

IMPROVING THE ACCEPTABILITY OF SOCIAL ROBOTS: MAKE THEM DIFFERENT FROM HUMANS

Benjamin Lebrun, Bing Li & Tatjana A. Nazir (**SCALab**, Lille)

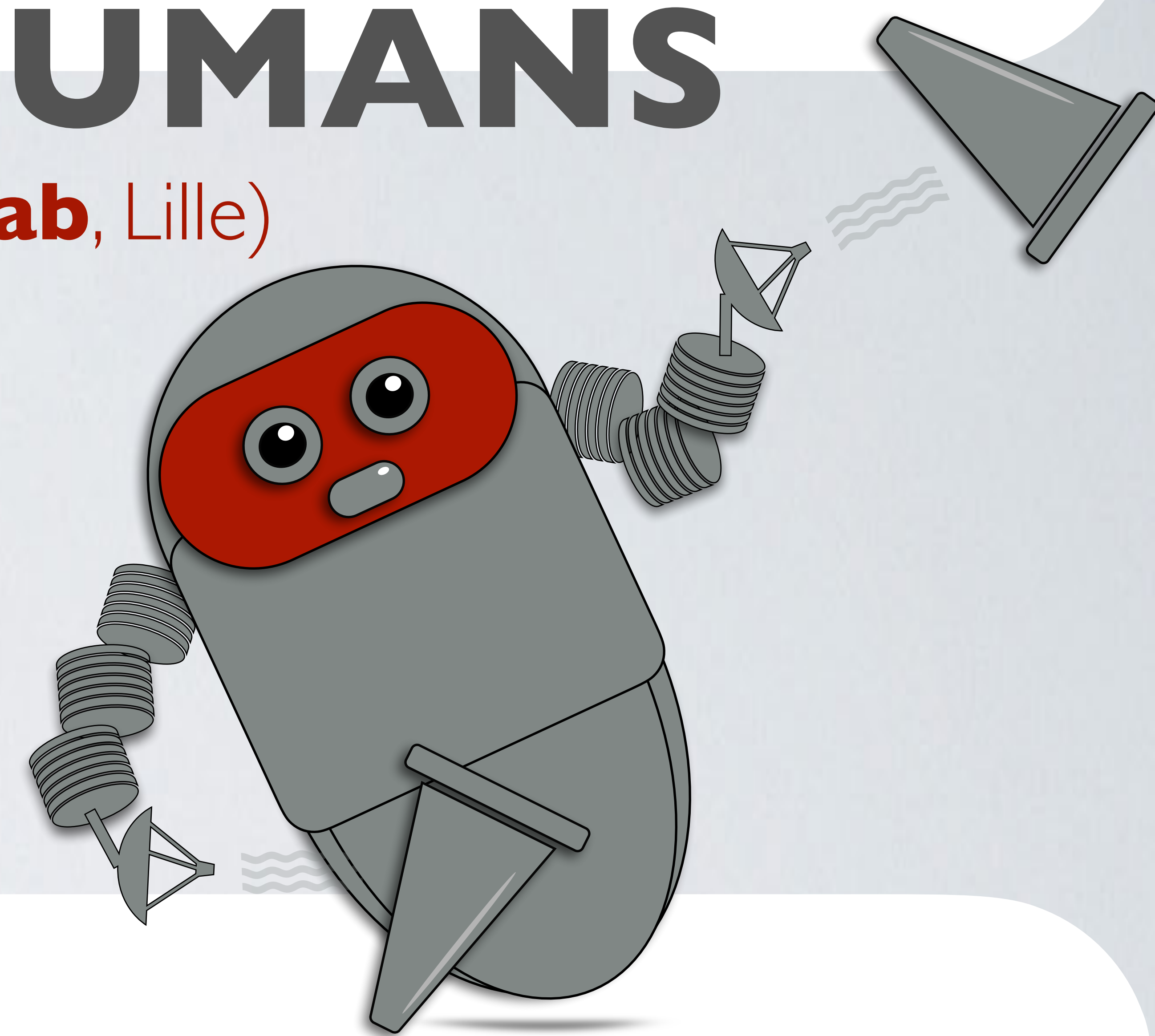
Observation

The social robot market is growing rapidly. However, what the arrival of these **new kind of social agents** means for society is largely unknown.

Previous studies have highlighted the **abuse** of social robots, with many of these robots exhibiting **human like features (resemblance)**.

