number of telephone calls with two of the elderly people.

"We were more in contact. Up till then it was only once a day he called me". (K1H3, 102)

Most of the participants felt that the usage of the system was mutual: messages were sent on both sides just about as frequently. Only one elderly person felt that others were more passive and slower than him, that it made the use of the system less sensible. One of the relatives felt the communication to be one-sided, because his elderly next-of-kin had difficulties in learning to use the system. When contemplating about the one-sidedness or mutuality of the communication the elderly bore in mind the different day rhythms of both the relative and the volunteers: they did not even wait answer for a message to be written during the day, but only after the working hours. The communication via the system was informal in nature. Messages were chat, sharing everyday matters, and catching up on things, and taking care of small things to be done.

"Well it is like hello, how are you" (K4H3, 73)
"Couple of times a week no more, when you don't have actual business then it's no use just to babble" (K2H3, 206)

The elderly actively using the system experienced the exchange of messages as a nice pastime, which came an integral part of daily routines. Some of the elderly people, although, got bored waiting for answers to their messages.

"It was a wish in our family, at least sort of on mother's side, that when she wrote something, so that I would instinctively be behind the computer right there and then and answer" (L3LRK)

It was a desire to be able to communicate with more people that it was possible during the testing period and, to an extent, there was a readiness to make totally new acquaintances. Talking was a more known way of communicating with the elderly than writing messages on the Internet, and writing on the tablet computer was to a part of the elderly quite slow, thus voice calls or video calls would have been a more quick way of communicating. On the other hand many answerers mentioned the down sides of video calls. It was not desired to always share one's own image with others. Video or voice calls would also be more confining than exchanging messages.

"Or on the other hand if you are tired yourself, so you really can't be bothered with a video call, because there is a good time for a video call, so it is not that it is suitable for every situation" (L5H1, 74).

F. Acceptability

Comcare was not experienced as being stigmatizing. The elderly were fine with introducing Comcare to other people. In the end of the testing period the participants were asked of their willingness to use the system in the future. Part of the elderly felt that the testing period was a positive experience and would have gladly continued using Comcare or a similar system. The costs of acquisition and maintaining of a similar system may, however, form an obstacle for the continuation of the utilization of social media.

"I regarded it as a reason to be proud" (K5KRK, 454)
"If I had the money, I'd surely get a computer straight away" (K1KRK, 142)

According to relatives and volunteers, how the elderly accept the social media application are influenced by easiness of use, and how one is able to grasp how it works, as well as full functionality and reliability. Also the price of

the equipment and the use of the service were believed to be factors in accepting the system. Relatives felt it was important that in order to be approved of by the elderly person, he would have to be totally in control if he wants to use the service or not. In addition, it was mentioned, that the ability to integrate Comcare as a part of the equipment already existing would facilitate its introduction.

"So if it was in your own tablet, so if it was in something you already use, then it would be easy to start using" (L5H1)

Volunteers were interested and ready to make Comcare a part of their everyday work routines. They did, however, mention that approval would demand a clear model of action in emergency situations, and how the service would be integrated to daily work routines. In addition, volunteers thought it was important that leisure time and time for volunteering work can be clearly defined.

"This was easy because it was a test period, so you could count that it was over by a certain date so it was quite easy to commit yourself to this. But I don't know, if it would be quite, that it would be there all the time... that could cause problems." (A1ARK).

V. CONCLUSION AND FUTURE WORK

The results must be interpreted with caution due to the minor research sample. The overall attitude of the elderly towards safety technologies and sensor technologies was positive and approving of with certain reservations. The elderly person himself is to decide as to who, where, when, and how he is being monitored and what kind of information is received about him. The attitude towards Comcare was of initial excited anticipation, which turned into annoyance and distrust towards the system, as part of the messages did not go through. The functionality of systems should be unconditionally secure before being introduced, in order not to lose the interest and excitement over the new technology.

