Learning and engaging with the use of gestures
Peisi Ying

Original Paper
Varied Human-Like Gestures for Social Robots: Investigating the Effects on Children's engagement and Language Learning

Reference
de Wit, J., Brandse, A., Krahmer, E., & Vogt, P. (2020, March). Varied Human-Like Gestures for Social Robots: Investigating the Effects on Children's Engagement and Language Learning. In *Proceedings of the 2020 ACM/IEEE International Conference on Human-Robot Interaction* (pp. 359-367).

Link to original paper online
https://dl.acm.org/doi/pdf/10.1145/3319502.3374815

Project created for the class:
Visual Thinking and Composition, Winter 2020
Tilburg University, Department of Communication and Cognition

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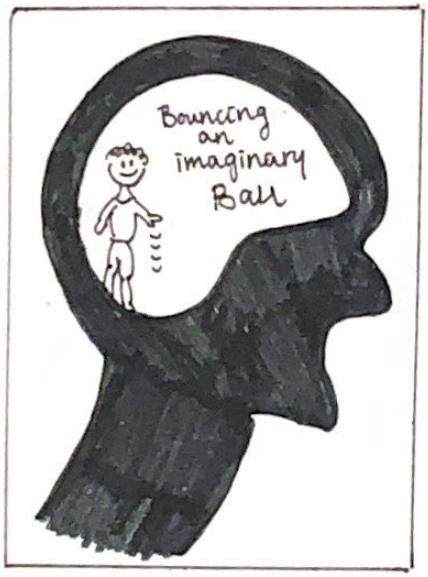
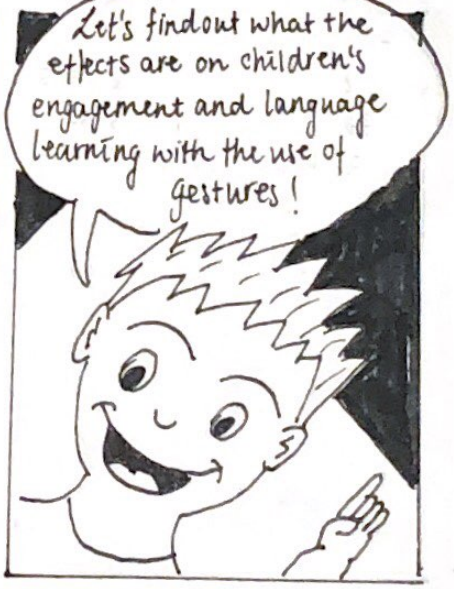
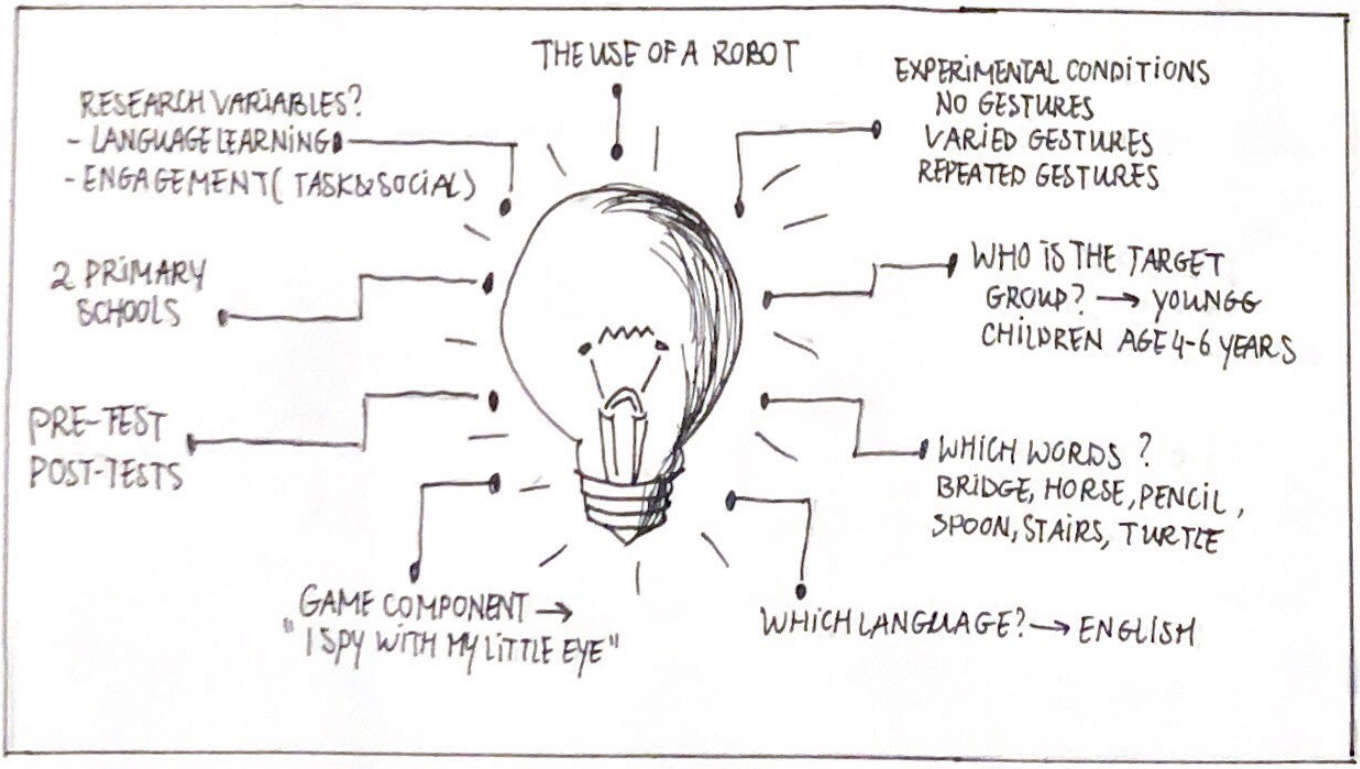
Hey! you want something to drink?

