An Analysis of Independent Living Elderly's Views on Robots

A Descriptive Study from the Norwegian Context

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UiO : University of Oslo

MECS Multimodal Elderly Care Systems

VID

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Diana Saplacan graduated from Kristianstad University, Sweden, with a BSc in Computer Science and a MSc degree. She has worked as a lecturer at Kristianstad University for three years, before following a Ph.D. degree in the Design of Information Systems Research Group at the Department of Informatics, University of Oslo. Her current research focus is on Universal Design (UD), specifically designing for situated abilities, rather than having the focus on disabilities. Her latest research focuses on understanding everyday interaction and use of domestic robots and of Digital Learning Environments in Higher Education. Her research interests span across Human-Computer Interaction, Human-Robot Interaction, Computer-Supported Cooperative Work, and UD.

Motivation

- How robots are seen by the independent living elderly (≥65 years old)
- Illustrate the elderly's views on robots

RQ: What is the elderly's understanding of robots, and how can these be better integrated into their daily lives?

Background

- MECS Multimodal Elderly Care Systems  research project.
- MECS aims to develop knowledge around a caring safety robot alarm for the elderly. The elderly are defined as old adults (≥ 65 years)
- The insights gotten during this study are intended to contribute to the design of the MECS safety alarm robot.
- digitalization of care services for the:
  - wearable sensors
  - through self-monitoring devices, or
  - personal safety alarms, e.g., bracelets or pendants alarms;
  - Robots as a solution
- Norwegian context

Theoretical lenses

- Aaron Antonovsky's work → focus on *salutogenesis* (= the origins of health), as opposed to pathogenesis
- Sense-of-Coherence theoretical construct:
  - Comprehensibility: the motivation behind the challenge of coping with the situation at hand
  - Manageability: the availability of resources to cope with the situation
  - Meaningfullness: understanding the challenge

Method

- Study context: study perfomed in southern-east part of Norway, in the area of Oslo, Norway, in an accommodation facility for independent living elderly
- Participants: 16 participants took part in three group interviews

TABLE I. OVERVIEW PARTICIPANTS.

#	Gender (Female F, male M)	Age	Comment on the participants' work experience (Not available N/A)
1	F	>65	Public sector
2	F	84	Arts and Craft
3	M	81	Arts and Craft
4	M	>65	Worked with computers.
5	F	94	Private- and public sector. Worked with computers.
6	F	>65	Public sector
7	F	90	Private sector
8	F	>65	N/A
9	F	>65	She worked previously in the private sector.
10	M	>65	N/A
11	M	>65	N/A
12	M	>65	N/A
13	F	89	Public sector.
14	M	>65	Public sector.
15	M	>65	Public sector.
16	F	90	Public sector. She had experience with computers before.

Method (cntd.)

- Data collection

Figure 1. Sample photos from group interviews 1 and 3.

TABLE II. OVERVIEW OF THE DATA COLLECTION.

Group interview #	Number of participants and their gender	Time for data collection	Type and duration of data collected
1	5 females, 2 males	Spring 2017	Interview 60 minutes, Photos
2	2 female 3 males	Spring 2017	Interview 60 minutes, Photos
1 Individual Pilot	1 female	Spring 2017	Interview 60 minutes, Photos
3 (part of a half-day workshop)	1female 2 males	Spring 2017	Interview 45 minutes, Photos
Total	16 participants (9 Female and 7 Males)		

Method (cntd.)

- Data analysis:
  - Data fully transcribed;
  - Data analyzed qualitative manifest and latent content analysis:
    - Step 1: (n= 132) meaning units;
    - Step 2: condensation and coding of meaning units (n = 13)
    - Step 3: systematic grouping of codes to sub-categories and categories, with reflective discussions with the aim of the study as the base (authors SD, PZ)
    - Step 4: analyzing process towards the formation of categories was the result of manifest content analysis.
- Ethical considerations

