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BRIDGING THE GAP - EXPLORING ELDERLY CITIZENS' PERCEPTIONS OF DIGITAL EXCLUSION

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Research paper

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Abstract

Digital exclusion of elderly citizens is a main contributor for poor uptake of public e-service. The situation is alarming since elderly citizens are a major target for many upcoming services provided by governments, such as online health care services. Playing an important role in a sustainable society, governments should always strive towards increased efficiency and effectivity in order for publicly founded resources to be better used. However, sustainable development of public e-services is problematic if the intended receivers of such services are excluded from, or do not want to use them. In order to address this problematic situation we need to know more about elderly citizens' perceptions of why they are digitally excluded. We add to existing research by providing a large sample of empirical data explaining elderly citizens' own perceptions about why they are digitally excluded. Furthermore, we present how these perceptions can be categorised and also how they relate in between. Such findings may serve as a basis for how to deal with these problems in order to enhance digital inclusion of elderly citizens, which in the long run may enhance their uptake of public e-service.

Keywords: Digital Exclusion, The Digital Divide, E-government, Digital Service, Public e-service

1 Introduction

For almost two decades, the e-government research community has discussed how to increase citizens' uptake of public e-services. Many public e-service development initiatives has failed, mostly due to citizens avoiding such services since they do not see any value in using them. Instead, already existing service channels are favoured, e.g. instead of using a malfunctioning app for reporting child care you use e-mail instead, simply because you are used to it and it is easier and works as well as any other option available (Holgersson and Karlsson, 2014). In a short time perspective, this means that governments have to keep existing and well established service channels open while also striving for increased delivery of e-services (Kotamraju and van der Geest, 2011). Ultimately, this may result in reduced efficiency and hampered effectiveness in e-government initiatives which in turn contradicts how a more sustainable society should deal with limited resources. Yet another main determinant for public e-service uptake is digital exclusion. In research, digital exclusion is a somewhat ambiguous concept, which is viewed differently in various research contexts (Scheerder et al., 2017). In general, digital exclusion refers either to limited internet access due to a deficient digital infrastructure (Bélanger and Carter, 2008), or to citizens' abilities to use the internet and digital devices, e.g. smartphones and tablets, in order to access and use digital services provided (Ebbers et al., 2016). Among digitally excluded citizens, elderly citizens[1] are overrepresented (van Deursen and Helsper, 2015), i.e. they tend to not choose to use the internet, even if they have access to both the internet and digital devices in their homes (Hill et al., 2008). This situation is problematic, not at least for government authorities striving for increased provision and usage of digital service. As pointed out by Sourbati (2009), elderly citizens represent the group with most need of public service, for example with respect to health related services. At the same time, elderly citizens use digital versions of such services the least (Nishijima et al., 2017). In order to increase the uptake of digital services, more attention is needed towards increased user centeredness and value co-creation (Bertot et al., 2016), as well as towards service innovation (Janowski, 2015). However, these suggestions are general and do not take digital exclusion of elderly citizens into the equation.

In this paper, we argue that reduced digital exclusion for elderly citizens is a crucial success factor for increased uptake of public e-service. Reducing digital exclusion, however, requires more knowledge about elderly citizens' perceptions of digitalisation in general, as well as more explicit arguments for why this user group tend to avoid digitalisation and e-services. Current research on digital exclusion mostly seem to focus on non-users and their arguments for being digitally excluded in a more general sense. Future research on how to promote digital inclusion for the elderly, however, as pointed out by van Deursen and Helsper (2015), should concentrate on factors explaining what arguments elderly citizens have for not using digital service, or explanations of what activities elderly citizens engage in when they do engage. There is little research exploring the attitudes of both users and non-users towards digitalisation. In particular, this is true in a national setting. Helsper and Reisdorf (2017) have pointed out that national characteristics influence how the digital exclusion plays out on a micro-level, and they emphasize that differences between countries may relate to general population characteristics and national policies. What has worked before in a certain regional context might not work now, and especially not in another regional context.

