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Ethical Dimensions of Human-Robot Interactions in the Care of Older People: Insights from 21 Focus Groups Convened in the UK, France and the Netherlands

Heather Draper[(✉)1], Tom Sorell[2], Sandra Bedaf[3], Dag Sverre Syrdal[4], Carolina Gutierrez-Ruiz[5], Alexandre Duclos[5] and Farshid Amirabdollahian[4]

[1]University of Birmingham, Birmingham, UK
h.draper@bham.ac.uk
[2]University of Warwick, Coventry, UK
t.e.sorell@warwick.ac.uk
[3]Zuyd University of Applied Sciences, Heerlen, Netherlands
sandra.bedaf@zuyd.nl
[4]University of Hertfordshire, Hatfield, UK
{d.s.syrdal,f.amirabdollahian2}@herts.ac.uk
[5]Centre Expert en Technologies et Services pour le Maintien en Autonomie à Domicile des Personnes Agées (MADoPA), Rosières-près-Troyes, France
{carolina.gutierrezrui, alexandre.duclos}@madopa.fr

Abstract. We briefly report the method and four findings of a large-scale qualitative study of potential users' views on the ethical values that should govern the design and programming of social robots for older people. 21 focus groups were convened in the UK, France and the Netherlands. We present and briefly discuss our data on: 1) the contrasting attitudes of older people and formal and informal carers towards how well technology might be received by older users; 2) views about healthcare professionals, informal and formal carers having access to private information about householders that has been collected by the robot; 3) the belief that robots *could* not, as well as *should* not, replace human contact because persuasion is regarded a uniquely human skill; and 4) differing perceptions of the role of the robot and how this was used to justify ethical opinions on robot behavior.

Keywords: ethics·social robots·care-robots·older people·elderly people· autonomy·privacy·paternalism·user views·user engagement·qualitative data· assistive technology.

1 Introduction

The aim of the ACCOMPANY (Acceptable robotics COMPanions for AgeiNg Years) consortium (coordinated by Amirabdollahian) is to design a socially acceptable, co-learning robotic companion to facilitate independent living for older users. There is a strong ethical component in the project that is led by Draper and Sorell. This will produce an ethical framework for robotic design in this area that is informed by the views of, and acceptable to, potential users. The first step in this process was for Sorell and Draper to suggest a framework based on a review of the literature, their views as ethicists, and the emerging features of the ACCOMPANY platform. The ACCOMPANY platform consists of a mobile manipulator in a smart-home environment primed with

features to support an individual's independence [1]. An initial framework was proposed that comprised six values: autonomy, independence, enablement, safety, privacy and social connectedness [2].The second step was to collect the views of potential user-groups using qualitative methods. The final stage – not yet completed – will modify the framework in the light of the views of the data gathered from the potential users. This paper reports and discusses some of the data collected in the second stage. We have focused on four areas that raise design issues.

2   Method

We wanted to determine (1) whether other values should be added to those already identified in the framework and (2) how users resolved tensions between these values. Potential tensions were represented in four scenarios (Table 1) that were formulated along with a series of open questions and prompts (a common topic guide to ensure consistency across groups and sites) to draw out ethical issues. 21 focus groups in three European countries (see Table 2) with a total of 123 participants were convened (by Draper, Bedaf, Syrdal, Gutierrez Ruiz, and Duclos) at four centres: University of Hertfordshire (UH), Maintien en Autonomie à Domicile des Personnes Agées (MADoPA), Hogeschool Zuyd (ZUYD) and University of Birmingham (UB). Participants were (a) older people aged between 62-95 years old (OP), (b) informal carers of older people (IC) and (c) formal carers of older people (FC).

Table 1 Brief Description of Scenarios

Scenario	Brief description
1. Marie	Marie (78) resists the robot's efforts to encourage movement that will help her ulcers to heal. She likes it reminding her to take her antibiotics but not its reminders to elevate her leg. She is not honest with her nurse about how much she is moving.
2. Frank	Frank (89) is socially isolated. His daughter wants him to access an online fishing forum with the help of the robot. He isn't keen to try.
3. Nina	Nina (70) has recovered from a stroke. She is rude to her daughter and carers (causing them distress) but not her friends. The robot is programmed to encourage better social behavior by refusing to cooperate when she is rude.
4. Louis	Louis (75) likes to play poker online using the robot. He uses its telehealth function to monitor/control his blood pressure. He doesn't let the robot alert his informal carers when he falls (which he does regularly, usually righting himself). His informal carers want to re-program the robot so it will not let him play poker and to alert them when he falls.

