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Differences between human- and robot- directed speech and communication? Evidence from 5-year-olds

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INTRODUCTION & GOAL

While research on adult-robot interaction is growing, little is known on whether and how children adapt their speech when talking to robots as compared to humans. The present contribution investigates children's remote communication with an interaction partner called Sila who was introduced either as a robot voice assistant or a human in a treasure-hunt game.

We investigate differences in:

- the effort to communicate (grounding behaviour, amount of speech)
- the speaking style (speaking rate, pitch)

PARTICIPANTS

50 5-year-old children took part in a between-subjects-design

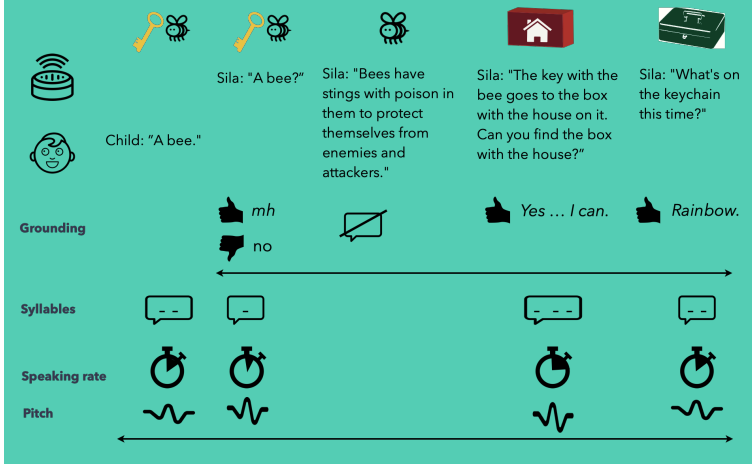
Demographics	Human	Voice Assistant	Group Difference
Age in months	70.34 (2)	69.74 (1)	t = 1.33, p = .19
Girls / Boys	12 / 13	13 / 12	X^2 = 0, p = 1.0
Media Usage Parents	3.71 (0.6)	3.8 (0.7)	t = -0.5, p = 0.64
Media Usage Child	2.28 (0.7)	2.35 (0.6)	t = -0.4, p = 0.72

CONCLUSION

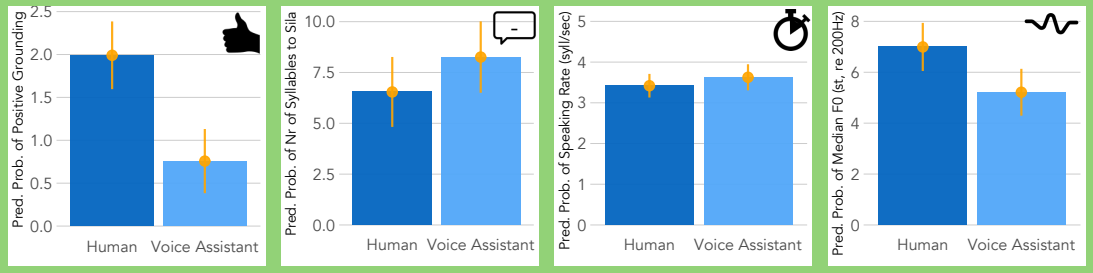
The results showed that the children adapted their speech to their interaction partner (human vs. robot), especially in the challenging communicative situations (misunderstanding trials). Overall, we observed a reduction in acoustic features in the voice assistant condition, which can be interpreted as less lively communication. We plan further analyses to investigate whether children attribute less cognitive ability or social trust to robots.

DESIGN

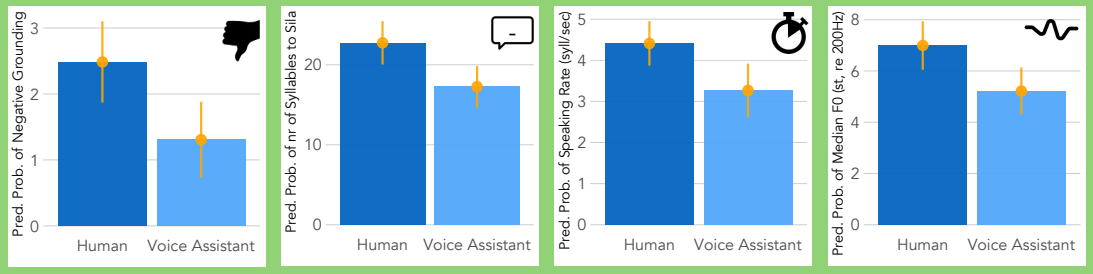
MEASURES



RESULTS OF EASY COMMUNICATION



RESULTS OF CHALLENGING COMMUNICATION



We ran preliminary analyses on half of the sample using lmer models with condition as predictor, communication/speaking style to E1 as covariate and subjects and trials as random intercepts.

We found that children in the robot voice assistant condition showed fewer instances of grounding overall. In challenging communication trials, in particular, they also tended to show a lower number of syllables, a slower speaking rate and lower pitch.