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Playfulness and disruptions: using pet robots in everyday life in a nursing home for people with dementia

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Abstract

Recent years have seen increasing interest in social robots, including pet robots, and their use in the care of people with dementia. Most research has focused on formal care-givers' perspectives. There is a lack of qualitative research on the use of social robots in embedded practice and how people with dementia react to and interact with social robots. This study explores the use of pet robots in everyday life in a nursing home for people with dementia and how playfulness and disruptions characterized many interactions among the people with dementia, the pet robots and the researcher. It draws on five months of ethnographic fieldwork in a Danish nursing home for people with dementia including 11 residents, 13 staff members and 3 family members. We found that pet robots opened people up for playful interactions, allowing people with dementia to express themselves and have fun in a way that flattened hierarchies and enabled these individuals to be active instigators of joyful interactions. In the article, we argue that agency is distributed and that residents, robots, researchers and other actors both instigate and disrupt playful interactions. Playful interactions in the nursing home can be fun and rebellious in an everyday life that is otherwise focused on fitting in and keeping calm. Therefore, playfulness and fun can be viewed as a way of coping with institutional life. Further, playful interactions with pet robots can provide opportunities for residents to be active instigators rather than merely passive recipients of care and activities.

Keywords: dementia; nursing home; pet robots; playfulness; social robots

Introduction

Dementia is an umbrella term for a range of neurodegenerative diseases that affect cognitive abilities and behaviours. Age is the strongest risk factor for dementia, but dementia can affect people of all ages. Due to demographic changes and the ageing

global population, there is an increasing trend in the number of people living with dementia (World Health Organization 2021). Dementia impacts the ability to maintain activities of daily living (World Health Organization 2017); accordingly, people with dementia need help from informal and often also formal care-givers, especially in the moderate to later stages of the diseases. The increasing demands for assistance may lead to the need for professional home care and admission to a nursing home. However, there is a global lack of professional care-givers for people with dementia, and this shortage is estimated to become more severe in the future (World Health Organization 2016).

In Denmark, where the data for the current study were collected, people with moderate to late-stage dementia often live in a nursing home, and it is estimated that the majority of nursing home residents live with some form of dementia. According to the Danish Alzheimer Association, 65–80 per cent of nursing home residents have dementia (Alzheimerforeningen 2021). Globally, these numbers vary greatly, with a meta-analysis finding an average prevalence of residents with dementia in long-term care institutions of 53 per cent, with Norway having the highest prevalence (84 per cent) and Mexico the lowest (11 per cent) (Fagundes *et al.* 2021). The vast majority of Danish nursing homes are public (Gjødtsbøl 2017: 25) and are organized by municipalities as part of the Danish welfare system. Nursing homes are designed so that each resident has a private apartment with a toilet, a bath and sometimes a kitchen (Sundheds- og Ældreministeriet (SUM) 2016).

Assistive technologies such as social robots have been proposed as potential solutions for the current and future challenges of caring for people with dementia. There are many definitions of social robots, but herein we use the definition proposed by Mannion *et al.* (2019): ‘robots that have social skills which enable them to communicate with human users in an acceptable manner’ (Mannion *et al.* 2019: 1). Social robots exist in many shapes and sizes and can be categorized in different ways. One such classification system is to divide social robots into humanoid robots, pet robots and telecommunication robots; another classification system divides social robots into service robots and companion robots (Felding *et al.* 2023). In the current study, we examined the use of pet robots, a type of social robot that is designed to provide companionship. These robots are sometimes referred to as companion robots, and mimic the companionship provided by living pets. Animal therapy has been shown to provide companionship, comfort and meaning to older adults as well as functioning as a social ice-breaker, and pet robots attempt to achieve the same benefits without the challenges of having real animals in a nursing home (*e.g.* hygiene) (Robinson *et al.* 2013). Different robotic animals, such as cats, dogs and seals, are available on the market (Koh *et al.* 2021). There is wide variance in terms of the abilities and prices of these robots. According to Koh *et al.* (2021), the seal robot Paro costs approximately \$6,000, whereas ‘low-cost robotic pets’, such as Perfect Petzzz and the robotic cats and dogs called Joy for All, cost approximately \$15–35 and \$110–130, respectively. These lower costs enable residents to have their own robot instead of sharing it with other residents. Together with recommended cleaning measures, this can ease some of the hygiene challenges that pet robots can present (Bradwell *et al.* 2020) – an especially pressing topic in the context of the Covid-19 pandemic, which was ongoing during data collection.

Pet robots are among the many technologies used in the care of older adults in Denmark. The Danish state has invested heavily in assistive technologies and digitalization – or welfare technologies, as they are referred to in the Scandinavian countries (Frennert and Baudin 2019). These investments are aspects of ‘the Nordic model’, a Scandinavian welfare and technology-based care approach that aims to increase the quality and efficiency of care. In addition, the Danish welfare state aims to be prepared for a future with fewer funds and a smaller workforce taking care of a growing population of older adults (Grünenberg and Hillersdal 2023). Pet robots have been part of dementia care in Danish nursing homes since the mid-2000s, when the seal robot Paro began to be used. Currently, more than 80 per cent of Danish nursing homes have purchased Paro (Hung et al. 2019). Lately, other pet robots have also emerged in Danish nursing homes.

We studied the robotic cats and dogs called Joy for All Companion Pets from Ageless Innovation LLC. These pet robots have touch-activated sensors on the head, cheeks, stomach and back of the robots as well as a light sensor on the head. They can make noises imitating barks, meows and purrs and have a heartbeat. The robots are not mobile, but the dog can move its head and tail and the cat can lift a paw and lean back. These features are activated through the sensors, making them interactive and making them social robots in contrast to, for example, the non-interactive Perfect Petzz cats and dogs, which can be classified as toys rather than robots (Hudson et al. 2020; Koh et al. 2021).

