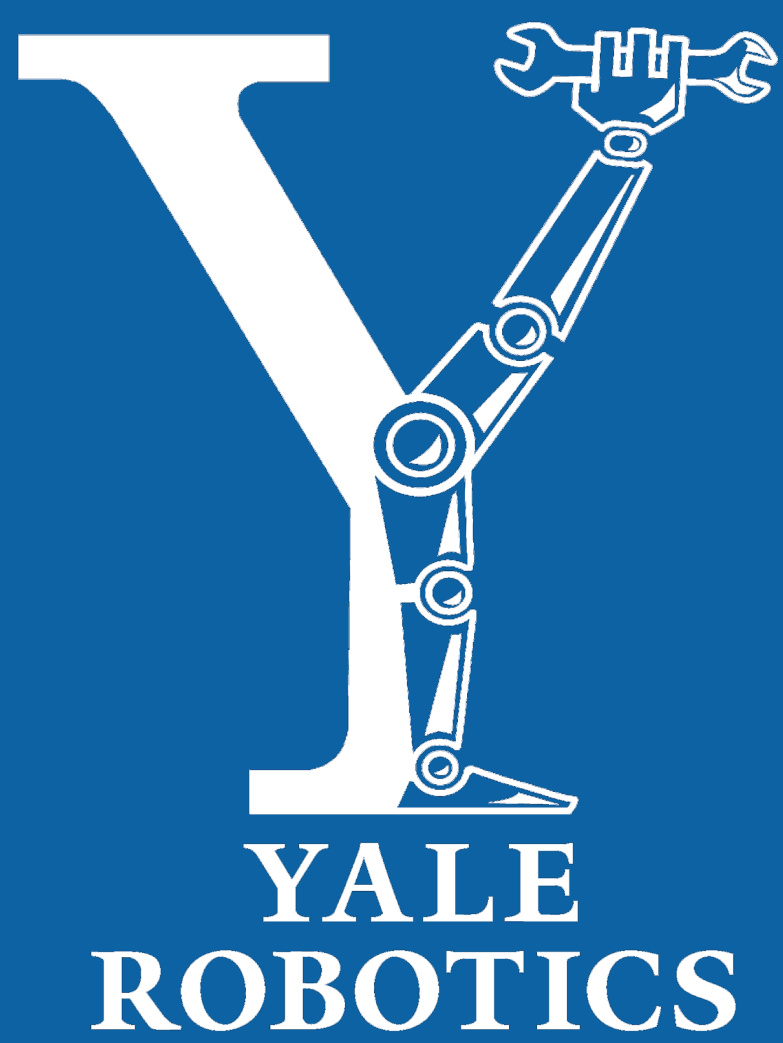# Socially Assistive Robots for Teaching Children about Nutrition through Play

Elena Corina Grigore, Aditi Ramachandran, Brian Scassellati *
Yale University

Background

Child Interacting with DragonBot

Child-friendly **social robots** have the potential to provide **educational support** for children through imaginary play, allowing them to engage with their lessons in a tangible and active way.

Educating children about **healthy food and beverage choices**, and **motivating them to make healthier choices**, can help to lower rates of obesity, which has tripled in the United States over the past 4 decades.

