

Evaluating the effects of humanoid robots on the story retelling skills of children on the autism spectrum



Background

The pilot study evaluated the effects of using a humanoid robot to help develop the perspective taking skills of school-age children on the autism spectrum during story retelling. Storytelling and retelling are activities that occur at school and in family and social situations. Non-autistic children's retelling of stories narrated by a humanoid robot have been previously investigated. To our knowledge, there is no published research exploring the use of humanoid robots to support perspective taking using story retelling for children on the spectrum.



How we did the research

A mixed-method two-phase design was used in this study. In Phase 1, baseline data was collected via an oral narrative task, individually administered before the story retelling group sessions. A post-intervention oral narrative task was also individually administered after the story retelling group sessions.

Children's oral narrative retellings were audio-recorded and transcribed verbatim. The transcripts were scored for perspective taking and use of internal state language. In Phase 2, individual semi-structured interviews with the two teachers were conducted to ascertain their perceptions of the value of the story retelling sessions, and of the children's ability to transfer their story retelling skills to classroom activities.



Aim

This project aimed to understand how:

- children on the spectrum perceive and react to humanoid robots
- the use of the robots can help strengthen the story retelling and perspective taking for children on the spectrum
- the use of humanoid robots could result in more effective planned interactions.

While these robots have been successfully used in previous research as social story telling agents in robot-assisted therapy for children on the spectrum, further research on the use of social robots for use in classroom activities, such as promoting story retelling and social perspective taking, needed to be explored.



Who took part

The study was conducted in two primary state schools in Queensland.

10

students between the ages of 9-12 years with a verified autism diagnosis

2

teachers

From each school, a group of five students and one teacher were recruited.

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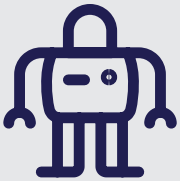
What we found



No significant changes were observed in students' social perspective-taking following the completion of the teaching program in both groups.



No significant changes were found in students' use of internal state language after the teaching program in both groups.



Teachers' expectations about using a humanoid robot need to be addressed prior to commencing using the robot in the classroom. Students' expectations also need to be managed.



The robot helped keep students engaged with the repeated reading of the story.



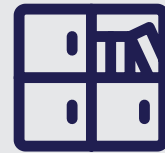
The teacher guide and session scripts were seen as important for helping scaffold the story retelling sessions. The scripts, and the robot, helped model the language needed for the retellings.



What we found



The character and perspective taking maps were considered as beneficial for scaffolding students' retelling of the story from a character's perspective.



The "StoryBraid®" was the most effective strategy used and was seen as the easiest to transfer to a classroom context. A StoryBraid® is a three-dimensional, non-linguistic representation of the story narrative structure.



Who did the research



Acknowledgments

Staff and non-staff in kind were provided by Autism CRC participants – CSIRO, QLD Department of Education Autism Hub, and QUT.

Find out more

Download the final report and executive summary on the Autism CRC website: autismcrc.com.au/reports/humanoid-robots