Previous research on pet robots for older adults and people with dementia

Previous studies have examined different aspects of pet robots for older adults, including implementation (Koh et al. 2022), acceptance (Felding et al. 2023), comparison with animal-assisted therapy (Banks et al. 2008; Thodberg et al. 2016), effectiveness, as well as whether the pet robots improve the wellbeing of people with dementia and their care-givers, measured using a range of instruments and outcomes (Birks et al. 2016; Bradwell et al. 2022). A qualitative study comparing different pet robots in care homes found that residents, family and staff were generally accepting of pet robots and preferred the cats and dogs from Joy for All because of their familiar embodiments and soft furs (Bradwell et al. 2021). Another qualitative study found that Paro increased communication and social interaction between residents in a long-term care facility (Chen et al. 2022), which is in line with findings from other studies (Birks et al. 2016; Moyle, Bramble et al. 2017; Pu et al. 2020; Robinson et al. 2016). A cluster-randomized controlled trial as well as a qualitative study reflecting on the trial found that Paro can help manage behavioural and psychological symptoms of dementia, but that there were big variations between and within individual users (Moyle, Jones et al. 2017b, 2019). A mixed-methods study found that facilitation by a human care-giver was crucial in the interactions between care home residents and pet robots (Feng et al. 2022) and a qualitative study found that staff and family members were resistant towards using the pet robot Paro at first, but became enthusiastic after using it (Bemelmans et al. 2016). Reviews on the use of pet robots for older adults and people with dementia found that pet robots show promise and can have a positive impact on quality of life, loneliness, depression and communication, among others (Abbott et al. 2019; Koh et al. 2021).

It appears that pet robots can simulate some of the benefits of animal-assisted therapy, but may not be as successful in maintaining attention and interacting with nursing home residents, though more methodologically sound studies are needed (Abbott *et al.* 2019; Koh *et al.* 2021; Thodberg *et al.* 2016). A meta-ethnography on pet robots in long-term care settings focused on formal care-givers' experiences with pet robots, due to the paucity of qualitative research on the perspectives of residents with dementia and informal care-givers in long-term care. Moreover, they found that most articles have studied Paro and that more research is needed on different pet robots being used in long-term care settings (Scerri *et al.* 2021). There have not been many ethnographic studies of pet robots in the care of older adults. Previous ethnographic research has studied the use of pet robots in practice in nursing homes and hospitals focusing on the work done by nursing home staff as well as insignificant others in interactions with pet robots and residents (Ahlin and Mann 2025; Chevallier 2023; Persson *et al.* 2024). Qualitative researchers have argued that there is a need for more qualitative research that studies the use of social robots embedded in real-life practices, as the implementation of social robots depends on social interactions (Blond 2019; Strandbech 2018; Wright 2023). This study attempts to fill these gaps in the research: researching pet robots other than Paro, embedded in situated practice with a focus on older adults living with dementia. The article adds to the literature by deepening our understanding of everyday use of the robots with a focus on interactions with residents in a nursing home context. Based on ethnographic fieldwork in a nursing home specialized in dementia care, we look at two research questions in this paper: (1) what characterizes interactions between pet robots and residents; and (2) how does the nursing home environment affect interactions between pet robots and residents?¹

Playfulness and disruptions in dementia and ageing research

Ryan (2021), who studies ageing and play, argues that this topic has been understudied in anthropology, as playing is often associated with childhood and development and is seen as an unserious or infantilizing topic in ageing research. However, many assistive technologies, such as brain training, exergaming and pet robots, are based on the idea of older adults playing in the nursing home. Ryan argues that play should be taken seriously and challenges ageist views of older adults as boring and unable to play (Ryan 2021; Ryan and Mendiola 2024). Golomski (2020) does this in his study of jokes in a South African nursing home. He argues that joking can mediate cultural, ethnic and class differences in the context of postcolonial and post-apartheid South Africa. This context clearly differs from that of a Danish nursing home, but his arguments on how joking can create a mutuality, which is produced through interactively participating in each other's lives (Golomski 2020), provide insights on what is at stake when residents are playing with the pet robot.

The initiation of joking here signals an encounter with linguistic and cognitive uncertainties and social differences. Then, by participating in joking, people playfully work among these uncertainties and differences to interactively forge a mode of coexistence that does not depend on fully understanding or taking

advantage of an other, but rather on historically situated sociability. This is what I take to be evidence for participatory mutuality. (Golomski 2020: 286)

Holt (2016) uses conversation analysis to understand playfulness and laughter. She argues that many contributions to playful interactions are not explicitly playful but rather ambivalent, meaning that distinctions between playful and non-playful actions cannot be sharply defined. On the other hand, Auburn and Pollock (2013), in their analysis of children with severe autism joking, laughing and teasing, argue that 'interactions involving people who are communicatively impaired can nevertheless display courses of action which are normative, recognisable and accountable' (Auburn and Pollock 2013: 17). Similarly, Pilnick et al. (2021) show how previous reviews on interactions with people with dementia found a range of different interactional skills in people living with dementia ranging from abilities to perform storytelling, do repair work and remain active participants in a conversation. Although we may not have access to the intentionality of residents with dementia, previous research shows how interactional skills, including joking and laughing, are nevertheless present in people who are communicatively impaired.

In a review across disciplines, Masek and Stenros (2021) found many definitions of playfulness. Playfulness in a nursing home for people with dementia differs from many of these definitions as we cannot be completely sure which part of the playing is intentional, that is, if we are playing with a pet robot *as if* it is a real living creature or if we are playing with a pet robot, *which is* a real living creature. We therefore cannot directly apply definitions of playfulness such as 'engaging with reality in a way that is knowingly false' (Masek and Stenros 2021: 21) or 'an active and intentional way of refocusing the perspective of a social group' (Masek and Stenros 2021: 19). At the same time, playfulness is defined as unconventional, playing with a non-real reality and being open, which is consistent with playful interactions in the context of dementia care. In their review, Masek and Stenros propose the following definition of playfulness: 'Playfulness prioritizes engagement over external consequence, realness, or convention' (Masek and Stenros 2021: 23). In this article, we use this definition of playfulness.