The sensors in Comcare were considered to be acceptable and giving extra safety, as long as their location is suitable and does not interfere with privacy. In general, there is readiness to use safety technology if one's own health so demands and if it is situated in spaces where privacy is not considered being under threat. Social media services designed for the elderly would seem to have potential to support elderly people experiencing loneliness, and also in supporting communality, and in supplying social support. The observation that the ones who used the system the most, benefited the most, is important. According to this study it is not reasonable to offer the application of social media to people that are not willing to share small everyday matters with others.

Based on the study it seems that Comcare was more considered to be a method of conversation, rather than as a safety technology. For these reasons the system was seen as to be applicable also for wider use among the elderly, as soon as the technical shortcomings are cleared. The elderly, who actively used the system, felt that they also get social support through the system. However, also the less active participants saw the system as a possible aid in giving and receiving social support. Although the attitude towards technology was quite positive, a shared common view was that the safety of the elderly, or anyone else for that matter, couldn't be left only to technology.

A successful introduction requires of everybody in the circle the will, and the desire, to share matters with others, because an active communication always calls for at least two participants. According to this work there would seem to be an order among the elderly for social media applications. Extra attention has to be paid for them to be easy enough to use, having a reasonable price, secure in functionality, and easily learned also to first-comers. The future work must concentrate on figuring out challenges of separating public status updates and private messages and on exploring of those reservations the elderly have toward safety technology at home.

REFERENCES

[1] Official Statistics of Finland, "Time use survey: Changes 1979 - 2009," Helsinki: Statistics Finland, http://www.stat.fi/til/akay/2009/02/akay_2009_02_2011-02-17_tie_001_en.html [Assessed 11 November 2013].

[2] M. Madden and K. Zickuhr, "65% of online adults use social networking sites," http://pewinternet.org/Reports/2011/Social-Networking-Sites.aspx [Accessed 21 December 2011].

[3] S. Guindon and P. Cappeliez, "Contributions of psychological well-being and social support to an integrative model of subjective health in later adulthood," Ageing International, vol. 35, 2010, pp. 38–60.

[4] D.W. McMillan and D.M. Chavis, "Sense of community: A definition and theory," Journal of Community Psychology," vol. 14, 1986, pp. 6–23.

[5] T. Mankkinen, "Turvallinen elämä ikääntyneille: Toimintaohjelma ikääntyneiden turvallisuuden parantamiseksi," Sisäministeriön julkaisuja 19/2011, Helsinki, 2011.

[6] R. Beringer, A. Sixsmith, M. Campo, J. Brown and R. M. McCloskey, "The acceptance of ambient assisted living: Developing an alternate methodology to this limited research lens," in Toward useful services for elderly and people with disabilities, B. Abdulrazak, S. Giroux, B. Bouchard, H.Pigot and M.Mokhtari, Eds. , Heidelberg: Springer, 2011, pp. 161–167.

[7] L. Lorenzen-Huber, M. Boutain, L.J. Camp, S. Kalpana and K.H. Connelly, "Privacy technology, and aging: a proposed framework," Ageing International, vol. 36, 2011, pp. 232–252.

[8] M. Ziefle, S. Himmel and W. Wilkowska, "When your living space knows what you do: Acceptance of medical home monitoring by different technologies," In Human–Computer Interaction: Information Quality in eHealth H. Holzinger & K.-M. Simonic, Eds. Berlin, Heidelberg: Springer, 2011, pp. 607–624.

[9] I. Alakärppä, J. Riekki and R. Koukkula, "Pervasive pain monitoring system: User experiences and adoption requirements in the hospital and home environments," Proceedings of the 3rd conference on pervasive computing technologies for healthcare, London, UK, 2009.

[10] I. Alakärppä, S. Hosio and E. Jaakkola, "SNS as a platform of the activity monitoring system for the elderly," International workshop on advances in personalized healthcare service (APHS 2012), Paris, France, 2012.