Table 2 Numbers, Type of and Countries where, Groups (with Numbers of Participants in Brackets) were Conducted

Type Country (Centre)	Older people	Informal carers	Formal carers
France (MadoPA)	3 (7,8,4)	3 (7,5,3)	3 (7,7,4)
Netherlands (Zuyd)	2 (7,3)	2 (6,5)	2 (6,8)

UK (UH&UB)	4 (5,7,7,7)	1 (4)	1 (6)
Totals	**9 (55)**	**6 (30)**	**6(38)**

The discussions were video/audio-taped and transcribed verbatim. A representative script from each type of group ((a) –(c)) run in the Netherlands and France was translated into English. All the available English transcriptions were then coded (by Draper) using a combination of directed analysis and Ritchie and Spencer's Framework Analysis [3] (see Table 3 below).

Table 3: Use of Ritchie and Spencer's 'Framework' Analysis

1) **Familiarization** - data immersion reading the transcriptions several times.
2) **Identifying a thematic framework** – coding of data using a combination of descriptive, in vivo and initial coding [4]. Descriptive codes referred to the values outlined in the ethical framework, hence hybrid between Framework and directed approach
3) **Indexing** –An approach similar to constant comparative analysis [5] was used in sorting the quotes, searching for correlations and contradictions between quotes.
4) **Charting** – involved thematic organization of the quotations which provided a systematic way to manage data directly relevant in answering the research aims/questions.
5) **Mapping and Interpretation** – involved creating a mind map of the data's main themes, subthemes and their connections, thereby bringing the data set together as a whole in each group.

This coding was independently checked (by Sorell). The results were discussed by the coders and then again with the facilitators at UH, MADoPA and ZUYD until agreement was reached. The facilitators from MADoPA (Gutierrez Ruiz) and ZUYD (Bedaf) then coded the outstanding native language transcriptions. Quotations to illustrate the codes were chosen and translated into English and represented in the write up. Draper and Sorell then combined all of the results, and the final report – running into some 70 pages – was circulated to the remaining members of the research team for verification. This method was informed by a methodology called 'empirical bioethics', where theory is iteratively developed using a combination of philosophical reasoning and empirical data collected (from stakeholders) for the purpose of informing theory building. [6, 7, 8]

3 Results and Discussion

A rich data set was derived. Only four of the emerging themes, selected because they raise specific design challenges as well as ethical issues, will be presented and briefly discussed in this paper. There is not space here to discuss all of the themes.

3.1 Attitude of Older People Participants (OP) to Technology

OP groups engaged well with the scenarios that were presented for discussion. They commented that they 'recognized' the behaviors of the fictitious characters in the scenarios, either in their own behavior or that of others.

> *I'm also such a person, so I can tell you that I don't always do what they tell me to do.* (ZUYD OPFG2 E3)[1]

> *'cause for twenty four years I lived in a block of retirement flats, so I've seen a lot of these situations come and go...carers come and go, people are rude and a neighbor of mine who's just died she fitted that scenario ...so well and she was rude to her carers, so they left.* (UB OPFG1 P6)

They did not express reluctance to accept robots (though they had some misgivings) whereas the IC participants and FC participants tended to assume that older people do not like new technology and may not, therefore, like having a robots in their homes.

> *That's a good use for a robot I think, a very good use. As an alarm, a monitoring device.* (UB OPFG3 P2)

> *You haven't got a computer but you might get a robot? So why not get a computer, between you and me a computer's probably much cheaper than a robot!* (MADoPA OPFG1 P7)

> *I think that these older people, they will not go with the robot, really! From the experience with my father… He would not say something like, OK I will walk, more like: switch that device off* (ZUYD IFFG2 M3)

> *They don't like changes well, elderly people are resistant to change* (UH FC PD)

Here our data are consistent with the existing literature suggesting that older people are not, in fact, averse to using new technologies (though they may worry about whether they will be able to learn how to use it) – see for instance [9, 10].