Alongside the concept of playfulness, we use the term disruption in this article, as playfulness is often disrupted in the nursing home. Disruption is discussed in medical anthropology where the term is often used to describe biographical or relational disruptions due to, for example, dementia (de Waal 2018; Inhorn 2007; Karner and Bobbitt-Zeher 2005); in this article we use the term to describe much smaller, everyday disruptions. De Waal (2018) looks at disruption and continuity in the everyday life of couples living with dementia and co-morbidities. She looks at disruption on different levels, whether in disrupted power balances, disrupted everyday activities or disruptions in the ability to carry out everyday tasks. She describes disruption as something that is unexpected and can happen suddenly, which stands in contrast to normality (though normality is negotiated when disrupted), to the expected and to continuity and has to be coped with to maintain daily routines. In her analysis, she shows how spouses attempt to create continuity to cope with these disruptions and how continuity and disruption come to coexist (de Waal 2018). In this article, we lean towards de Waal's use of the concept and see disruption as unexpected and sudden changes of

everyday activities, and as a phenomenon that can coexist with a need for continuity and calm in everyday life in the nursing home.

Methodology

Study design

This article is based on ethnographic fieldwork. The fieldwork was inspired by phenomenology, with its focus on the intersubjective, relational and interactional (Sjørøsløv 2015). In particular, it was inspired by Desjarlais' critical phenomenology, which aims to describe not only what people feel, experience and think but also how feelings and experiences come into being through different interactions. In his study of homeless people, he argues that the phenomenological study of experience must be bracketed and questioned, as experience often is understood as 'a subjective, reflexive process that rests securely on a person's cognitive abilities to reflect on and make introspective sense of his or her engagement with the world' (Desjarlais 2011: 14). This kind of experience did not apply to his interlocutors in the homeless shelter, and he suggests defining experience in this case as being there when something happens (Desjarlais 2011). Similar to Desjarlais, we are inspired by as well as critical of previous phenomenologically inspired anthropological approaches to experience, which do not always fit well with people with dementia living in nursing homes. We nevertheless find it important to present the life worlds of people with dementia. We do this through fieldnotes describing interactions with residents as well as how the fieldworker experienced these interactions.

Phenomenologically inspired anthropology has been critical of binary understandings of human subjects and non-human objects and foregrounded how humans are embodied beings thereby researching not only what people say but also bodily experiences, knowledge and practice (Desjarlais and Throop 2011; Zigon and Throop 2023 [2021]). This has influenced our fieldwork, where non-human actors (in our case pet robots) were approached as actors having agency and not simply as passive objects. A phenomenologically inspired anthropological approach enabled the inclusion of people with dementia in the research, when they were not able to express themselves verbally, with a focus on their practices and embodied expressions. Furthermore, the fieldwork design was inspired by sensory ethnographic methods as described by Pink (2015), which align well with a critical phenomenological approach. The study design was based on this combination and therefore, in addition to semi-structured interviews and observations, includes a reflective practice of the researcher's own positioning, and sensory and emotional experiences in the field. These reflections are important to be aware of and they minimize bias in the research as they enable the fieldworker to become aware of potential bias and show from which position and through which relations data were collected.

The first author carried out five months of ethnographic fieldwork in a Danish nursing home for people with dementia from September 2021 until January 2022. The fieldwork was conducted during the Covid-19 pandemic, which had an impact on the fieldwork as well as on the data collected. Although Covid-19-related restrictions were not in place when the fieldwork began, the pandemic had had a strong impact on the nursing home. Many social activities, as well as volunteer visits, were discontinued,

and another autumn/winter season with potential new lockdowns was on the horizon; therefore, social activities were not re-established in early autumn 2021. While there were no official restrictions for the first author during the fieldwork, she underwent PCR (polymerase chain reaction) tests² to detect potential Covid-19 infections twice a week, received timely vaccinations and stayed away when she had been in close contact with someone with Covid-19. During the fieldwork, a new variant of the coronavirus (Omicron) started spreading, and new restrictions were implemented. Along with the staff members, the first author wore masks – something that puzzled the residents at times – and was unable to move between units as freely as before. Furthermore, a lack of staff was a challenge in the nursing home, which was exacerbated by the Covid-19 pandemic as well as a nurse strike that ended shortly before the fieldwork began (Eller 2021).

Participant recruitment

The first author undertook recruitment by reaching out to Danish municipalities asking if there were nursing homes within their jurisdiction that use social robots and if they were willing to help with access to the nursing homes. One municipality agreed and connected the researcher with a nursing home that was willing to participate. We used non-probability sampling because the goal of the ethnographic fieldwork was not to reach statistical generalizability but rather to obtain an in-depth understanding of the phenomena of pet robots in nursing homes. According to Bernard (2017), using non-probability sampling is appropriate for labour-intensive, in-depth studies of a few cases (fewer than 50). In practice, this meant that we recruited the nursing home purposively rather than randomly, using the criteria that they were (according to themselves) actively using social robots. After gaining formal access to the nursing home, the first author met with a dementia expert in the nursing home. The dementia expert became the gatekeeper in the field and introduced the first author to staff, residents and relatives in the nursing homes. After this introduction, the first author approached staff, residents and relatives. She approached staff and residents in the common areas in the nursing home, explained her purpose in the nursing home and asked if they were interested in participating. Relatives were less present in the nursing home and were therefore contacted via email as well as when the first author saw them in the common areas.