The aim of this paper is therefore to explore how to address Swedish elderly citizens' perceptions (attitudes and behaviours) towards digitalisation in order to identify how education can contribute to increasing digital inclusion. The study will provide a robust and consistent study incorporating a significant number of respondents, and focused on the elderly themselves. Results can be used to identify alternative solutions for how to reduce digital exclusion of the elderly, first and foremost in a Swedish

[1] In this paper elderly citizens are represented by the age of 65 and above, which is the general age for retirement in Sweden (The Swedish Pensions Agency, 2018)

context. This is in the line with (Helsper, 2009) who states that there is a continued need to support people in access to and acquiring skills to use digital technology, as well as providing activities to address negative attitudes towards the same. Our research takes a stance from suggestions in previous research, such as categorisations, while additional perspectives are also included. We argue that different strategies may be needed depending on the knowledge levels, habits, geographical locations, needs and wants relating to digital services, as well as addressing both attitudes and behaviours of the elderly towards digital services.

2 Background

In order to describe and understand participation or non-participation in the digital world, plenty of recent concepts have emerged. Some examples are the digital divide, digital exclusion, digital participation/non-participation, and digital inclusion. They all point to the same fact, that some people can take part in digital activities and use digital services, while others cannot (see e.g. van Deursen and van Dijk, 2010). All concepts are meant to examine what this gap is about, what factors that influences it, and how to explain it. However, as pointed out by van Deursen and Helsper (2015), research on digital exclusion often is focused on which groups of citizens that are the most likely to be using internet or not. However, nothing is often as simple as to binary divide citizens into those who do and those who do not. Instead, what is needed is to pay more attention to the varying spectrum of citizens in different groups, such as elderly citizens who may be the most predominant group when referring to digital exclusion. In several research initiatives (e.g. Hill et al., 2015, Lee et al., 2011, Morris et al., 2007), elderly citizens have been asked regarding their motives for not using the internet. Commonly mentioned argument are: 1) A negative attitude towards internet, often associated with a general anxiety for using digital technology; 2) A sense of feeling too old to learn how to use digital technology; 3) Lacking knowledge and experience of using digital technology; and 4) Traditional literacy issues in terms of elderly citizens having problems with reading and writing.

When referring to elderly citizens, research on digital exclusion do not provide a definite age for when someone becomes elderly and different studies indicate different ages for when significant differences in usage of digital technology can be found. Reddick (2005) points out that major differences in digital usage patterns can be seen already at the age of 55 whereas Powell et al. (2012) argue that citizens older than 60 have easier to feel discomfort for the use of digital technology compared to younger citizens. Also Fortes et al. (2015) highlight the age of 60 as a delimiter for when citizens become elderly in terms of digital usage patterns. In Sweden, the age of retirement most often is 65 (The Swedish Pensions Agency, 2018) and since the research in this paper is based on retired citizens, elderly citizens in this study refers to citizens with the age of 65 or above.

Today, too many elderly citizens are digitally excluded, not at least in Sweden where an estimated 400 000 elderly citizens are digitally excluded to at least some degree (Rubensson, 2017). That means that they have limited opportunities in taking part in and make use of digital service offered by the society (Polat, 2012). As a digitally excluded elderly citizen the life becomes hard when governments and companies decide to only send e-mails and electronic notifications instead of traditional post and phone calls.

In research, we see quite a few studies on elderly citizens and their use of digital technology and its effects. Olphert et al. (2005) studied older people's use of digital technology with an emphasis on identifying what factors that lie behind the elderly's non-use of the same. They origin from a literature survey and a questionnaire study of adults aged 50-85. Results show five gaps in awareness and information that need to be addressed in order to give elderly a proper choice and an opportunity to make well-informed decisions about using digital technology: 1) What the internet is and what you can do with it; 2) How you can access it and where; 3) The real costs of access and use; 4) How people can learn about and use it; and 5) Examples of "good press" to counteract negative messages in media.