3.2   Contrasting Attitudes to Accessing Health Information from the Robot

OPs tended not to be too concerned about the prospect of personal information being accessed from the robot by healthcare professionals and formal carers (though opinion was more divided when it came to informal carers). Some concerns were expressed about the possible intrusiveness of monitoring (sometimes likened to Orwellian notions of 'Big Brother').

> *Yes* [the robot should tell the nurse], *because otherwise there is no point having the robot doing these things.* (UH OP P2)

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[1] Focus groups labelled according where they were held (e.g. UB = University of Birmingham) then according to type (e.g. OP, IF, FC), and individual participants according to the transcripts prepared by the sites – e.g. E<number>, P<number> or P<letter> to maintain participant confidentiality. FG<number> is used where more than one group of the type ran at that centre.

> *It's arranged that this goes to his doctor and he will take action if needed.*
> *That's enough. Why again telling the daughters-in-law?* (ZUYD OPFG2 E3)

> *Don't you find it un- well - unethical I suppose to find that you're being watched*
> *all the time, that you're being fed, recorded all the time...* (UB OPFG1 P5)

ICs and FCs recognized both the importance of the older person's privacy and the value of the robot as a health monitor. FCs also expressed fears that robots may be used to monitor their *own* behavior, and this latter surveillance may inhibit the care they provide.

> *I think that she* [the nurse] *should check it all the time, it should be automatic.*
> *You should get into the habit of checking every day.* (MADoPA FCFG1 P1)

> *Well, I agree with* (pointing at PF) [information] *about the blood pressure is*
> *between the patient and the doctor, not necessarily common knowledge for*
> *everyone.* (UH FC PA)

> P4: *I think it's all very 'Big Brother is watching you' if you have such a thing*
> *in your home and it can be programmed at all times to turn against me.*
> P1: *Yes. You could look at it like that.* (ZUYD FCFG2)

Participants' views were often that user information should either stay within the older person's control – to avoid the 'Big Brother' effect – or that personal data could be circulated within a tightly defined group. This is consistent with the weight given in the ethical framework to user autonomy. Within Europe, and specifically the European Union, there is considerable pressure being applied by those supporting human rights legislation to tighten protections on individual privacy and personal data, even within the circle of those who might regard themselves as part of a patient's wider care team. This is more or less explicitly inspired by the principle that people should be in control of information about themselves. It is arguable that in full generality the principle is questionable: for example, it might unreasonably protect politicians engaged in image-management who may otherwise face fair public criticism. But in relation to policies that are supposed to protect independence and autonomy, such as policies of using telecare and robotic companions to prolong older people's independence, the principle makes more sense. Sorell and Draper have argued elsewhere that healthcare monitoring aimed solely and directly at benefiting an individual is wrongly characterized as surveillance of the kind envisaged by Orwell [11], but their argument only goes some way to allaying the kinds of fears expressed by our participants.

The concern of formal carers that *they* may be monitored was combined with a concern that this form of monitoring may interfere with the care they provide. The implication here was that such interference would have a negative impact. Equally, however, it may drive up standards and offer vulnerable older people some protection against bad care. Carers should not be allowed to object to monitoring for this reason.

3.3   Human Care Should Not and Can Not be Replaced by Robots

All of the groups were generally adamant that robots *should* not replace human contact – a common view elsewhere in the existing literature (see e.g. [12]).

> *nothing can replace the presence of another human being* (MADoPA IFFG1 P6)

> *I suppose a robot is not like a human you can interact with really...It will do requests and what you need, or its programmed to, y'know remind you of things. But it's not the same as having a person who you can talk about anything to.* (UB OPFG1 P2)

However, our participants thought that there was an important sense in which the robot *could* not replace human care for older people, and this was in relation to humans having unique powers of persuasion. In response to scenario 2, for example, all of the groups generally felt that persuading Frank by '*fair means or foul*' (UH OPFG P4) to try the fishing forum was acceptable, and that persuasion in general was a significant aspect of providing care for older people as older people tend to resist change. The clear implication in what the participants said was that the robot, at least in its current iteration, lacks the *capability* to persuade and cajole, and that they saw persuasion as a distinctly human form of interaction.