Methods

The primary method used in the ethnographic fieldwork was participant observation with fieldnotes written after each day in the field. The participant observation was carried out in a nursing home for people with dementia in a larger municipality in Denmark. Here, the first author interacted with residents, staff, management, municipal workers and family members. The participant observation mainly took place in the common areas of the nursing home (kitchen, living room, dining room and hallway); the first author entered the apartments of residents only when she was invited in. During the participant observation, the researcher had informal conversations with

residents, staff and family members; jottings were made in a notebook and later written out as fieldnotes on a computer. The fieldnotes included sensory ethnographic data such as descriptions of sensory experiences as well as reflections on emotional reactions, hunches and gut feelings. In addition to these more informal conversations, five semi-structured interviews were conducted: two with staff, one with a resident alone, and two with residents and one of their family members present. The interviews were conducted to gain insights from participants that were otherwise difficult to reach. Family members rarely participated in everyday life in the common areas in the nursing home, but retreated to apartments to have time with residents. Interview appointments provided an opportunity to talk to them. Similarly, two interviews were with staff that were otherwise difficult to reach: one was from another nursing home and the other was rarely present in the nursing home at the time of the fieldwork. The interviews were conducted either in the nursing home or online. The interviews with residents and relatives were conducted in residents' apartments in the nursing home. The interviews were semi-structured for staff and relatives and narrative for residents and lasted between 16 and 52 minutes with an average of 36 minutes. Interview guides can be found in the supplementary material. The interviews were audio-recorded and transcribed by the first author.

Participant observation is a continuum in which the fieldworker moves between more active and more passive observation (Musante 2015; Spradley 1980). During the fieldwork, the strategy for how actively the first author participated in the use of the pet robots changed. At first, the first author was rather a passive observer getting to know the field and waiting for situations involving pet robots that she could observe and participate in. Underlying this strategy was an assumption that the pet robots would be part of everyday life in the nursing home. Upon arriving in the nursing home, the first author quickly found that the robots were not being used by staff or residents but were locked in offices or hidden away in attics and cupboards. During recruitment, municipality workers explained that the pet robots had been implemented successfully in the nursing home. However, it appeared that this implementation process had not been as successful as expected. The robots seemed to be hidden. Staff explained that they were worried that something would happen to the robots if they left them in the common areas. After a few weeks of participant observation without the robots, the first author changed her strategy and started using the robots herself. She took on a more active role of walking around – often with a pet robot on her arm or on the furniture close by – talking to residents and staff and occasionally family members when they were present. The decision was made in collaboration with the dementia expert in the nursing home and discussed with colleagues at the Department of Anthropology, University of Copenhagen, where the first author was a guest researcher during the fieldwork. Staff at the nursing home wanted to know more about the robots and how they worked and seemed curious about their use in the nursing home. The decision to start using the robots influenced the fieldwork and the positioning of the first author in the field. She became associated with the pet robots and got nicknames such as *the woman with the dog*, a positioning which we have discussed in detail elsewhere (Felding *et al.* 2024). The fieldwork changed from the first author participating in and observing how staff use the robots, to herself becoming an active instigator of these interactions.

The following data were collected: 290 pages of fieldnotes, 5 audio-recorded interviews, interview transcriptions, photographs, a logbook, a sketchbook, a jotting pad, emails, signed consent forms and a couple of documents and news articles. The fieldnotes were the primary source of data. The fieldwork was conducted in Danish (the native language of the first author). All interview citations and fieldnote excerpts used in the article were translated from Danish to English by the first author. Translation was based on the interpretative-communicative translation method, where meaning, context and effect are translated, rather than providing a verbatim translation (Molina and Hurtado Albir 2002).

Analytical approach

Analysing ethnographic data is not a one-time event. Data analysis occurs at all stages of research and begins even before fieldwork (DeWalt and DeWalt 2011; O'Reilly 2005; Pink 2015). O'Reilly describes this approach as an iterative-inductive analysis, which means that analysis and data collection are interlinked and shape each other (O'Reilly 2005). As described earlier, critical phenomenology informed the design of the fieldwork, which formed part of the analysis before the data collection started.

Anthropology is a comparative discipline, and in this process of analysis we compare our fieldnotes with concepts and theories from the literature (Hoek 2014: 111). Simultaneously, the analysis was informed by memories and intuitions about what was important during the fieldwork, which is why reflexivity, positioning and sensory awareness are important throughout the planning, conducting and writing of fieldwork (Hoek 2014; Pink 2015, 2021). The fieldnotes therefore include the reflections of the researcher to give a phenomenological insight into the experiences of being in the nursing home and interacting with residents and pet robots. This approach involves a combination of systematic work; intuitive, embodied knowledge acquired during fieldwork; and AHA-moments that suddenly appear.

Data analysis

After finalizing the fieldwork, the first author started transcribing the interviews, sorting the data and reading the material. After this first round of sorting and familiarization with the data, all the data were imported into MAXQDA 2022 (VERBI Software 2021) for coding. The coding was carried out inductively and iteratively over several rounds. After a first round of inductive coding, categories were collated and refined in several rounds of coding. From this, a code tree emerged with 6 main categories, subdivided into 20 subthemes. This process was carried out in Danish in collaboration with colleagues from Denmark and Sweden. The code tree that was developed was translated to English, discussed among co-authors and refined in subsequent coding rounds. Based on the code tree, the first author created analogue mind maps to visualize how themes fitted together. During this process, several links between subthemes and individual codes across themes were identified. In this article, we describe cross-cutting themes that influence and define many of the other codes in the code tree and play a central role in the use of pet robots in the nursing home. An example of a

different subtheme is the theme ‘What is the robot?’, which includes codes on naming the robots and the abilities of the robots, which we have reported on in a different article (Felding *et al.* 2024). While comparing the findings to other findings, concepts and theories, the analysis continued during the process of writing the articles together with the co-authors, which yielded different perspectives and critical questions about the data. After building an argument, the first author re-examined the data to ensure that the arguments were supported by the data.

A challenge when analysing qualitative research with people with dementia lies in interpreting or accessing the perspective of people with dementia. The residents in the nursing home had moderate to late-stage dementia and therefore lived with different cognitive impairments, many having various degrees of aphasia. This meant that verbal communication was sometimes difficult or at least different. When analysing the data, we interpreted the actions and communications of people with dementia, but often we were not sure how to interpret these. Conducting five months of ethnographic fieldwork with the residents enabled the first author to get to know them and better understand how they communicate and what is important to them. However, because of the degree of their cognitive impairments, the first author could not verify interpretations by asking residents if she understood something correctly and expect them to understand and answer. It is therefore important to keep in mind that the intentionality of the people with dementia may have been different from what we interpret – a topic that we will discuss when we analyse joking and playfulness in this article.