General population studies and qualitative research with elderly citizens have identified several reasons for being digitally excluded. Most often, elderly non-users are described in terms of demographics rather than asking them directly about why they do not use the Internet (Helsper and Reis-

dorf, 2013). Socio-demographics that are associated with elderly citizens' Internet uptake are often discussed in terms of gender, education and household composition (Morris et al., 2007, Helsper and Reisdorf, 2013). Olphert et al. (2005) stress that improving awareness is not enough to transform a non-user into a user, but a continuous improvement of accessibility and usability of hardware and software is also necessary. Tsai et al. (2015) conducted a similar study in terms of focusing on how elderly citizens decide to use new technology, how they conquer the barriers to said technology and the impact the new technology has on their lives. The technology in focus was tablets. The study was conducted using 21 in-depth interviews. Results showed that elderly citizen's use of technology influences whether or not they themselves acquire it, that the initial learning threshold was not that great as most elderly had some previous experience with technology, and that the impact on their lives was immense in making them feel connected, current and more content. Other research studies come from Lee et al. (2011) who investigate perceived barriers experienced by elderly citizens in different age segments when using computers. Their study included 243 senior computer users. Another research study on computer and Internet use among the older population is presented in Morris et al. (2007). This study took place in the UK and included 473 questionnaires and interviews with people 55+. Their results show that many elderly citizens miss out on the benefits that computers and internet may bring. They suggest that future research must include changing elderly citizen's misconceptions about computers, better informing them about what computers are, what they can do, and how they can be of real practical use.

Ordonez et al. (2011) studied the effects of digital inclusion on cognitive abilities and cognitive performance of elderly citizens. The subjects were aged 60 and up, and the study was conducted by 22 individuals participating in digital inclusion workshops, and 20 constituting a control group. The conclusions included that one major challenge for the elderly citizens today is to adjust to the demands of a modern world, in which the use of digital technology is necessary. Learning new technologies, however, can lead to improved cognitive abilities. Another angle is presented in Hill et al. (2015), who examine how digital technology could be used to enhance the lives of elderly citizens and their wellbeing, by increasing their social network. Seventeen older adults (10 female, 7 male Mage = 71.67, SDage = 10.05) participated in two focus groups. Interpretative phenomenological analysis yielded two main themes: digital technology serving as a tool to disempower and empower. The findings presented by Hill et al. (2015) support evidence of a digital divide and how that divide is evolving from the ideographic perspective of digitally-engaged elderly citizens and for society. Discussions also surround barriers to digital technology use for elderly citizens, the codification of digital technology use within society, and how elderly citizens use digital technology in a facilitative and inclusive way to empower themselves and protect them from the negative effects of the digital divide.

Related research as presented here show several interesting findings that corresponds directly to the main purpose of this paper. Firstly, national characteristics plan an important role when studying digital exclusion for elderly citizens, which in turn means that different counter measurements may be applicable depending on what regional context that is in interest (Fuchs, 2008, Helsper, 2012). Helsper and Reisdorf (2017) and also Brandtzæg et al. (2011) furthermore emphasize that general features of a population and national policies play an important role for elderly ending up as digitally excluded. It is therefore essential to undertake case studies covering the national situation for elderly in different countries, something our research aims to do by being part of a Swedish, industry-led initiative on helping elderly citizens becoming more digital. Furthermore, previous research is often limited to either examining factors that influence Internet use, or general suggestions for what to do about it. Our research will take one additional step in suggesting strategies for handling and preventing digital exclusion for the elderly.

3 Research approach

In order to examine the perceptions of the elderly concerning their propensity to be excluded from the digital world, we adopted a qualitative interpretive approach. As such, our main research interest lied in studying and interpreting elderly citizens' perceptions of digital exclusion. This approach enabled

us to go in-depth into motivations and arguments for digital exclusion reasons, which in turn provides the foundation for devising actions to prevent exclusion (Klein and Myers, 1999, Walsham, 1995).

Data collection was made during educational workshops organised in collaboration between a medium sized municipality in Sweden, the researchers, and [2]Telia Sweden AB. These workshops were directed exclusively towards elderly citizens and aimed to help them become more digitally included. The participants have been voluntary participants, in terms of choosing to come to the workshops themselves. In this municipality, a total of 6 workshops were held, with approximately 70 participants each day, on average. Data was collected using qualitative free text inquiries, which were handed out and collected during the workshops. A total of 293 usable results were collected during the 6 workshops. The qualitative free text inquiries covered a wide range of aspects regarding the participants' experiences of and attitudes towards digital technology. However, in the research presented here we have been explicitly addressing the participants' arguments and motives for why they perceive themselves and other elderly citizens as digitally excluded.

