

Social robotics in children with autism disorders

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Editor Note

Social robotics is a subfield of robotics in which intensive research has been going on for 20 years now [1-8]. Until now, we have known robots that are used in mechanics to relieve humans of work. What distinguishes social robots from these is that they are capable of establishing relationships with people and can adhere to social rules [2-4]. This is why we often speak of "emotional and social robotics". In the future, social robots should even be able to learn throughout their lives and integrate new experiences into their behavior.

They can be used with a variety of target groups in need of care. The elderly, people with physical impairments, people undergoing rehabilitation, or even students and pupils can benefit from robots. Scientific studies conducted by the University of Applied Sciences Campus Vienna found that children see potential friends in robots. They see them as social beings with feelings. Children on the autism spectrum are also observed to be more interested in interacting with a robot than with a human one. They show higher attention, greater engagement in learning tasks, and remain much calmer and more receptive in conversation [5]. Previous research supports the thesis that the use of robots is helpful for autism therapy [4-8].

Researchers are calling for the long-term use of robot-assisted therapy to develop social and communication skills in autistic children [2-8]. The goal is to have social robots as standard equipment in schools and school settings. In autism therapy and scientific studies, Nao is the most commonly used humanoid programmable robot [6-8]. Nao was first introduced in 2006 by the French robot manufacturer Aldebaran Robotics (SoftBank-Robotics since May 2016). Since then, the robot has been in constant overhaul, with the current model launched in 2018. The robot has a human-like body and robot-like face but is categorized as a humanoid robot. Social robots that have a more human-like appearance in their overall appearance are

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called humanoid robots. The idea of integrating robots into autism therapy came about quite by chance: A mother observed how her otherwise socially distant child suddenly talked extensively with a robot. She remained calm and listened to attentively. It was a behavior she had never seen from her autistic child. She was so moved by this that she shared her idea. According to the World Health Organization, one in 160 children is affected by autism and requires treatment. Autism spectrum disorder primarily affects the social skills of those affected. Children on the autism spectrum find it harder to talk to other children, play with them or make friends. They tend to be more interested in objects than in people. According to the Bundesverband Autismus Deutschland e.V. (German Autism Association), those affected have great difficulty perceiving and processing stimuli. When talking to other people, children on the autism spectrum find it difficult to concentrate. The words, the body language, the facial expression - they try to pay attention to everything at the same time. But in doing so, they have trouble interpreting other people's emotions and feelings and understanding them. Phobias and fears in social interactions can develop from this. According to the medical portal AMBOSS, this can be seen in low eye contact, reduced social smiling and low use of facial expressions and gestures. Because of this, the children find it difficult to make friends with other children and are therefore often loners. Instead, it is noticeable that they are much better at building relationships with objects. The difference: they do not feel judged by objects in any way. Behavioral therapy and treatments for

improving social skills exist, according to the WHO, but require a lot of time and discipline on the part of parents. With work, everyday stress, and possibly other children at home, many parents can't keep up. However, technological progress and increasing use of artificial intelligence allow for increased studies with so-called "social-assisting robots". These are intended to take on a mediating function between child and therapist in therapy. Social robotics is a subfield of robotics in which intensive research has now been going on for 20 years. Until now, robots have been known to be used in mechanics to take work away from people. What distinguishes social robots from these is that they are capable of establishing relationships with people and can adhere to social rules. This is why we often speak of "emotional and social robotics". In the future, social robots should even be able to learn throughout their lives and integrate new experiences into their behavior. They can be used with a variety of target groups in need of care. The elderly, people with physical impairments, people undergoing rehabilitation, or even students and pupils can benefit from robots. In conclusion, children with autism disorders can get emotional support from social robotics and many studies confirm good results in autistic children and social humanoid robotics. Due to the high costs, it would be wishful for these patients to equip bigger children hospitals with this social robotics, which treat an enormous number of children with autism spectrum disorders.

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