Hypotheses and Predictions

- During social interactions humans create **dominance hierarchies**.
- The establishment of these hierarchies is governed by specific **behavioral/morphological cues** and occurs preferentially when there is a basis for skill comparison (**e.g., possibility for simulatability of functions with the human body**).
- Dominance accompanying behavior occurs when humans consider that **they can do better than the robot**.
- If the robot's **skill is not in the human repertoire**, such comparison is precluded and dominance accompanying behavior **reduced**.



Test

16 robots presented two-by-two (120 different pairs; functions shown via **video clips**).

* Rating of robot's **resemblance** to humans (n=25).

* Rating how well the robots possessed five essentialized human qualities (Haslam et al., 2004): **independent, intelligent, imaginative, creative, and talkative** (n=25 per quality).

* Rating the degree of **simulatability** of each function with the human body (1-7 Likert scale).

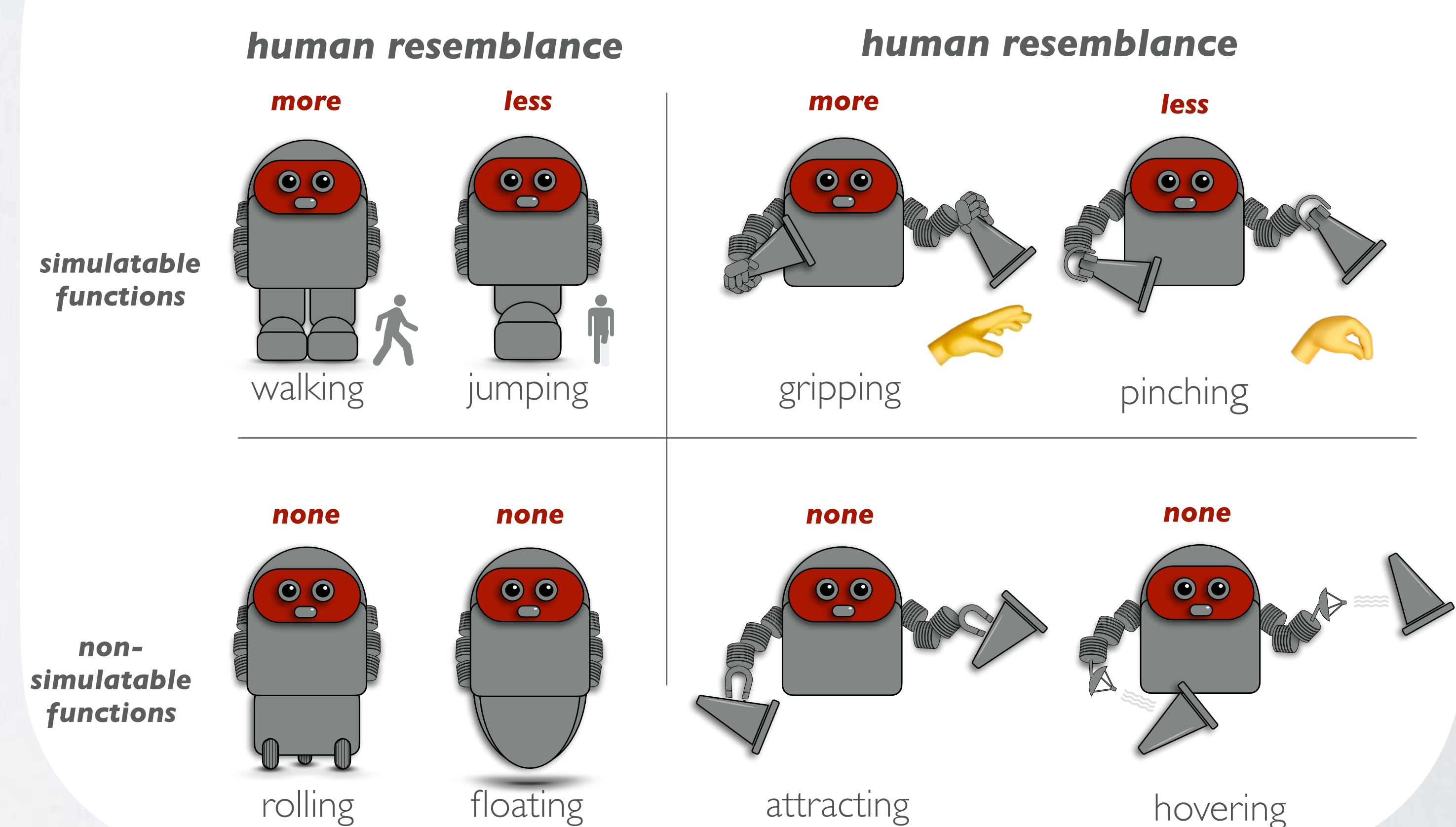
* Estimate the outcome of a situation in which a robot is approaching a group of humans: the robot is either **invited, ignored, excluded, attacked** (n=31).