The analysis was conducted using researcher triangulation (Patton, 2002), where the authors first made individual analyses and then merged the two analyses into one. The analysis was based on the general themes for digital exclusion among elderly citizens presented in the background (negative attitudes and anxiety, age as a delimiter, lacking knowledge and experience, and traditional literacy). For each of the statements collected from the elderly citizens, we asked ourselves if any of the themes were applicable. The merging process initially included more categories, which were reduced via the mutual analysis. As an example, one respondent stated: "*You get to a point where you cannot absorb any more information due to a long life of work with new information all the time*". This statement was interpreted as a somewhat frustrated response from an elderly citizen who experience that engagement in new technology in the later life is not prioritised, thus the statement was placed in the theme regarding age as a delimiter. Another statement was placed in several themes since it was interpreted as belonging to both negative attitude and anxiety as well as traditional literacy: "*It is about fear but also difficult technical words, the speed and all codes to remember*". We interpreted this statement as a general anxiety and fear of new technology in combination with difficulties understanding new terminology and terms of conditions for using digital technology. In some cases, the predefined themes were not applicable. In those cases, we added more detailed sub themes as a complement to the predefined themes. As an example, the statements: "*You don't dare to try by yourself and you are afraid of asking since you are feeling stupid*" and "*Fear of making yourself look like a fool*" were interpreted not only as a general fear of new technology but also as a sense of shame in not being able to master digital technology. In this particular case, we added an additional sub theme regarding shame to the general theme on negative attitude and anxiety. Ideally, we would have wanted to go back to the participants to validate our interpretation of their responses. However, the format of the workshops, with the anonymous provision of responses, did not allow such validation.

4 Results and analysis

The thematic analysis of the questionnaire material revealed 5 categories of factors explaining why elderly people, think they run a higher risk of being digitally excluded than other citizen groups. Each category was analysed and related to existing research on digital exclusion, before a conceptual model was created depicting how the categories relate to one another and to what extent they relate. Quotations from the empirical material will be used to illustrate the content of the categories. The categories cover both *how* the elderly feel excluded, and *why* they feel excluded. These two perspectives must be viewed together as complementary aspects to achieve a more holistic view.

The categories are:

[2] Telia Sweden AB is Sweden's largest telecom operator. Telia AB sells connections in fixed telephony, data communications, Internet, digital TV, IP telephony and mobile telephony to private individuals, companies and organizations.

1. Fear and anxiety of using digital technology and services.
2. Negative attitude towards digital technology and services.
3. "Too old" – a sense of feeling too old to bother for learning how to use digital technology and services.
4. Missing knowledge and experience of using digital technology and services.
5. Linguistic problems in terms of having trouble understanding digital terminology, often in English.

Fear and anxiety of using digital technology and digital service is a commonly debated cause for digital exclusion (see e.g. Powell et al., 2012, Guo et al., 2013, Rana and Dwivedi, 2015) and is one of the most commonly mentioned categories within our empirical data. It entails fear of making mistakes, fear of new technology, fear of lacking knowledge, and insecurities. Technological developments have been extremely rapid in recent years, and many elderly find it difficult to keep up with the changes, exemplified by the following quotes: "*scared of the new*", "*scared to try*", and "*scared of new technology*". The levels of insecurities are high, for example in that there is a fear of daring to try, because of poor self-esteem, cowardliness, and fear of the new (e.g. "*You don't think you know how to do it, you are afraid to make a click*", "*If you push too many buttons you are afraid to break the computer*", "*they think they cannot do it and do not dare to*", "*because we are afraid of doing it wrong*", "*we are a little slow and way to coward*", and "*fear of the unknown and problems getting help when needed*").

