Introduction

- Older adults’ daily lives may be stressful for a variety of reasons (Lawrence & Schiller Schipulzko, 2002).
- If stress is not properly managed, it can have a negative impact on physical and mental health (Lawrence & Schiller Schipulzko, 2002; Norris & Morrell, 1998).
- Previous research on socially interactive robots such as PARO has suggested that they may have the potential to be effective sources of stress-reduction for older adults, but this claim has not been empirically tested (Wada & Shibata, 2006).
- Further investigation is needed on PARO’s ability to reduce older adults’ perceived stress and workload while engaging in a difficult task.

Goals of Research

- Does PARO reduce older adults’ perceived stress while they engage in a cognitively demanding task?
- Do the effects persist after PARO is removed?

Method & Procedure

Robot: PARO, designed by Dr. Takanori Shibata for therapeutic purposes.

Participants: 8 older adults (Sample Range= 67–76 years; M= 69.63)
Stress: State subscale of the State-Trait Anxiety Inventory (STAI) (Possible range = 20–80)
Workload: Mental demand, effort, and frustration subscales of the NASA-TLX (Possible range = 15-300)
Difficult Task: Raven’s Progressive Matrices Test

Procedure:

- **T1 Demographics | STAI | NASA-TLX**
  - Raven’s Test (20 items, 5 minutes)
- **T2 STAI | NASA-TLX**
  - 3 minute break & PARO present
  - Raven’s Test (20 items, 5 minutes)
- **T3 STAI | NASA-TLX**
  - 3 minute break
- **T4 STAI | NASA-TLX**
  - Raven’s Test (20 items, 5 minutes)
- **T5 STAI | NASA-TLX**
  - 3 minute break
  - Interview & Questionnaire

Results

- **PARO’s Impact on Workload and Stress**
  - Workload
    - Engaging in the cognitively demanding task (Raven’s) increased workload, even with PARO present.
    - Workload continued to increase after PARO was removed.
  - Stress
    - Engaging in the cognitively demanding task increased stress slightly from baseline.
    - When PARO was present, stress decreased despite the cognitively demanding task.
    - After PARO was removed and the demanding task was re-administered, stress returned to baseline.

- **In general, do you think PARO could help reduce stress?**
  - Yes 100%
  - No 0%

Discussion

- As expected, doing the cognitively demanding task increased workload throughout the study.
- Stress was relatively low throughout the study, and was not greatly impacted by the cognitively demanding task. However, stress was lowest when PARO was present during the task and then returned to baseline after PARO was removed from the room.
- Identifying new methods of diminishing stress is critical to the support of healthy aging.
- These data provide valuable insights into the potential of the PARO robot as a stress reduction tool for older adults.

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References