> *That's the thing that's going to make the difference between a carer and a machine. A professional care worker is going to be able to stimulate, encourage and repeat all these requests, and so on, and also explain again and again why we're there, why that person has to get up and go for a walk, etc. I think that's what's likely to make the difference.* (MADoPA FCFG1 P7)

> *...it still requires a person to explain this to her and model it to her and to see if she can actually do it because she might not be able to do it…* (UH IF P1)

> *Or maybe his daughter could take a look together with her father. So the father can look if he likes it. Maybe after 1 or 2 times he will like it and will use it himself as well.* (ZUYD OPFG1 E5)

Few roboticists disagree with the prevailing view that human-human interaction with older people should not be completely replaced by social robots. Nonetheless, many – including those working in ACCOMPANY – aspire to create a robot that is self-sufficient in its interactions with users; for instance, one that co-learns alongside the user and whose interactions are not thereby mediated through a third party. We are some way from producing a robot with the linguistic and persuasive skills of the robot in the film 'Robot and Frank', whose programming also accommodated deception and mild coercion to the end of persuading Frank to adopt a healthier lifestyle. Participants in all groups strongly believed that the autonomy of older people needed to be respected (a theme that is not reported in this paper), but were generally strong advocates of persuasion that came close to coercion – for instance by involving deception, such as the daughter in the second scenario 'accidentally-on-purpose' exploring the social media functions of the robot. Autonomy promoting paternalism (limited coer-

cion, motivated by the interests of the older person, and aimed at enhancing choice through experience) was also regarded as acceptable practice. This form of paternalism was 'soft' in the sense that it could be resisted, albeit with some effort, and also time-limited. With some exceptions (e.g. related to safety that we do not have space to explore here), participants thought that attempts at persuasion should not themselves spill over into outright coercion. The reasons they provided were not, however, always motivated by ethical concerns to protect and respect autonomy. The FC groups, for instance, tended to the view that trying to force older people is pointless because it is destined to fail, which may imply that they thought that if it could succeed it may be justified. This view will be explored further by Draper and Sorell for ACCOMPANY and reported in the final deliverable.

3.4   Ethics and Perceptions of the Role of the Robot

Participants often justified their moral intuitions by conceiving of the robot as occupying a particular role, even though no roles were assigned in the scenarios. Commonly assigned roles were servant, healthcare provider, extension of a healthcare provider and companion when discussing the scenarios. Sometimes intuitions were based on the robot being merely a machine (just like any other household appliance), and at other times on its being a fairly sophisticated machine (more than just a common household appliance).

> *I think I rather agree with that because it's, because it is a bit like the nurse coming in and saying 'Shall we have a game of poker?' isn't it. And you wouldn't expect that* (UB OPFG3 P7)

> *I'd want to know if it would sing me a lullaby, I think that would be rather nice* (UB OPFG2 P6)

> *The robot is there to do things for us...It can't refuse to do things: it can't refuse the person's wishes, although there may be exceptions to the rule...* (MADoPA OPFG1 P7)

> *The advantage of a robot, it's, you were talking, you had a home-help two hours, three hours per week, the robot, once it's there and equipped, can work 10 hours a day. That doesn't bother it* (MADoPA IFFG3 P1)

> [it's] *just a machine"* (ZUYD FCFG2 P5)

> P7: *Is it like a household appliance, for example like a food processor you use to slice tomatoes because you don't want to cut your hand? In that case, is it just there to go and fetch bottles? Like a vacuum cleaner is just there to vacuum? Or does it have a job as a carer, is its role to care for a person and give them something more? How do we really define this robot?*
> P1: *For me, its role is the second one you describe; it's not a Moulinex mixer!*
> P7: *Then if its role is as a carer, isn't it supposed to do what the individual cared for asks it to do, not what other people might ask it to do?*
> *(Several people speak all at once)*

P1: *It's also supposed to do what the person needs* (MADoPA IFFG1)