Ethics

Written informed consent was obtained from the staff and family care-givers. For the residents, written informed consent was obtained either from them or by proxy from their family members when they were not capable of giving consent themselves, which was assessed in collaboration with their significant others and members of staff.

We do not see consent as a one-time event but rather as a process that is continually negotiated and adapted to needs, moods and contexts. As Tauzer *et al.* argue in their paper on ethics approval for ethnographic research in a care home, ‘consent is momentary and occurs in relations’ (Tauzer *et al.* 2023: 2). When doing ethnographic fieldwork, the fieldworker develops relations with the interlocutors, and they may not be aware at all times that they are talking as interlocutors and not just having an informal conversation. This is a general ethical challenge in ethnographic fieldwork, where the fieldworker develops intimacy with research participants. ‘That intimacy is a powerful instrument that must be used with care so as not to violate the trust established nor abuse the confidence that has been given’ (Fluehr-Lobban 2015: 146). This becomes even more important when residents have dementia and may not be able to recall why the fieldworker is present. Tauzer *et al.* (2023) argue for a situated ethics that accounts for this complexity and fluctuation of consent as well as non-verbal and more subtle signs of consent and assent rather than procedural ethics. During the fieldwork, the first author therefore ensured ongoing oral consent and assent in addition to written consent from the participants. Furthermore, the first author respected the participants when they declined participation or interaction, whether verbally or non-verbally. None of the research participants withdrew their consent explicitly, but on some days it was clear that they were too occupied or not interested in talking to the first author,

Table 1. Research participants³

Type of participants	Number of participants	Gender
Resident	11	6 female, 5 male
Staff member	13	12 female, 1 male
Family member	3	2 female, 1 male

and on these days she kept a distance and did not collect data. The first author was aware that some of the provided information was shared confidentially; it was therefore ensured that this information was not passed on and that anonymity was maintained through pseudonymization as well as by omitting identifiable characteristics of the residents.

Findings

Eleven residents consented to participate in the study. The participants all had a diagnosis of (different types of) dementia. In addition to the residents, 13 staff members and 3 family members participated in the study. See Table 1 for details on research participants.

The findings presented in this article build on two codes from our code tree that were difficult to group into themes as they touched upon several themes and impacted and were impacted by many other codes. One of these codes is *calmness and disruption*, which is simultaneously related to how residents feel and act in the nursing home as well as to the nursing home environment and dementia care approach enacted in the nursing home. The other code is *playful interactions*, which are related to robot interactions with human actors, non-human actors and the nursing home environment. In the findings, we first introduce the nursing home (which we gave the pseudonym Frydendal) and the informal but fundamental code of conduct, including some of the clashing relations between calmness and disruptions in the nursing home. Then, we present how interactions between pet robots and residents can be playful and how playfulness adds to our understanding of pet robot use and impacts everyday interactions and hierarchies. Finally, we analyse how playful interactions were affected by calmness and disruptions in the nursing home and could come to an abrupt ending.

Calmness and disruptions

To enter a unit in Frydendal, you had to open a door from the staircase, using two door handles going in opposite directions. The first thing you saw was a room divider with a beautiful close-up picture of plants and flowers. The room divider shielded the exit, not blocking it but hiding it from direct view. Passing the room divider, you entered a long hall, with a kitchen and a dining room on opposite sides of an open floorplan. Continuing down the hall, residents' apartments were located on each side and at the end of the hall you found a small living room, a locked office and a laundry room as well as another exit, which was used only by staff. During the fieldwork, the first author received an employee access card and thereby had access to both the staff entrance and the offices.

Everyday life in Frydendal was characterized by an informal code of conduct, which was rarely verbalized but always followed. Maintaining a calm atmosphere by moving slowly, never showing that you are in a rush, taking your time and not making noise were integral parts of the nursing home that were also followed by visitors.

When caring for people with dementia in a nursing home, staff were taking care of many people with different dementias, interests and needs at once. The nursing home had a dementia expert on staff, and on several occasions she emphasized the importance of keeping the atmosphere calm and thus reducing the likelihood of residents becoming overstimulated. Simultaneously, everyday life in the nursing home was characterized by constant disruptions, interruptions, urgent needs, restlessness and boredom. Some residents were constantly restless, repeatedly asking if anything would happen soon, if they could go for a walk or do some other activity – often, they wanted to do an activity outside the walls of the nursing home.

Else asks me if I can find some toothpaste and hand cream for her. I know that a member of staff has found toothpaste for her, but unfortunately, I cannot help her with the hand cream. She gets annoyed with me. Asks me what will happen now. Won't something be happening? She tells me that she's bored. That all the others are crazy. She asks me if all the others are crazy. Then, she moves on to tell me that she cannot read the subtitles on the TV (Fieldnote 04.10.2021).

A focus on calmness and avoiding overstimulation can both result in and be challenged by restlessness, which can disturb and disrupt the calm. Else was always ready for something new to happen and ready to get out of the nursing home; therefore, she could become quite disruptive to the calmness in the nursing home when she was repeatedly complaining about the lack of activities and walking in circles from her apartment to the living room to the kitchen and back to her apartment. The Danish distributor of robotic cats and dogs marketed pet robots not only as something that could reduce agitation but also as something that could increase arousal and stimulate residents (Gloria Mundi Care 2022a, 2022b). This seems paradoxical at first but speaks to the context of the nursing home, where a need for calmness and a need for activities to prevent restlessness coexist.

