Insight Medical Publishing

Journal of Childhood and Developmental Disorders

ISSN 2472-1786

2020

Vol.6 No.4

Robot-mediated interactions for autism therapy

Hideki Kozima

Tohoku University, Japan

Abstract

Autistic children, in general, have difficulties in exchanging and sharing intention and emotion with others through nonverbal information, and experience delay in language development, especially in pragmatic use of language. In spite of these difficulties in social interactions, autistic children are relatively good at interacting with physical objects like toys. Though their interest and actions are often restricted to specific aspects, autistic children are generally good at understanding and manipulating things as physical and mechanistic systems. This implies that information processing for objects (by systemizing) and that for people (by empathizing) are quite independent, both in ontogenetic and phylogenetic meanings.

Robots can be seen as physical systems and/or as human-like social agents that have "mental states". So, robots could provide autistic children with opportunities to experience interpersonal interactions with social agents through predictable interactions with physical systems. Based on this idea, we developed a simple robot, Keepon (Figure), which was designed to express only attention (by head orientation) and emotion (by simple body movements), so that autistic children could intuitively read its "mental states", not being overwhelmed by complicated facial expressions, body gestures, or speech. Keepon is a simple physical system that can express a variety of social information.For the past several years, we have been using Keepon as a mediator of social interaction with autistic children (at the age of two to five) at a day-care center for children with developmental disorders. Keepon, being tele-controlled by an operator (researcher or therapist), performed interactions with the autistic children in their daily therapeutic environment. The longitudinal interactions showed that the minimally designed robot worked well as a useful tool for therapeutic interventions. We analyzed the video data recorded from Keepon's subjective viewpoint (of the onboard camera), and the data was offered to practitioners such as pediatricians and psychiatrists as well as the parents of the children for sharing and exchanging the understandings of each child's developmental style..

Biography:

Hideki Kozima completed his Ph.D in computer science from the University of Electro Communications (Tokyo, Japan) in 1994, then he joined National Institute of Information and Communications Technology (Tokyo/Kyoto, Japan) as a researcher and senior researcher, where he developed "Keepon", a therapeutic robot for autism. In 2008, he joined Miyagi University (Miyagi, Japan) as a full professor at School of Project Design, and appointed as a vice president in 2013. In 2017, he joined Tohoku University (Miyagi, Japan) as a full professor of Graduate School of Educational Informatics, and in 2018 as a full professor of Graduate School of Education..

Speaker Publications:

1. "Hideki Kozima, Yu Suzuki: Introduction to Electronics using Miyagino (In Japanese),p.207, Kogakusha, 2015
2. Hideyuki Takahashi, Kazunori Terada, Tomoyo Morita, Shinsuke Suzuki, Tomoki Haji,Hideki Kozima, Masahiro Yoshikawa, Yoshio Matsumoto, Takashi Omori, Minoru Asada,Eiichi Naito: Different impressions of other agents obtained through social interactionuniquely modulate dorsal and ventral pathway activities in the social human brain, Cortex,Vol.58, pp.289-300, 2014.
3.Michio Okda, Kotaro Matsumoto, Takeshi Asao, Hideki Kozima, Sumio Hamada: Sorrowof the Robot, p.224, Shin-yosha, 2014.

2nd European Autism Congress; February 28-29, 2020- Budapest, Hungary.

Abstract Citation:

Hideki Kozima, Robot-mediated interactions for autism therapy, Autism 2020, 2nd European Autism Congress; February 28-29, 2020- Budapest, Hungary (https://autism.psychiatryconferences.com/abstract/2020/robot-mediated-interactions-for-autism-therapy)