Negative attitude concerns lack of interest (see e.g. Chen and Chan, 2011, Niehaves and Plattfaut, 2014, Venkatesh et al., 2003) and that it is more of a "must" than a "want" regarding using digital technology and online service. If elderly people do not have any interest in digitalisation (e.g. "lacking interest"), they may think it is too much new technology to take in at one time (e.g. "Too much new at one time, fear of making mistakes, and no one to ask"). Many elderly people want to learn about digital technology, while for others the problem is that they are not curious about it and they don't see the point is using it, or lack interest in "difficult things". As put by one respondent: "Already have routines that they feel work for them". Some respondents point out that the problems are caused by them not being "born into the digital landscape", which makes them somewhat sceptical and cautious, or as one respondent puts it: "We are not born into the digital landscape, we are a bit sceptic and a bit too cautious" A further consequence of that is that many elderly people do not think they have the ability to learn or take it in.

The perception of elderly people as sometimes being unable to learn can be regarded from different perspectives in the category *too old* (see e.g. Wagner et al., 2010, Barnard et al., 2013, Hawthorn, 2007). As mentioned earlier, the elderly were not brought up in the world of computers like young people are today, as the following quotes illustrate: "*modern technology develop so quickly that the old brain cannot keep up*", "*did not have access to computers, they did not have those in our school*", and "*can't keep up, am old fashioned*". There is hence a generation gap to manage, which also means that the elderly will need to get more knowledge in order to make full use of digital technology. Many do not feel there is enough done to help elderly people to acquire that knowledge (e.g. "*very poor and scarce information to elderly*"). But even if there *is* information available, some elderly do not have the energy to take in something new (e.g. "*you get to a point where you cannot take in information, after a long life with work and constant information*"). Moreover, due to a high age, some respondents point out difficulties in using digital devices due to small icons, degrading vision and hearing. Related to this is the perception of digital technology only being relevant to the younger generations (e.g. "*older people do not have the same needs*", and "*it concerns learning and fresh new brains*").

A key category in the sense of it being one of the most frequently mentioned categories is *missing knowledge and experience*. As discussed in numerous research initiatives, now knowing how to use digital technology is a major cause for digital exclusion (see e.g. Teles and Joia, 2011, Silva and Correia, 2013, van Deursen and Helsper, 2015, van Deursen and van Dijk, 2010). The digital technology is new, it is part of the "unknown", and in the words of some of the respondents: "*it is difficult to understand what it is about*", "*everything is so quick, a lot of clicking on different places and most is in English*", and "*lack of knowledge and tools because of the associated costs*". One issue brought up by

some respondents was that many elderly have not used computers in their work life, and that this hinders and hampers them in their adoption of digital technology. This influences their ability to keep up with technological developments, or as one respondent puts is: "they are not used to this from their work life". What makes this even more difficult is the common lack of someone to ask when problems arise. Many are embarrassed and ashamed that they get problems and that they do not understand, and without someone to ask, the problems will solidify. These quotes illustrate the issues: "*it is a little difficult on your own, plus it is difficult to understand the English terms*", "*you do not understand the technology, and are afraid to push buttons as you do not know what will happen*", and "*If you feel insecure, you end up doing nothing*". Interestingly enough, some elderly believe many *think* technology is difficult, but have not actually tried and hence let their assumptions get in the way of trying.

Linguistic problems primarily concerns digital technology often being available in English (literacy in general) (Wagner et al., 2010) and as pointed out by Fortes et al. (2015) elderly citizens has continuously been marginalised by digital service providers who has viewed all users as one large homogenous group. Language problems thereby are part of the barriers to digitalisation adoption. It is not only the English terms, but technological terms in general even in the native language that can be problematic. This is relevant both for written and digital information, as well as too technical a language by "experts" that are meant to help, or as one respondent states: "*during help sessions an incomprehensible expert language that I do not understand is used*". These hurdles are further emphasised by the perceived complexity of technology, with many codes and worries of poor memory hindering remembering how things are done, as shown on the following quotes; "*chocked by everything new, poor memory – easy to forget everything*", and "*we installed email on the iPad. It took about 30 minutes, but there were so many codes used that I will never be able to do it again*".