Playful interactions

Laughing and playing was a recurring theme in the analysis of the different ways of being together that were developed with the residents and the pet robots over the course of the fieldwork. The following fieldnote describes one of these playful interactions between the pet robot, a resident and the fieldworker:

It seems that the resident Inger, who is also sitting at the table, notices the dog from time to time. However, it is hard to tell, as she is constantly gesticulating and speaking quietly. I don't know if it is the dog or something else that I cannot see, which she is noticing. I push the dog in front of her. 'She is not communicable', another resident tells me warningly. I nevertheless push the dog towards Inger. She smiles and slowly strokes the dog. I put the dog in her lap. She holds it tightly. Strokes it. She keeps talking into the air. She looks at me. Smiles. Laughs. Says

something incomprehensible. I am not sure how to respond. She laughs loudly, as if something is completely ridiculous. I find it hard to assess whether we are having fun together, or she is laughing because it is ridiculous that she herself is incomprehensible, or if she is laughing because it is ridiculous that I cannot understand her. Nevertheless, it is nice to laugh together. Maybe we are laughing about something completely different that I am not aware of. She reaches out her hand. We hold hands for a while. I sit a little awkwardly skewed on the edge of a chair. However, I enjoy holding her hand. With her other hand, she is holding the dog (Fieldnote 12.01.2022).

The interaction between Inger, the robotic dog and the first author is an example of one way that playfulness and laughing played out in the nursing home. It was one of many situations where a resident laughed loudly and the fieldworker had the feeling of being in a joyful and playful situation, without understanding what we were laughing about. The pet robots became an important part of these situations and were defining for the fieldworker's interactions with the residents, as she often walked around with one of the pet robots on her arm. Frequently, they became openers for interactions and conversations. When she did not understand what Inger was saying, stroking the dog and laughing together became a shared reference point for the interaction.

The following fieldnote describes the details of a playful interaction as well as what was at stake in this situation:

On this day, as on many other days, I sit with the cat in front of me in the dining room together with a couple of residents, while the TV is running in the background. A resident, Erik, sits by the dining table. He sits with a straight back in his chair and has his gaze pointed away from the TV. I decide to try to give him the cat. He has had fun with it before. I put the cat on the table in front of him. He smiles and looks at me. Immediately, he starts playing with the cat. He uses his facial expressions a lot. When the cat meows, he makes a facial expression as if he gets a shock. He inhales sharply and opens his eyes widely. He makes me laugh. He smiles at me. He speaks to the cat, saying things such as 'Are you cute?', 'Are you naughty?', 'Yes, yes', 'That's alright', 'Wow', and 'Okay, okay'. I haven't heard him put together words in sentences like this before. He lifts up his big hands and makes a gesture to calm down the cat. I show him a small plastic brush that can be used to brush the fur of the cat. He starts brushing it. He is surprisingly mild towards the cat today. On other days, he hits the cat quite hard. Today, he laughs, smiles, and is joyful when the cat says something. Once again, he seems shocked when the cat lifts its paw and dramatically leans back. I am not sure if his shock is part of the games he is playing or if he really gets a shock. The first time he saw the cat doing this, he seemed to be very startled, and a member of staff came over to him and explained that the cat had not died. This time, he does not appear to be scared. 'Wow, that was impressive', he says. 'Now you can come back up again', he says as the cat has bent over. He laughs and plays with the cat for a long time. I am also a part of it. He often looks at me and laughs (Fieldnote 17.01.2022).

In this situation, we can interpret Erik's reactions to the cat as if he experienced it as a real animal. However, we can also interpret it as a game – that Erik and the fieldworker were playing as if the cat is real. It is clear that something was at stake in this play – the dramatic movement of the cat worried Erik the first time he saw it and shows us how playing can be a risky activity and can cause distress. This time around, Erik seemed to be more familiar with the movements of the cat and knew that they are part of a playful interaction with the cat. The movements of the cat did not disrupt the situation this time. However, this playful interaction did end up being interrupted, as was often the case in the nursing home.

Disrupted playfulness

The playful interactions that we analysed earlier occurred in the nursing home, which we have shown to be simultaneously defined by calmness and disruption. This impacted the interactions with the robots. The situation described in the previous fieldnote continued as follows:

Erik is sitting on my left side. To my right, another resident is sitting at the table. She asks me if I can make the cat shut up. Tells me that she finds it annoying. That she thinks the cat is stupid. I tell her that I am sorry to hear that, but that Erik and I are having fun with it right now. Another resident, Tove, comes over and gives me a couple of chocolates on a piece of paper towel. Louise, who is a member of staff also present in the dining room, smiles at me. I thank Tove for the chocolates. Louise suggests that I give them to Erik. I give Erik the chocolates. He takes one and eats it. Immediately after, he starts sneezing repeatedly. He suddenly looks completely exhausted. I ask if he is alright. 'Yes, yes', he responds. 'What did you say?', he asks me. I ask him again if he is alright. 'Yes, yes', he responds again. His mood seems to have changed. 'Get lost', he tells the cat. He pushes his hands in front of him, as if signalling to the cat to go away. 'Get lost! Go away now. Get out of here, now.' Louise asks me if he is having allergies. I am not sure if she means against the chocolates, the cat or something else. I am also not sure how I should be able to know this. 'Maybe, I say. 'It is possible.' I push the cat a little away from Erik. He sits straight up in his chair again, with his gaze directed at something far away (Fieldnote 17.01.2022).

As the example with Erik shows, it was often unclear whether the primary interaction we are describing here was between Erik and the robots, between Erik and the first author or between all three. The robotic cat did not interact with Erik in a vacuum. In contrast, the situation was affected by the first author, by the residents around us and by the chocolates provided to Erik, and the agency was distributed among all these actors in the situation. The seemingly kind action of another resident, bringing Erik chocolates, disrupted the situation. It was difficult to determine how the sudden sneezing and subsequent changes in mood were triggered, but the playful interactions ended abruptly. This situation is a good example of disruptions in the nursing home. Although the disruptions were sometimes clear, such as when a resident asked for the cat to shut up, at other times they just appeared from objects such as chocolates and

other people in the nursing home and seemed to be unintentional. Nevertheless, they affected the playful interactions with pet robots.