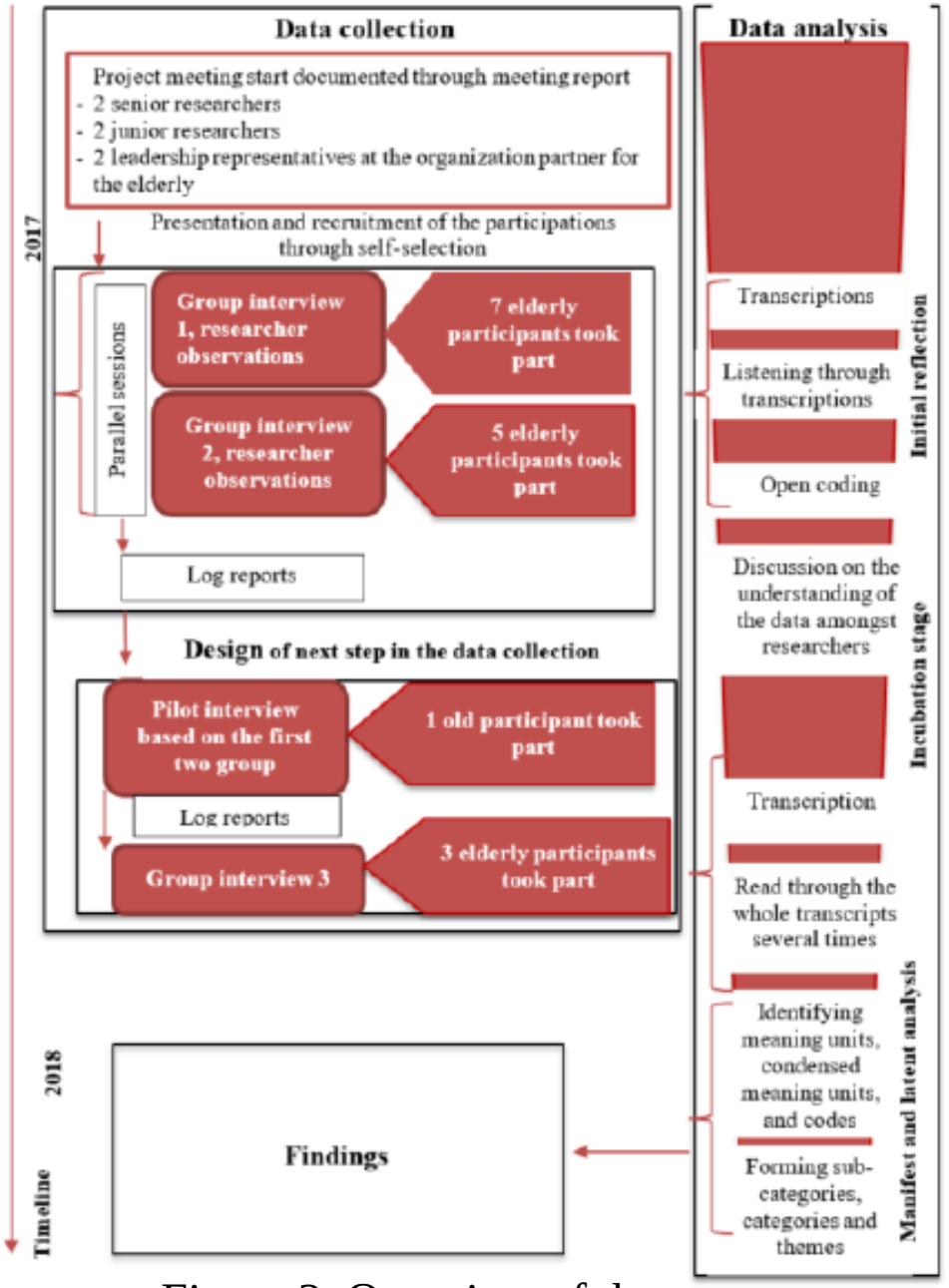

Figure 2. Overview of the process.

Findings

- On integrating welfare technology in the everyday life of the elderly: the overall theme of the study
- On aging during the technological renaissance
- On domestic robots
- On the elderly's expectations of the legislation and regulations around robots

"When I should learn something new, I am asking – what's the point?",

"*To fix the TV when it gets stuck. Or the computer when something went wrong. It would have been nice to have such a robot for this"*. Another participant explained: *"The robots have to have a practical aim. I think many feel ill and do not have the energy to bring food from downstairs... This could be something a robot could do."*

"It is not ready… the laws are not ready yet.. for these.. which is quite advanced.".

"*the authorities do not allow resignation.*"

"*I feel like I am in another world, you know.. I do not know so much about these things we discuss now… and this has to do with the [world] we grew up within… a different one, yes. What I mean is that we start getting so old, that there is so much surpassing us. We are not able to keep up the pace. However, the authorities do not take this into account.*"

Discussion

- Comprehensibility and manageability of robots in the homes of the elderly
  - This study shows that the majority of the participants used modern technology for simple everyday tasks, such as checking the bank account balance
  - not many of the elderly felt that they were skilled enough to using these technologies.
  - Limited *comprehensibility* of these technologies
  - mostly familiar with robots used in the industry.
  - Important to interact with the robots through speech
  - The robots should be able to speak Norwegian

Discussion (cntd.)

- Meaningfulness in the robots for the elderly
  - Elderly dislike monitoring devices that are “off-putting”
  - These advanced technologies need to be “appealing” and meaningful for the elderly, in order for them to use those
  - However, the functionality of the robot was more important than the appearance
  - The elderly were familiar with domestic robots, such as robot vacuum cleaners and lawnmowers
  - The elderly wished for servant robots, although the MECS project was focused on safety alarm robots

Discussion (cntd.)

- Integration of robots viewed through the Sense-of- Coherence
  - comprehensible, manageable, and meaningful welfare technologies and robots seem to be still not enough for achieving consistency, e.g., a *sense of coherence*.
  - Need for legal frameworks that regulated the use of robots in the home of the elderly, especially if these robots shall be part of the digitalization of the healthcare services
  - The robots' design should embed: autonomy, self-worth and ways of living, following the salutogenic approach from The Norwegian Social Ministry
  - These technologies should be seen as "enabling" (as opposed to "assistive")

Conclusion

- The study contributed to the understanding of the integration of robots in the homes of the elderly.
- We focused on a salutogenic approach as opposed to a pathogenic one.
- The study also brought concrete examples of how the elderly seek to understand (*comprehend*) and to be able *to manage* welfare robots.
- We also drew attention upon the importance of having meaningful technologies for the elderly users.
- We can conclude that SOC theory is a useful theoretical construct to analyzing the use of robots in the home of the elderly.