We use a **socially assistive robot** to teach nutrition to 1st-grade children. We evaluate the feasibility of such an approach, **measuring children's engagement** with the SAR system over time.
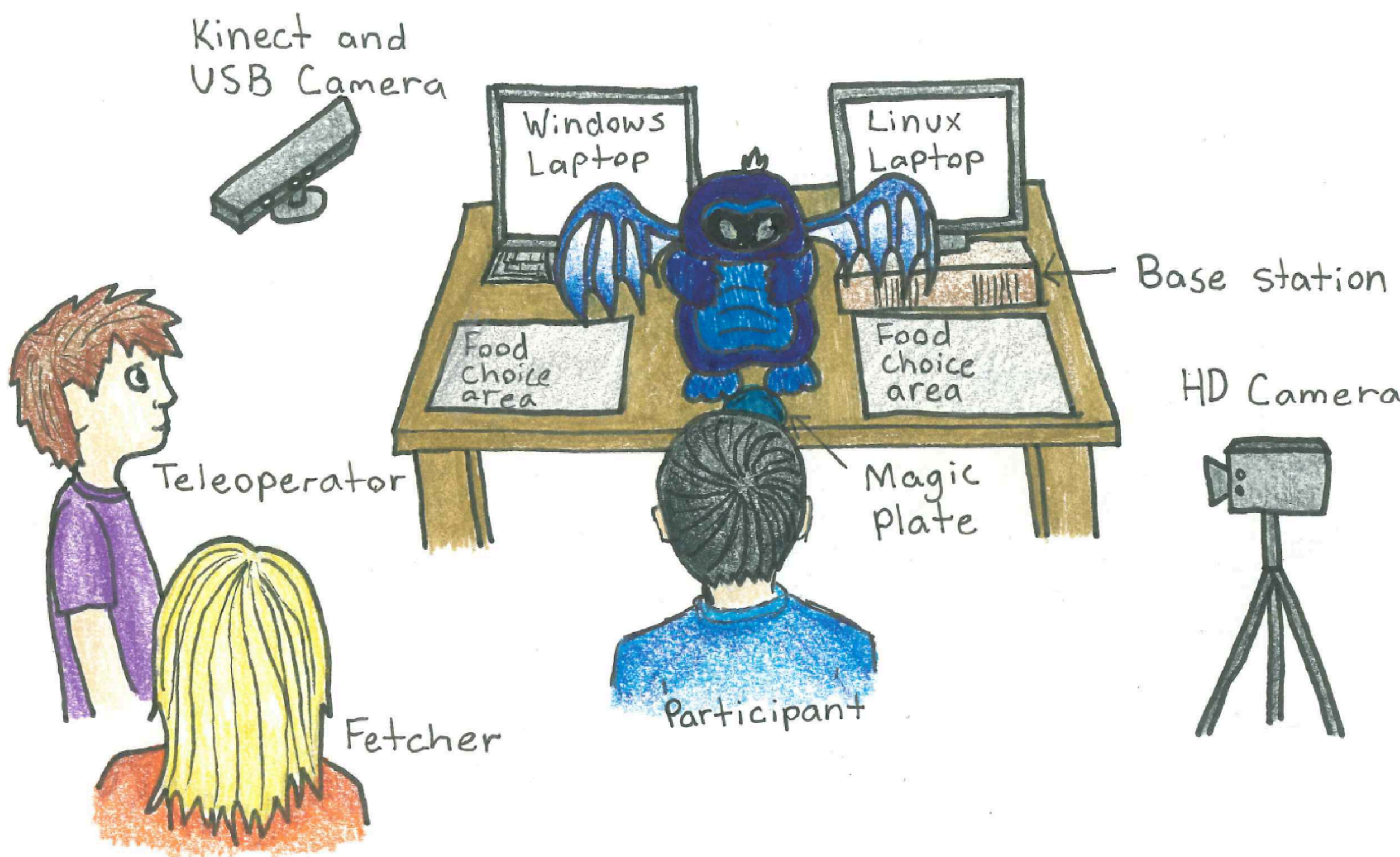
Experimental Design

Week	Week 1		Week 2	Week 3	
Topic	Packing a lunchbox		Choosing after-school snacks	Creating a balanced meal	
Type	ES*	CS*	ES	CS	ES	CS
Foods	• wheat bread • white bread • muffin • soda • water • milk • chocolate milk		• banana • trail mix • candy • chips • apple • carrots	• Fiber One • Lucky Charms • green beans • rice • french fries • carrots	• egg • donut • orange • mashed potatoes • broccoli • roll

