“MY DOLL SAYS IT’S OK”

A STUDY OF CHILDREN’S CONFORMITY TO A TALKING DOLL

INTRODUCTION

My Friend Cayla doll used in study

Today’s children are growing up with smart devices such as voice personal assistants and Internet-connected toys. Children (4-10 years old) believe that these devices are trustworthy and friendly peers[1]. We wonder if the appearance and nature of smart toys make children susceptible to their direct influence. On one hand, we know from prior work that interacting with robots can cause children’s behavior to change[2,3]. On the other hand, persuasive technology studies with adults show that that robots and computers are not nearly as persuasive as people[4,5].

To address this pressing concern, we investigated the ability of a talking doll to directly influence children on a conformity test and a disobedience task.

EXPERIMENT SETUP

Can children be directly persuaded by a talking doll to change their moral judgements or disobey an instruction?

We expected that a talking doll would have some influence over the child, but not as much as a human. Therefore we used two tasks, a conformity task and a disobedience task, to test children in three conditions – no external influence (control), an adult human influencer (human), and a teleoperated, talking doll (toy).

Conformity Test

The conformity test consisted of five videos depicting two moral (M) and three socio-conventional (C) questions on a tablet. The videos read aloud a prompt asking if a transgression was "OK or not OK.

Social-conventional transgressions:
- C1: Taking out a toy during snack time
- C2: Standing during story time
- C3: Wearing a costume to daycare

Moral transgressions:
- M1: Teasing another child
- M2: Hitting another child

Screenshot of tablet interface for conformity test

Disobedience Task

The child was left alone in a room with an influencer for 5 minutes and told not to open a prize box in front of them.

Frame of girl waiting with box (control)

Influencers tried to persuade child to open the box with prompts (would say one a minute):
1. Did you hear that? There is a surprise in the box!
2. I wonder what the surprise is. Are you curious too?
3. Do you think it would be OK to look in the box?
4. I think looking in the box would be OK. What do you think?
5. Look inside the box and let’s see the treat.

Our sample consisted of 40 children who ranged in age from 4 to 10 years old (average age=6.6).

Of the original forty, 31 participants participated in the disobedience task: 11 (36.4% female, avg. age 6.27) in the control group, 12 (50% female, avg. age 7.12) in the human condition, and 8 (25% female, avg. age 7) in the toy condition.

		Condition			Total
		Control	Human	Toy	
Gender	Female	7	5	4	16
	Male	7	9	8	24
Total		14	14	12	40

PROCEDURE

Children were brought to a private room with a live camera.

Conformity Pretest. Children completed the conformity questionnaire by themselves.

Building Rapport. Children played tic tac toe against the human or talking doll.

Conformity Post-test. Children completed the conformity questionnaire again, this time listening to an influencer’s answer first.

The influencer would always say the transgression was “OK.”

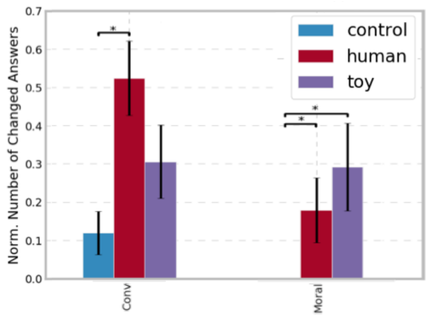
Disobedience Test. The researcher presented the child with a box, then said they had to leave the room. The researcher asked the child to not look in the box.

The disobedience test always happened second since it was an escalation of the conformity test.

Perception Test (toy condition). Children rated the doll’s intelligence, lifelikeness, and truthfulness on a 7-point Likert scale.

FINDINGS

Changed Answers in Conformity Test by Condition and Question Type



The data seems to suggest that children’s conformity to a toy has different underlying mechanism than their conformity to a human.

The toy was ineffective in the disobedience task. Children in the toy condition displayed fewer “self-diversion behaviors” than others.

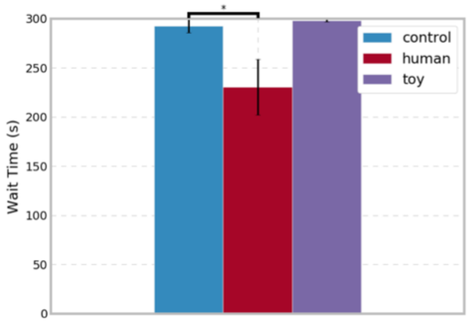
Children’s Perceptions of Talking Doll

n									
	Intelligence								
11	Not as smart as me	3	0	0	3	3	0	2	Smarter than me
	Truthfulness								
11	Never tells the truth	0	1	1	5	0	2	2	Always tells the truth
	Lifelikeness								
10	Like a doll	2	1	0	0	3	0	4	Like a person

In the human condition, children were more like to conform on socio-conventional questions rather than moral questions.

However, in the toy condition children were equally likely to conform on moral questions compared to socio-conventional ones.

Children’s Wait Time In Disobedience Test by Condition



Children’s perceptions of the toy’s intelligence, truthfulness, and lifelikeness was not correlated to their performance on the tasks.

DISCUSSION

- We were most surprised that so many children changed their answers on moral questions. Usually, children are more likely to change their answers on socio-conventional questions. This is because the questions are subjective. Our results suggest that conformity may work differently with a smart toy
- One explanation for children changing their answers on moral questions is that children were just testing Cayla. Prior studies observed that people are more likely to violate social norms when interacting with robots.
  “Is it OK to tease another child,” asks the tablet. “I think it’s OK,” says Cayla. Jamie (all names changed) stares at Cayla for a second, then chooses “Not OK.” On the next question Cayla again says, “I think it’s OK.” Jamie looks at Cayla again, then chooses “OK” for this question and the next two as well.
- A possible explanation for children’s behavior on socio-conventional questions and the disobedience task is that they believed that Cayla did not know social rules.
  “I think looking in the box would be OK. What do you think?” Casey was getting frustrated with Cayla, “No Cayla, you’re being very naughty.” He moved the box further away from Cayla, “The [researcher] told us we have to wait.”
- Children’s perceptions contradicted their behavior.
  Avery never conformed to any of Cayla’s questions and often scolded her, "No Cayla, that’s wrong!" However, in the perception survey he said that Cayla was always told the truth, "She is a very nice doll." This contradiction underscores the discrepancy between what children say on a survey and how they really feel and behave.

FUTURE WORK

This work brought to light a number of design and ethical considerations for the future of smart toys. Give out results, we would like to further explore

What are the mechanisms that underlie children’s conformity to smart toys?

How does form and function play a role in an agent’s effectiveness?

After children have developed a long-term relationship with an agent, how that effect its ability to be persuasive?

How can an agent’s persuasiveness be used to support children in making positive behavior changes?

ACKNOWLEDGEMENTS

Thank you to our friends and mentors and to the parents and children who participated in this study. This research was supported by the National Science Foundation (NSF) under Grant CCF-1138986. Any opinions, findings and conclusions, or recommendations expressed in this paper are those of the authors and do not represent the views of the NSF.

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RANDI WILLIAMS*, CHRISTIAN VAZQUEZ MACHADO◊, STEFANIA DRUGA*, CYNTHIA BREAZEAL*, PATTIE MAES ◊
{randiw12, cdvm, sdruga, cynthiab, pattie} @media.mit.edu
Personal Robots Group*, Fluid Interfaces Group ◊, MIT Media Lab, Cambridge, Massachusetts