Funny how gestures can show meaning to things..
Like a thumbs up for showing liking or an agreement

Molding the shape of a Ball


Bouncing an imaginary Ball

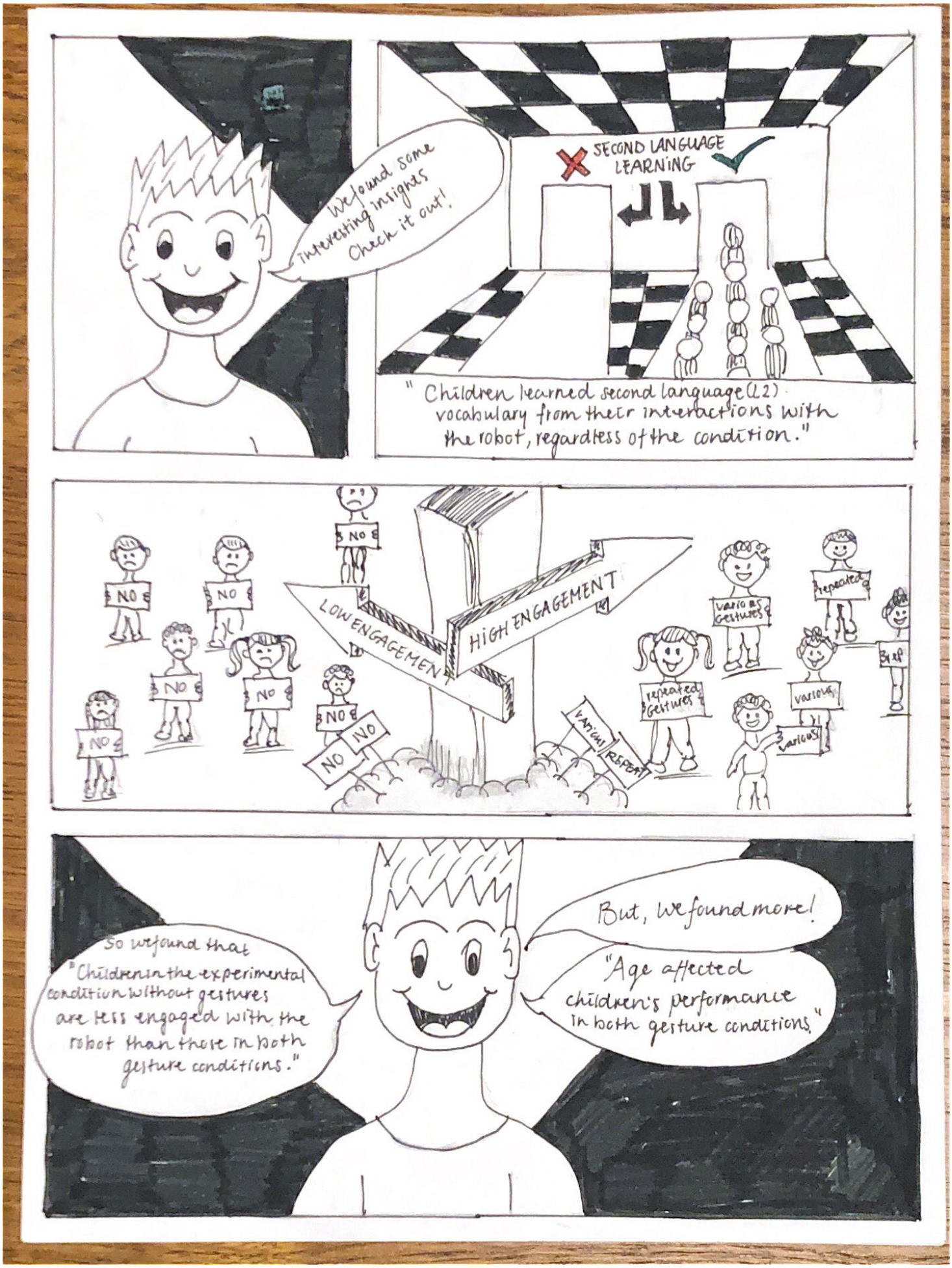

Let's find out what the effects are on children's engagement and language learning with the use of gestures!