Interaction Progression

* ES = Expert Session
* CS = Cooperative Session

- 26 first-grade children
- 6 one-on-one sessions per child over 3 weeks
- Experimental design based on **hypotheses** including:
  - ➤ *H1*: Children will have a **positive reaction** to the SAR system, that will increase over time
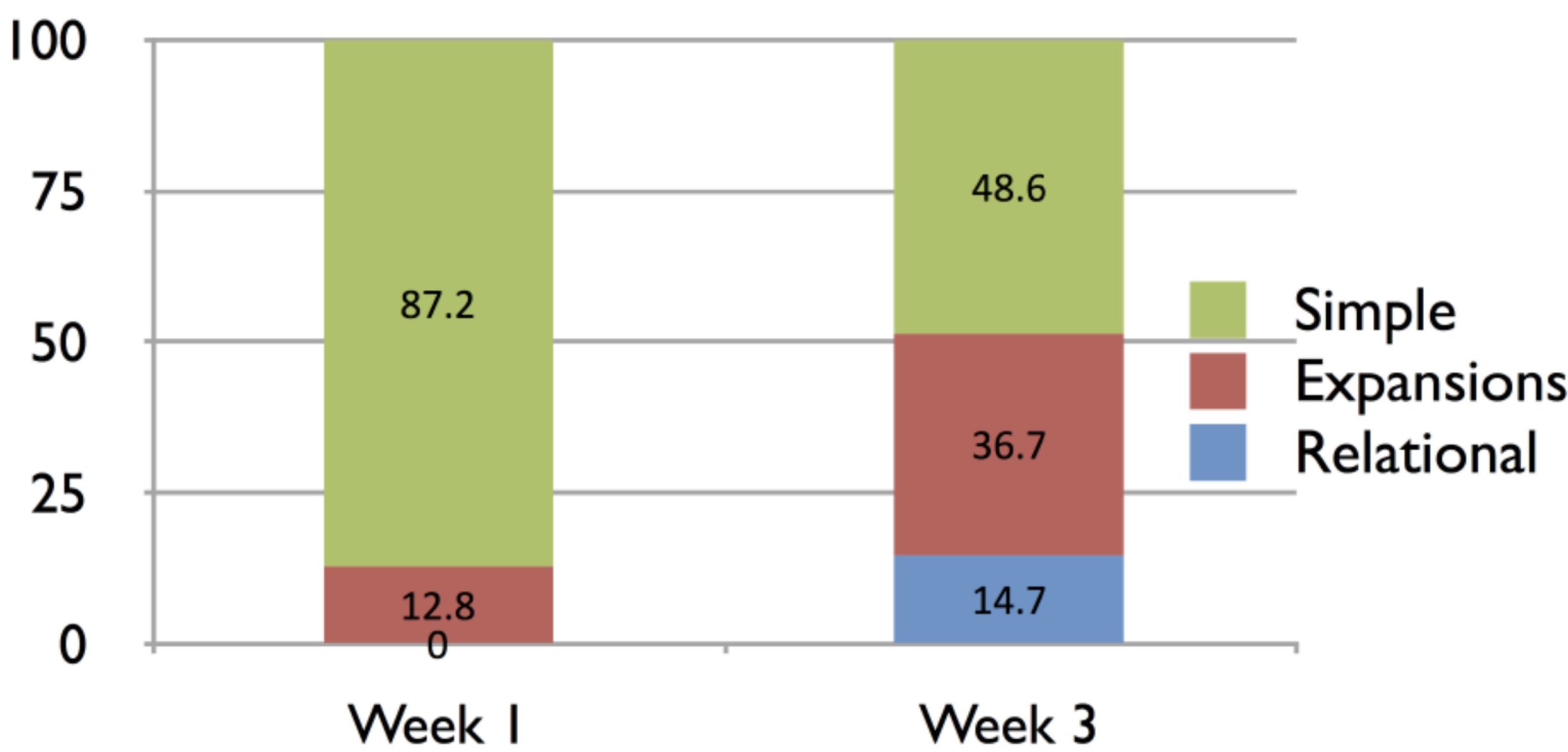 - ➤ *H2*: Children will use more **complex speech** with the robot over time