No particular perception of the robot was dominant; it was rather that participants referred to role-norms to justify their views – particularly where there was an underlying tension between values that they held to be important. So, for instance, in the final scenario, participants were clearly torn between wanting to say that Louis should be free to spend his money as he chose (including gambling) – thereby respecting his autonomy – and the desire to protect Louis from the harms and wrongs of financial debt. The tension was reconciled by claiming that it was acceptable to program the robot to block the gambling site for reasons justified with reference to the norms for healthcare workers. The robot *qua* healthcare professional should not facilitate or introduce gambling into the home. If Louis found another way to gamble, then so be it. These kinds of tensions are increasingly likely the more complex and multi-faceted the social robot is, not least because it is unclear to whom the robot should primarily respond. *Prima facie* the robot should answer to the mentally able older person, with whose consent it has been introduced into the home. But this construction fails to recognize that if the robot is to be governed by the norms of the healthcare professional, it should not – unlike a servant – simply do the bidding of the autonomous older person. On the contrary, healthcare professionals have duties in some circumstances to resist patients' requests if these run counter to their professional judgments about a patient's best interests. Whilst consent is a prerequisite to any intervention performed on an autonomous patient, patients are only free to choose from the range of options that their doctor is willing to make available. These interventions are offered on the basis of professional judgment. Patients can, of course, refuse any/all options but professionals are arguably not obliged to provide an intervention solely because it is what a patient wants.[2]

To manage these differing role assignments and their associated ethical norms, developers may need to consider clearly defined and rigidly adhered-to roles for social robots. These will enable developers to work to clear standards of safety and within the bounds of defined and understandable expectations for robot behaviors. This may result in the need for more and simpler robots to be introduced into each individual's home to meet all of their needs; with each robot governed by ethical norms stipulated or suggested by its assigned role.

4   Limitations

We did not have the funding to translate all of the transcriptions into English for analysis. Moreover, some nuances many have been lost in translation. Steps were taken to mitigate this by bringing together the facilitators to agree the coding.

5   Conclusions

Older people and informal and formal carers in focus groups convened in the UK, France and the Netherlands discussed four cases designed to highlight potential tensions between values in the ethical framework being developed in ACCOMPANY.

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[2] This is the basis of debates in medical ethics about, for instance, patient-elected caesarean section or the surgical removal of healthy limbs at the request of a patient with body dysmorphia.

Their views will influence the final version of the framework, which will be completed in September 2014. The rich data that resulted, however, also shed light on potential users' views on other issues of interest to roboticists. Four such themes were reported (and briefly discussed) in this paper. The results are summarized in Table 4.

Table 4 – Summary of the Results Reported in this Paper

Theme	Summary results
Older people and new technology	Older people had some misgiving about the robot, but they were more positive than informal and formal carers thought older people would be
Accessing health information from the robot	Participants in all groups recognized the value of privacy. Older people raised few objections to health information being accessed from the robot by healthcare professionals, but were more ambivalent about information being shared with informal carers. Informal and formal carers could see the value of being able to access information from the robot. Formal carers tended to think that informal carers should not have access to such information, and were also concerned about their own interactions with older people being monitored.
Human carers should and cannot be replace	All groups felt that human-human interaction *should* not be replaced by robots. All groups tended to think that persuasion to overcome the resistance of older people to change (including beneficial changes to their own behaviors) was a distinctly human skill that robots did not have. Therefore robots *could* not replace humans.
Ethics and perceptions of the role of the robot	Participants in all groups assigned roles to the robot and then used corresponding role norms to address the scenarios. No role predominated. It was also recognized as being a machine. Carers in particular acknowledged its advantages as a machine.

Users were not convinced that the robot on its own could effectively encourage independence-promoting behavior. Concerns that older people may doubt their ability, or lack the ability, to use new technologies points to the need for usable systems, intuitive features and support for users unfamiliar with the technology.

With regard to accessing health care information, the dominant view supported by both older people and carers was that privacy should be protected. In particular, and in keeping with the value of autonomy emphasized in the ethical framework, personal information should be exchanged only with the consent of those concerned.

Carers highlighted the constant availability of the robot as one of the important advantages of technology, and its uninterrupted presence may have been assumed by the participants. However, the value of human-human interaction was highlighted, especially with regard to persuasion, and participants were skeptical of robots' powers to persuade. A clear distinction was, however, drawn between persuasion and coercion, and the bounds of justifiable coercive behavior were likely to vary with the users' perception of the role of the robot. The perceived role of the robot gives rise to role norms that are likely to be critical in users' views of acceptable robotic behav-

iors; for instance it may be unacceptable for a robot acting as a nurse to have features that enable playing poker, whilst these might be more acceptable for a robotic companion. The role of any robot therefore needs to be carefully defined and presented to users in advance to minimize false expectations about robot behavior.

This paper highlights the empirical approach taken to ethics in ACCOMPANY and demonstrates how the empirical bioethics methodology can be extended into robotic ethics.

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