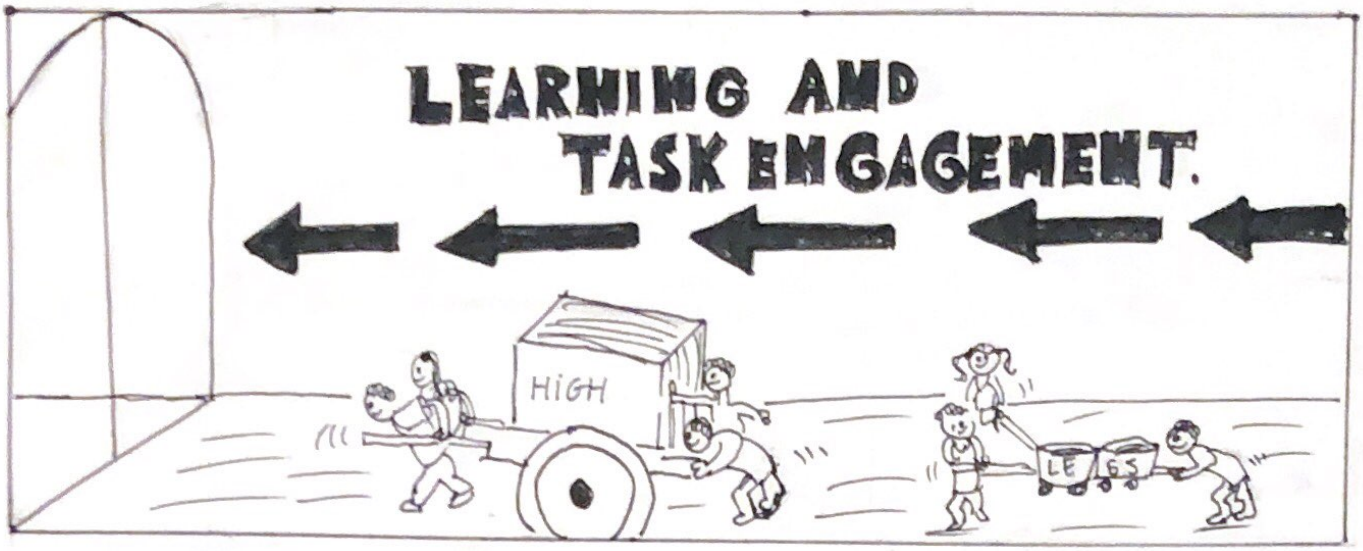

THE USE OF A ROBOT
RESEARCH VARIABLES?
- LANGUAGE LEARNING
- ENGAGEMENT (TASK & SOCIAL)
EXPERIMENTAL CONDITIONS
NO GESTURES
VARIED GESTURES
REPEATED GESTURES
2 PRIMARY SCHOOLS
WHO IS THE TARGET GROUP? → YOUNGG CHILDREN AGE 4-6 YEARS
PRE-TEST
POST-TESTS
WHICH WORDS ?
BRIDGE, HORSE, PENCIL, SPOON, STAIRS, TURTLE
GAME COMPONENT →
"I SPY WITH MY LITTLE EYE"
WHICH LANGUAGE? → ENGLISH

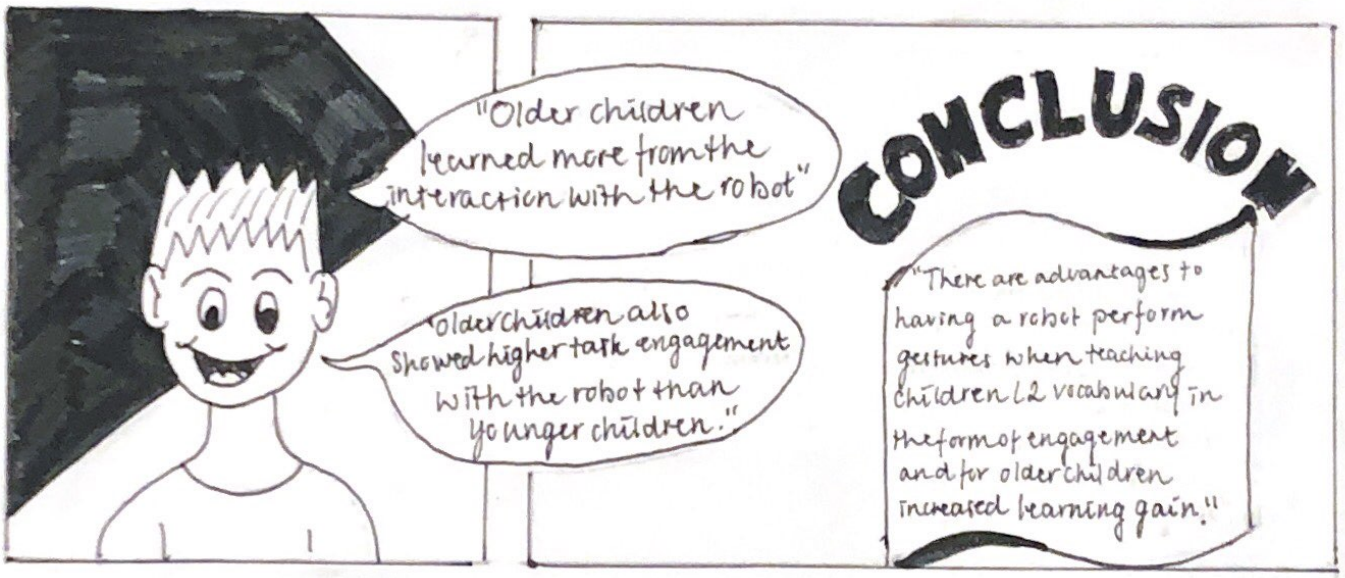
PREPARING THE ROBOT....
The robot is ready! Let's contact the school if they have time next week!
Great!
SORRY, I totally forgot to introduce my colleagues! Their names are: Arold, Emiel, and Paul!
Now let's ask the schools if they want to participate!
That's a great idea! Let's do it! So interesting too!
Thanks! We will see you and the kids next week!
ONE WEEK LATER...
MEET OUR NEW FRIEND!
Hi kids! This is our robot friend and today we are going to do something really fun!