In addition, we have observed concerns among the respondents regarding *time consumption,* which is a consequence of lack of knowledge to some extent. Previous categories have established that learning new technology takes time when there is no pre-knowledge about it. In the words of one respondent: "*It takes time to learn and understand*". In addition to time needed to learn, some elderly are afraid that they will spend what they perceive as too much time using digital technology, instead of spending their time on socialising in face-to-face, for example. Moreover, we have found concerns which can be related to a *restrained economy*, i.e. a limited ability to acquire digital equipment and internet service, or as one respondent puts it: "*everything goes so fast and cost too much money for a senior citizen"*.

When analysing the categories presented above it is clear that neither of these should be studied in isolation. As an example, many respondents express concerns regarding time consumption, which can be interpreted as consequence of lack of knowledge to some extent. Previous categories have established that learning new technology takes time when there is no pre-knowledge about it. In the words of one respondent: "*It is so new and therefore difficult to keep up*". In addition to time needed to learn, some elderly are afraid that they will spend what they perceive as too much time using digital technology, instead of spending their time on socialising in face-to-face, for example. Yet another example of how the categories are related is that an elderly citizen exhibiting fear and anxiety for digital technology may also express a negative attitude towards using digital technology, or a lacking knowledge of how to handle digital technology. When interpreting the empirical data into the categories described, we also counted those cases when more than one theme could be identified in the quotation being analysed. In doing so, we identified relationships of varying strength between the themes. As can be seen in figure 1, strong relationships are marked as "++" whereas weaker relationships are marked "+". Thus, we have chosen to leave the additional categories time consumption and restrained economy out, merely since they were mentioned less frequent and with no relationship to the other categories.

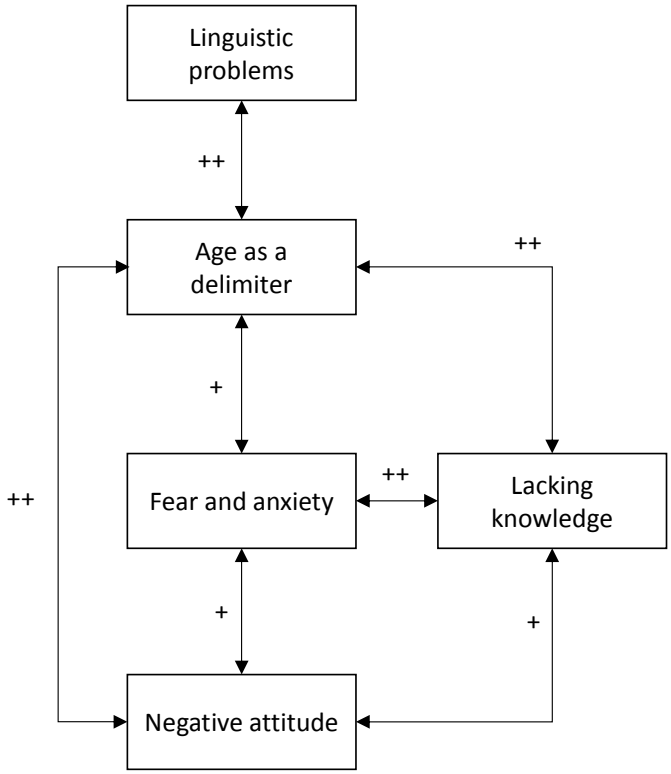

Figure 1: Correlating categories of elderly people's perceptions of causes for digital exclusion.

As previously pointed out, fear of digital technology is one of the most commonly mentioned categories. Fear relates the most to lacking knowledge and experience. It should not come as a surprise that fear of using digital technology is affected by knowledge and experience of how to use digital technology. As it seems, the single most i important factor to reduce digital exclusion is to reduce elderly citizens fear of using digital technology, which comes naturally when knowledge and experience of using such technology are enhanced. Moreover, lacking knowledge and experience relates strongly to as sense of feeling too old to adapt digital technology. It is apparent that counteracting fear of using digital technology combined with an awareness of that a higher age might be seen as a delimiter may play as important enhance knowledge among elderly citizens regarding digital technology. In turn, a sense of feeling too old to learn new digital technology is the third largest cause of digital exclusion and relates primarily to linguistic problems where elderly citizens experience that they have a hard time understanding new technology, often expressed in English, which in turn relates to lacking knowledge due to not being able to keep up with advances in the digital society. As a consequence, relationships between linguistic problems and a sense of feeling to old can be observed. Negative attitudes towards digital technology relates to some degree with lacking knowledge and experience of using digital technology. Not surprisingly, elderly citizens not knowing what benefits e.g. digital service may bring, are reluctant to use such alternatives over existing more familiar ways of using service.