Disrupted playfulness could also come from the actions of staff members, who would react differently to playful attempts from residents. Some would shut down these attempts as if they were inappropriate behaviours, while others would join in the playfulness. Shutting down these attempts is understandable when we examine the drive for calmness in the nursing home and the good intentions behind it – ensuring a calm environment that does not overstimulate people with dementia living in the nursing home.

Discussion

In this article, we have looked at what characterizes interactions between pet robots and residents as well as how the nursing home environment affects these interactions. In our findings, we have shown how playfulness characterized many robot interactions and how the focus on calm and the potential for disruptions set the scene for the use of pet robots. In the discussion, we will discuss how playful robot interactions are affected by the nursing home environment and use a critical lens to understand the interplay of playfulness, the agency of people with dementia and structures of power in the nursing home.

Engaging in playful interactions on an equal footing

In his analysis of joking and participatory mutuality, Golomski (2020) states that knowing that someone is joking entails understanding the intentionality of what was said, which presents an analytical challenge when working with people with dementia. This is also the case for the play that we analysed herein. We do not have access to the intentionality of the residents and often were not sure if they were pretending that the cat was real or if they believed that they were playing with a real cat. Nevertheless, it seems clear that play was part of the interaction. The fieldworker got to know Erik quite well during the fieldwork, and he always seemed to be playing – whether by flicking an empty plastic glass, which had contained his pills, by making funny faces or something else. Playing and being playful was part of his signature, as Zoanni (2018) describes. Zoanni uses the term *signature* to describe how his interlocutors with cognitive disabilities may not be able to verbally express themselves but nevertheless have something that sets them apart and characterizes them. They come from the person, but ‘their legibility requires others to make an effort to read them and to cultivate the skills to do so’ (Zoanni 2018: 72).

In a study about a dance programme in long-term care, Kontos et al. found that ‘persons living with dementia can be playful by purposefully and spontaneously creating imaginative encounters ... The significance of playfulness is that it challenges stigmatizing assumptions of existential loss and broadens understandings of creativity’ (Kontos et al. 2020: 720). Thinking of the interaction with Erik in terms of play rather than in terms of impairment helps us understand what is at stake. As Golomski shows, joking – or playing in this case – becomes a space that allows us to have a joyful interaction, despite not fully understanding each other and inhabiting very different

positions in the nursing home. We simply had fun, and Erik was the main driver of this fun. At the same time, the situation probably would not have occurred without the presence of the pet robot and the researcher. As previous research has reported, we also found that the pet robots worked as openers for conversations and interactions, where playfulness could arise.

Kontos *et al.* (2017) use the term *relational presence* to describe the reciprocal nature of interactions between elder-clowns and persons with dementia. They show how the capacities of people with dementia are often overlooked and people with dementia are portrayed as passive. Nevertheless, people with dementia are capable of being funny, playful and imaginative and can both initiate and respond to verbal and embodied engagements, including playful engagements. This is something which Kontos *et al.* (2017) argue should be supported in institutional care beyond the interactions with elder-clowns. Our article shows how playful engagements with residents with dementia can be a part of everyday activities that are not predefined as being playful in the same way as clowning activities. The pet robots opened up a space for interactions and playfulness, which we – along the lines of Kontos – argue should be supported and encouraged by the facilitators of the robot interactions.

In Golomski's definition of joking, he argues that we have to understand at least part of the intentionality behind actions. In Masek and Stenros's (2021) definition of play, intentionality is not at the forefront of the definition, which enables an analysis of playfulness in a dementia ward. As we have shown, the interactions were playful and fun even when we did not understand what exactly we were laughing about and despite the drive for calmness in the nursing home. Playfulness is a way that people with and without dementia can engage on an equal footing if we dare go along and play with residents. As Buse *et al.* describe in their study of the domestic gardening practice of people with dementia, play provides possibilities for people with dementia 'to exercise a sense of competency, enjoyment and humour' (Buse *et al.* 2024: 16).

We find it important to emphasize that playful interactions with pet robots are not a one-size-fits-all solution. Each resident in a nursing home is a different individual, and each person has different ideas of what is fun. One resident did not like the pet robots and called them stupid or silly, depending on her mood. With this resident, playful interactions occurred with respect to beauty products – looking for them in magazines, having a pedicure session or going out to shops that sell beauty products. Along these lines, in a study of relational clowning with residents with dementia in a care home, Dunn *et al.* (2013) found that residents reacted very differently to playful clowning practices and that the artists had to get to know residents and adapt to their individual play preferences and personalities. As with any other activity in dementia care, person-centredness and paying attention to the individual characteristics of each person is essential, when supporting playful pet robot interactions.

Distributed agency

When we analyse interactions between pet robots and residents, we examine situations in which many actors are present and agency appears shared or distributed between human and non-human actors in the nursing home. Lykkeslet *et al.* (2014) discuss how a phenomenological life-world perspective can work as a supplement to what they

call 'the person-oriented paradigm in dementia care'. The person-oriented paradigm refers to a movement in dementia studies that has shifted attention away from views of dementia as something that erases the selfhood of a person and therefore leads to social death. Tom Kitwood has been highly influential in dementia research and practice; he has advocated for a focus on the human living with the diagnosis instead of speaking about people with dementia as being their diagnosis (Kitwood 2009 [1997]; Leibing 2006). Numerous anthropologists have critiqued the personhood paradigm for defining personhood as an interior essence and thus still presenting a picture of people with dementia as people with disappearing or incomplete selves (Basting 2009; Kontos 2005; Leibing 2006; McLean 2006; Taylor 2008). This is consistent with the work of Serbser-Koal et al. (2024), who conducted a thematic synthesis on autonomy and underlying constructs of personhood in the literature. They describe two perspectives on personhood: a *rationalistic and cognitive concept of personhood* as well as a *relational perspective* coming from a social constructionist or interactionist point of view (Serbser-Koal et al. 2024).

