Emotions Evoked by Robots - Comparison of Older Adults and Students

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Abstract : Background: Due to demographic change and shortage of skilled nursing staff, assistive robots are built to support older adults at home and nursing staff in care institutions. When assistive robots facilitate tasks that are usually performed by humans, user acceptance is essential. Even though they are an important aspect of acceptance, emotions towards different assistive robots and different situations of robot-use have so far not been examined in detail. The appearance of assistive robots can trigger emotions that affect their acceptance. Acceptance of robots is assumed to be greater when they look more human-like; however, too much human similarity can be counterproductive. Regarding different groups, it is assumed that older adults have a more negative attitude towards robots than younger adults. Within the framework of a simulated robot study, the aim was to investigate emotions of older adults compared to students towards robots with different appearances and in different situations and so contribute to a deeper view of the emotions influencing acceptance. Methods: In a questionnaire study, vignettes were used to assess emotions toward robots in different situations and of different appearance. The vignettes were composed of two situations (service and care) shown by video and four pictures of robots varying in human similarity (machine-like to android). The combination of the vignettes was randomly distributed to the participants. One hundred forty-two older adults and 35 bachelor students of nursing participated. They filled out a questionnaire that surveyed 30 positive and 30 negative emotions. For each group, older adults and students, a sum score of "positive emotions" and a sum score of "negative emotions" was calculated. Mean value, standard deviation, or n for sample size and % for frequencies, according to the scale level, were calculated. For differences in the scores of positive and negative emotions for different situations, t-tests were calculated. Results: Overall, older adults reported significantly more positive emotions than students towards robots in general. Students reported significantly more negative emotions than older adults. Regarding the two different situations, the results were similar for the care situation, with older adults reporting more positive emotions than students and less negative emotions than students. In the service situation, older adults reported significantly more positive emotions; negative emotions did not differ significantly from the students. Regarding the appearance of the robot, there were no significant differences in emotions reported towards the machine-like, the mechanical-human-like and the human-like appearance. Regarding the android robot, students reported significantly more negative emotions than older adults. Conclusion: There were differences in the emotions reported by older adults compared to students. Older adults reported more positive emotions, and students reported more negative emotions towards robots in different situations and with different appearances. It can be assumed that older adults have a different attitude towards the use of robots than younger people, especially young adults in the health sector. Therefore, the use of robots in the service or care sector should not be rejected rashly based on the attitudes of younger persons, without considering the attitudes of older adults equally.

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