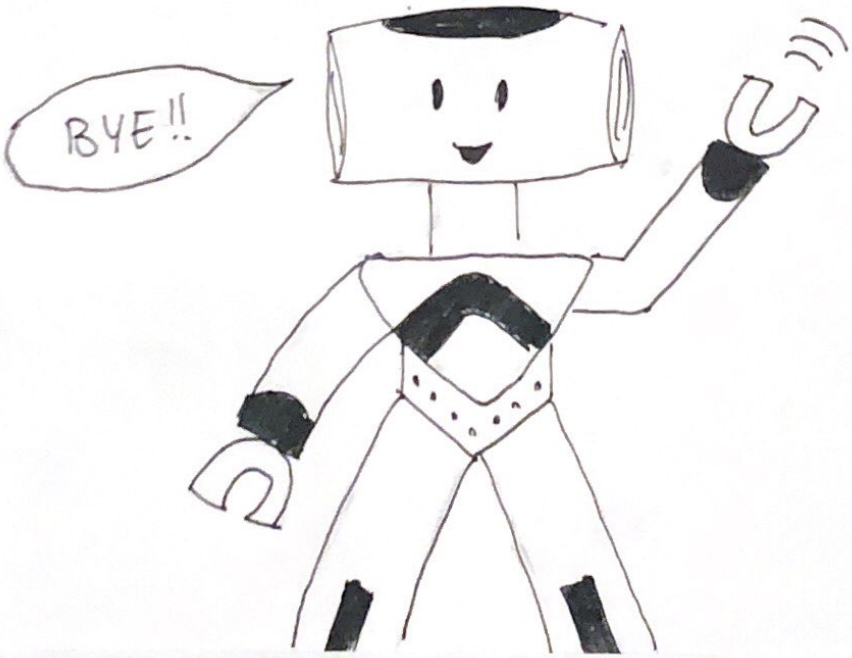
EXAMPLE OF 5 VARIATIONS OF THE WORD "TURTLE"
come on in! Are you excited?
yess!! very!
4-6 YEARS OLD
you are going to play the "I spy with my little eye" game and you have to guess the word ok?
OKay!
REPEATED GESTURES
ik zie, ik zie wat jij niet ziet en het is een spoon!
ik zie, ik zie wat jij niet ziet en het is een spoon!
VARIOUS GESTURES
Ik zie ik zie wat jij niet ziet en het is een spoon!
ik zie ik zie wat jij niet ziet en het is een spoon!

NO GESTURES
ik zie ik zie wat jij niet ziet en het is een spoon
ik zie ik zie wat jij niet ziet en het is een spoon
you guys did such a great job! See you next week!
Bye Jan!
One week later, we did the exact same tests with the kids. Now we are going to analyse the findings!
NONE
REPEATED
VARIOUS
NO GESTURES
REPEATED GESTURES
VARIOUS GESTURES
AGE
LEARNING
SOCIAL ENGAGE-MENT
TASK ENGAGE-MENT
Data incoming!
ANALYSIS BOX
Pearson Correlation
Anova
Manova
Bonferroni Correlations
Wilk's Λ
Post-Hoc
SEND
OUTCOME
PRE & POST TESTS
IN THE MEANWHILE INSIDE THE SPSS PROGRAM...


We found some interesting insights Check it out!
SECOND LANGUAGE LEARNING
" Children learned second language (L2) vocabulary from their interactions with the robot, regardless of the condition."
NO
LOW ENGAGEMENT
HIGH ENGAGEMENT
VARIOUS
REPEAT
repeated Gestures
various Gestures
repeated
various
Brep
So we found that "Children in the experimental condition without gestures are less engaged with the robot than those in both gesture conditions."
But, we found more!
"Age affected children's performance in both gesture conditions."


LEARNING AND
TASK ENGAGEMENT.
HIGH
LE
GS


"Older children learned more from the interaction with the robot"
"Older children also showed higher task engagement with the robot than younger children."
CONCLUSION
"There are advantages to having a robot perform gestures when teaching children L2 vocabulary in the form of engagement and for older children increased learning gain."


BYE!!