5 Conclusions

As stated in the introduction, this paper answer the call made by Helsper and Reisdorf (2017) by adding a Swedish context that takes into account the unique regional factors that can affect how digital exclusion is perceived. In order to do so, the aim of this paper is therefore to explore how to address Swedish elderly citizens' perceptions (attitudes and behaviours) towards digitalisation in order to identify how education can contribute to increasing digital inclusion. It should be noted that there can be many other factors influencing digital exclusion, such as income (Fuchs, 2008) and educational level

(Morris et al., 2007, Helsper and Reisdorf, 2013). Our research takes a complementary perspective in examining elderly people's attitudes and behaviour towards digitalisation. The results build on and extend previous research, for example in identifying a refined description of categories of causes explaining why digital exclusion among elderly citizens occur. We also show how the categories relate to one another and how strongly they relate in a conceptual model. This model can be utilised to design for example educational efforts to address attitudes and behaviours of elderly towards digitalisation and digital technology uptake. It is always possible to work towards changing attitudes and behaviours, but to reach change any efforts must be based on knowledge about the elderly peoples' actual views and what factors that influence them. Building on that, it will be possible to work to awaken interest, change and challenge perceptions of digitalisation and its usefulness. Educational efforts (short or long) as well as other actions must be practically oriented in order to show directly what is to be gained by becoming more digital. Instead of assuming what the elderly may want to know, make sure they get to ask the questions *they* have, and that they get help with the technology they have access to. Technology developers should take into consideration physical restrictions that elderly (and others) may have, such as difficulty to use fingers, degrading vision and hearing, etc. It is worth noting that not every elderly person can be expected to become digital. While we claim from our experiences that it is possible to work on attitudes and behaviours, not everyone will change and embrace digitalisation. There is a difference between being digitally excluded, and voluntarily remain outside of digitalisation because of digital choice (Helsper, 2009). Even so, some elderly are not aware of what digitalisation actually can do for them, and these attitudes can be addressed. An example from the workshops we conducted is that some elderly who said they were too old to use digital technology were challenged in their age-related perception by being shown a video about a Swedish woman who took a computer course at age 99 and started a blog at age 100 (SVT, 2016). She herself says it is never too late to start.

One important lesson we bring to the table is that the categories presented affects one another and that some categories should be prioritised over others. We thereby contribute to the results presented by van Deursen and Helsper (2015) who are highlighting what arguments elderly citizens have for not using digital technology and what explanations they have why they use or not use it. In our results, it is clear that preventing fear is the most important aspect to address in order to decrease digital exclusion. Increasing knowledge is an important path to take along with reducing technology fear in general. Negative attitudes are problematic and are best handled by emphasizing the benefits of using digital technology, e.g. not only educate about technology itself but also what it can be used for. Each elderly person may have their own views of what is valuable, which makes it important to look at each individual's situation and questions during educational efforts. Our analysis has been based on an assumption that each respondent has expressed views of their own perspective. Another important lesson to learn is to pay attention to the language used when helping elderly become more digital. The technological lingo is difficult to many of them, and care should be taken to avoid assuming everyone knows the terminology.

Future research should extend our research by 1) Investigate other geographical areas and make cross-case comparison to achieve an international picture; 2) Test the conceptual model and elaborate it to a version 2.0 and beyond; 3) Use our findings to elaborate on concrete actions for raising the levels of digital inclusion for the elderly; 4) Apply and test our findings on other societal groups at risk of being digitally excluded; and 5) To expand the study by including the elderly as well as their families, carers and others involved in their daily lives.

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