

# Application Fields & Innovative Technologies

## Understanding Older Adults' and Caretakers' Attitudes Toward Social Robots Using Sentiment and Thematic Analyses B. Çonka Banuş, B. A. Urgan, & Y. Afacan. *Gerontechnology* 25(s)

**Purpose** As adults age, they face physical and psychological challenges that can lead to loneliness and social isolation. To prevent these adverse effects of aging, researchers explore assistive technologies, such as social robots [1], which are designed to facilitate social interactions with humans [2]. The use of socially assistive robots in caring for older people has mostly revealed positive effects [1], addressing the challenges faced by older adults while also supporting the caretakers who look after them. Thus, the present study aims to investigate the attitudes of older adults and caretakers towards social robots: specifically, Aibo, Paro, and Pepper. These robots differ in terms of their appearances and abilities. While Aibo is a dog-like robot, Paro is more like a toy in the shape of a baby seal. On the other hand, Pepper resembles a human and has human-like behaviors. Thus, these robots might evoke different feelings among people and result in distinct attitudes. Therefore, the present study has two research questions: I) "How do older adults and caretakers respond to social robots?" II) "How do older adults and caretakers respond to different types of social robots?" By examining the responses of older adults and caretakers, the study can determine whether social robots can be integrated into the lives of older people in Türkiye and help improve their well-being and quality of life. **Method** The study explored attitudes toward social robots using semi-structured interviews with older adults aged 65 and above (N = 18; 13 female; M = 76.47 years), recruited from the Hacettepe University Hospital Geriatrics Department, and caretakers (N = 12; 8 female; M = 52.33 years). In these interviews, participants were shown images and videos of the three robots in a randomized order and asked to answer open-ended questions about their feelings toward these robots, potential benefits they could derive from them, and the desired functionalities they would like to see in them. The study procedure is illustrated in Figure 1. Data analysis involved sentiment analysis (SA) to see the polarity of answers (positive, negative, or neutral), and thematic analysis (TA) to identify recurring themes and patterns in participants' attitudes. **Results and Discussion** SA revealed that older adults have positive attitudes towards Aibo, Paro, and Pepper, with no significant differences between them. On the other hand, the attitudes of caretakers varied. They approached Paro negatively while having positive attitudes toward Aibo and Pepper. Additionally, TA identified four overarching themes: 1) perceived and expected roles of the robot, 2) physical characteristics and design features of the robot, 3) factors influencing acceptance of the robot, and 4) disadvantages of the robot. These themes were further categorized into positive and negative themes and sub-themes, which differed among older adults and caretakers. For instance, the "toy-like" theme observed in caretakers' responses may account for their negative attitudes toward Paro, given its physical characteristics (e.g., its furry texture). In conclusion, this study combined Natural Language Processing (using SA) and a qualitative data analysis (TA) approach to investigate the possible role of social robots in older adults' lives. It informs designers by revealing the positive and negative aspects of older adults' and caretakers' attitudes towards social robots, and helps improve these robots accordingly. However, the study has several limitations, including a small sample size that particularly affects the validity of SA, as well as the use of photos and videos instead of in-person interactions with the robots.

### References

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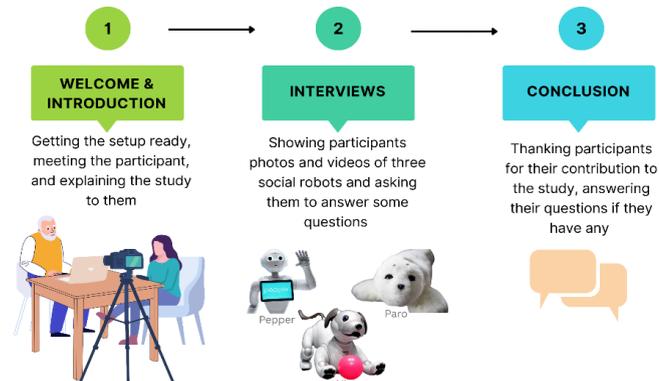


Figure 1: Procedure of the study