Experimental Setup

Results

(A) High positive perception of robot both pre- and post-intervention

➤ Partial support for *H1*

(B) Children used more complex speech with the robot over time

➤ Support for *H2*
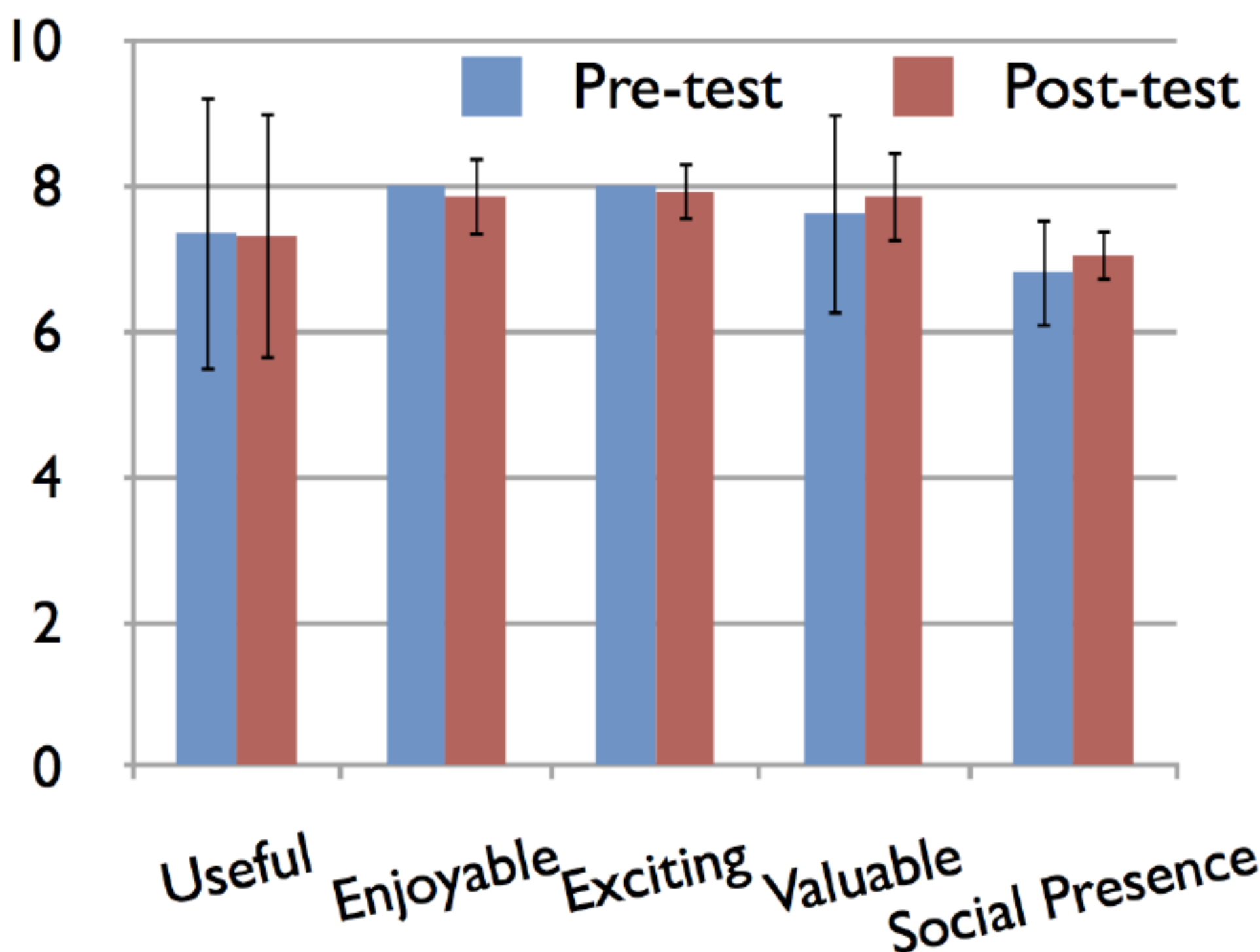
(A) Child Evaluation of the Robot in Several Categories

(B) Response Categories over Time in Child-Robot Interaction