Using a phenomenological life-world perspective, Lykkeslet et al. (2014) broaden the perspective on dementia care so that it is still person-centred, but, drawing on Heidegger and van Manen, they also acknowledge how humans are embodied, live in time and space and are dependent on human relations. Consequently, personhood does not solely belong to an individual; 'It may thus be reasonable to claim that health care providers in a nursing home are co-creators of the patients' universe of meaning. Accordingly, we are responsible for creating each other's personhood, a view that is not very clearly illuminated in Kitwood's writings' (Lykkeslet et al. 2014: 8). Within this perspective, people are considered fundamentally relational. Interpreting and understanding each other may become more difficult when people live with moderate to late-stage dementia, but that does not mean that we are no longer relational and searching for meaning (Lykkeslet et al. 2014).

The playful interactions occurred in relations between residents, pet robots and the first author. In the interactions described in this article, residents were the instigators of playful interactions, and together we created small pockets of playfulness and fun in the nursing home. As Lykkeslet argues, the pet robots and the researcher became co-creators together with residents in playful interactions. Additionally, this was happening in the densely populated common areas in the nursing home, and the robots and the researcher were not the only relations in the nursing home. Within the social life of the nursing home, which may seem calm and uneventful at first, many events occurred at once, and, often, residents, staff, non-human actors and/or situations ended up disrupting each other.

Together with objects in the nursing home, residents, staff and the researcher, the robots worked in what Bennett (2010) calls a *heterogeneous assemblage*. 'What this suggests for the concept of agency is that the efficacy or effectivity to which that term has traditionally been referred becomes distributed across an ontologically heterogeneous field, rather than being a capacity localized in a human body or in a collective produced (only) by human efforts' (Bennett 2010: 23). This way of understanding agency as distributed has implications for our understanding of pet robots in nursing homes and who has the agency and/or capacity to decide and influence this process. As we have shown, the robots could go from being part of playful interactions with residents

and the fieldworker to being pushed away and ignored. Disruptions and interruptions are unpredictable constants in the nursing home, making a stable and linear use of pet robots in this specific time-space of a nursing home for people with dementia utopian. This does not mean that the robots cannot work well in the nursing home. However, this means that we cannot calculate or predict under what circumstances the robots will work, as the agency to decide this is distributed in the heterogeneous assemblage.

In a nursing home characterized by institutional guidelines and a focus on calmness, moments of playfulness can be a rebellion, however small, against the strict code of conduct ensuring a calm environment at all times in the nursing home. Playing seems to be risky and sometimes a little wild. It does not contribute directly to the calmness of the nursing home, and when residents initiate playfulness, they often do so with a glimmer of amusement and a look that indicates that they are doing something outside what is allowed. We argue that playfulness can open up enjoyable ways of being that counter strict structures, hierarchies and binaries between people with and without dementia, thereby giving people with dementia the space to be active agents, instigators, being recognized as equal human beings and simply making others laugh.

Strengths and limitations

This study is based on five months of ethnographic fieldwork, which gave the first author time to build relationships with the research participants. We believe this to be a strength of the study, where the findings are based on in-depth and detailed findings from the nursing home. Additionally, the methods made it possible for people with moderate to late-stage dementia to participate in the study and make their perspectives known. Our findings add to the literature on pet robots, refining our knowledge on their use with people with dementia by studying these interactions and examining the (distributed) agency of residents with dementia rather than merely seeing them as passive recipients of care. We believe that this adds to the literature on playfulness and personhood in dementia care as well as discussions on technology.

A limitation of these findings is the small sample size coming from one nursing home and a lack of diversity of participating residents. Including more residents would be an advantage, but we followed strict ethical guidelines and were therefore not able to include more residents in the study. Including another nursing home, with residents from more diverse backgrounds, would have been an advantage as well, but the Covid-19 pandemic made this inadvisable. Future studies should examine more diverse groups of residents, potentially including several nursing homes.

Conclusion

We analysed interactions between residents and pet robots, the fieldworker and many other actors within the context of a Danish nursing home for people with dementia. The nursing home context can at times feel very heavy and does not always provide the best conditions for having fun, but we found playfulness in many robot interactions and we argue that playfulness is an important part of life in the nursing home. Pet robots are one of many technologies for older adults and people with dementia designed for playfulness, and, together with residents, the researcher, and other actors

in the nursing home, they facilitated playful interactions. Playfulness is a concept that can bring out some of the joy and happiness that the first author experienced when interacting with people with dementia in the nursing home. This concept can nuance stigmatizing views of dementia and nursing homes as places without joy. If we focus on playfulness in dementia care, we may be able to foster joyful moments where we can meet each other despite challenges related to language, communication and sometimes different perceptions of where we are in time and space. It allows us to focus on abilities instead of impairments and allows residents living with dementia a chance to define interactions.

In an institution that aims to provide a calm atmosphere for residents with many different needs, playfulness can be disruptive. It can be a little wild or risky and can be a rebellion against the strict code of conduct in the nursing home. Playful interactions can disrupt the calmness, but they also provide joy and non-hierarchical interactions, providing a space where residents can initiate and lead interactions if we go along and make space for playfulness. Using pet robots in everyday interactions in the nursing home led to many playful interactions and for future use and implementation of pet robots, playfulness may be considered as one of the desired outcomes.

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Notes

1 In a previous paper based on the same fieldwork, we showed how pet robots come into being together with their facilitator in a nursing home and how pet robots are fluid beings that can change from being mechanic to living animals in a matter of seconds (Felding et al. 2024).

2 At the time of the fieldwork, the Danish state provided different Covid-19 tests, the most common being an antigen test or a PCR test. The PCR test is more accurate than the antigen test and is thus referred to as

the gold standard in testing, although it is more expensive and slower than the antigen test (Filchakova *et al.* 2022; Friis-Hansen 2023).

3 To protect participants, we did not add information about their individual characteristics, such as specific ethnicities.

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