GoS (Game of Stimuli)

Type of Project

Intervention

Summary

GoS (Game of Stimuli) is an interactive game-like interface specifically designed for children with autism. Its main objective is to investigate the sensorial skills of a person diagnosed with ASD and facilitate a better focus on a given activity and therefore ignoring irrelevant input which are distracting from the task, both in an individual and collaborative set-up.
The system was designed and developed by the Robotics and Learning Technologies Lab, University of Siena in collaboration with Luca Giacolini of the Department of Industrial Design
Eindhoven University of Technology.

Low-tech, high-tech products, services and contexts for play

The system is completely customizable in terms of hardware and software. The hardware consists of one core element, where most of the electronic components are located. Next to it, structure expands into a variable amount of modules which can be attached to the main element. Each module consists of a wood block with a pushing button on top of it. On the one hand the button can detect the pressure applied, while on the other one it can emit a light, by means of a RGB LED. The activities are supported with the use of a MIDI speaker, which produces positive reinforcement feedback at the appropriate time.

On the software side, the system allows the therapists for a custom set-up of the play activities, according to the needs of the children, varying from a cognitive play to a collaborative play.

GoS was designed to:
• help children maintain the level of attention on the given activity;
• train children filter irrelevant input which is distracting during their given task;
• stimulate children to socially interact with both their therapists and within a peer-to-peer setup.
Through GoS the chlidren can play three different play scenarios: “Tactile Exploration”, “Stimuli Recognition” and “Cooperative Game”. Each scenario demanded a different level of engagement and interaction.

Currently the system is being tested at the “Piccolo Principe” association on autism in Siena, Italy.

The context of use

GoS is being tested at the “Piccolo Principe” association on autism in Siena, Italy (Educational and Rehabilitation centre)

Type of play in this play system

Social

Solitary
Cooperative

Objectives related to play according to ICF-CY

Play for the sake of play: Major life areas - d880 enagement in play

d8803 shared cooperative play
d8808 engagement in play, other specified
d8809 engagement in play, unspecified

Play-like activities: Therapeutic and educational objectives

b1 Mental functions
b2 Sensory functions and pain
d3 Communication

Number of participants

5-10

Chronological Age

6-12 years

LUDI Categories of disabilities

Mental/intellectual impairments::
Autism Spectrum Disorders:

Explanation on the use of low-tech, high-tech devices, services or contexts

Explanation

Verbal instruction, language and communication is adapted
Modeling by therapist/researcher
Hand over hand: therapist/researcher leads the actions of the participant
Prompting: therapist/researcher touches the participant as a key for further actions
Guided discovery: therapist/researcher coaches the participant so s/he discovers how to use the assistive technology

Involvement

Adult: therapist/educator/researcher

Role

Participatory observer
Providing instruction

Evaluation of objectives and outcome measures

Description of outcome measure(s)

Observation by professional/researcher providing the play experience
Video analysis
Feedback from client/parents/professionals

Information about availability of outcome measure: publisher, website, contact person

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Summary of achieved effects

Children demonstrated interest in the exploration of the buttons and the offered interaction possibilities, which at the beginning held almost all of their attention. The material properties of the buttons, their softness and flexibility afforded various types of manipulation additional to pressing. The buttons were caressed, squeezed, pinched. However, this explorative behaviour stopped when the exploration and the game activity were shared with another person.

The simplicity of the game associated with the modularity is definitively a winning aspect of the system. This design enabled us to generate a wide range of interactions and a significant amount of play scenarios. A modular hardware and an easy-to-hack software allowed for tailoring the system to the different children's skills and therapeutic needs.

References to the intervention or research project

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Keywords

Children,
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