Analysis: t-test; ANOVA or Friedman's test

Haslam, N., et al. (2004). Essentialist Beliefs about Personality and Their Implications. *Personality and Social Psychology Bulletin*, 30(12), 1661-1673.

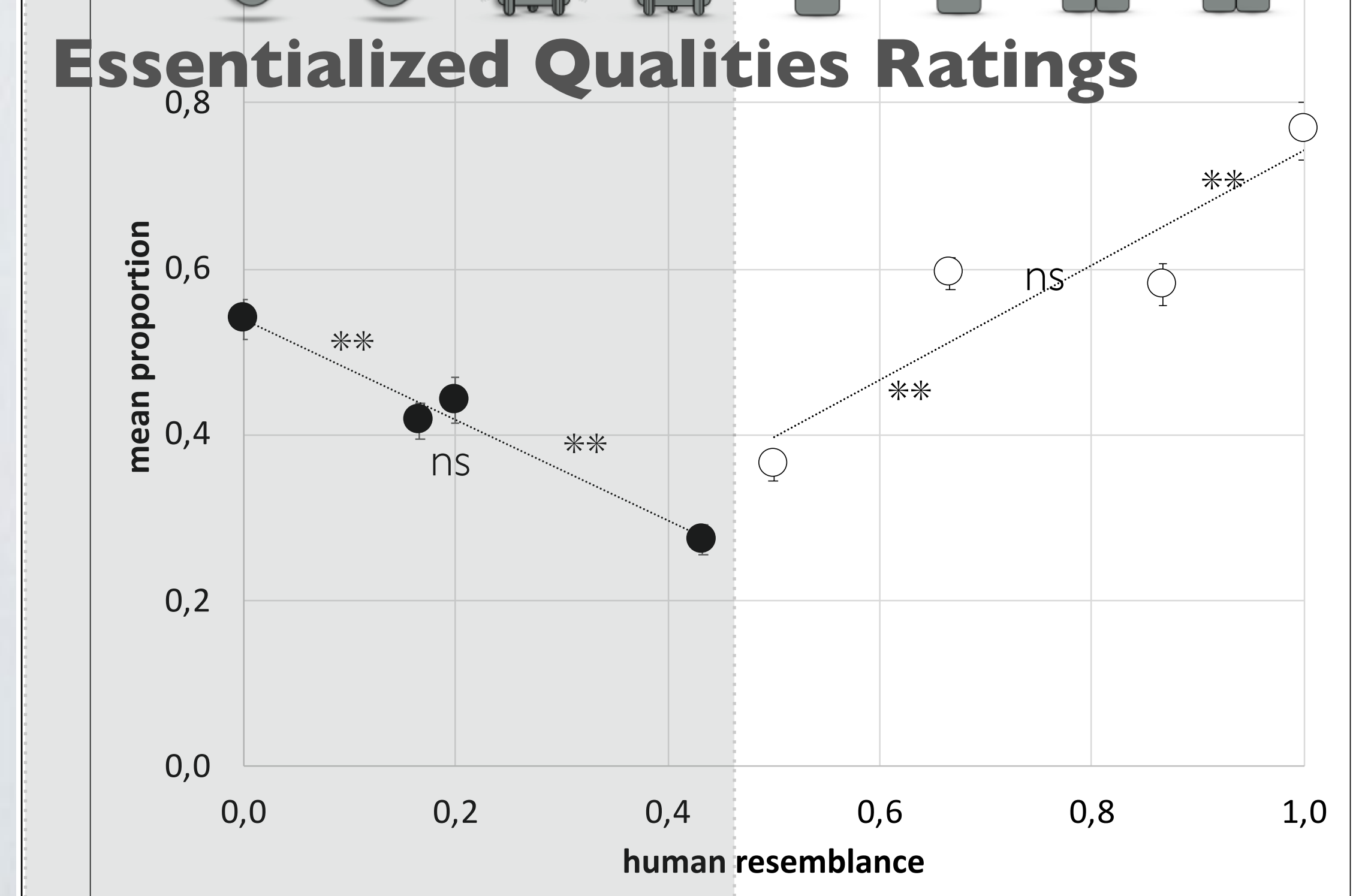
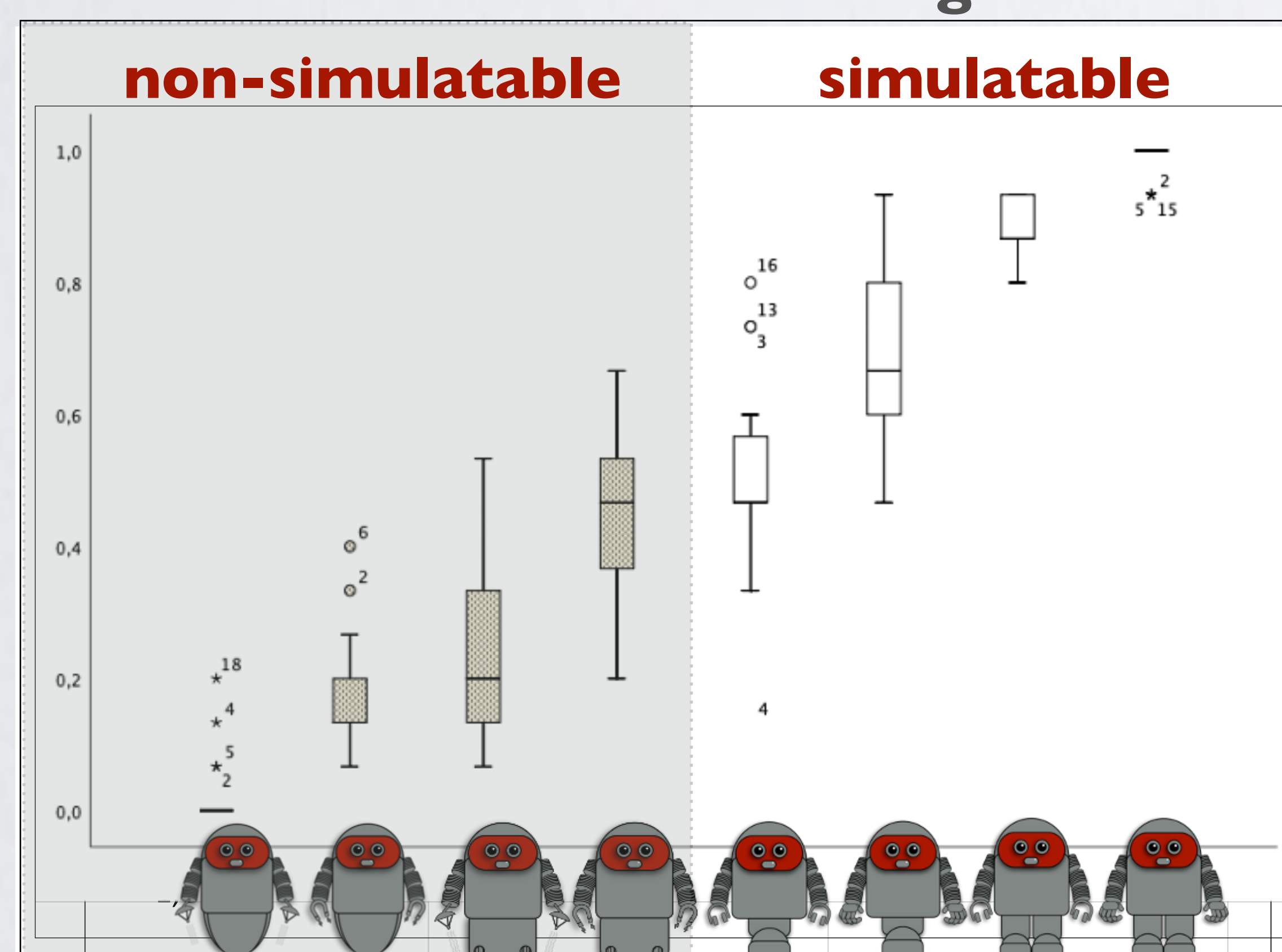
Robot-Stimuli

16 Robots (4 upper x 4 lower extremities. Functions simulatable/ non simulatable)

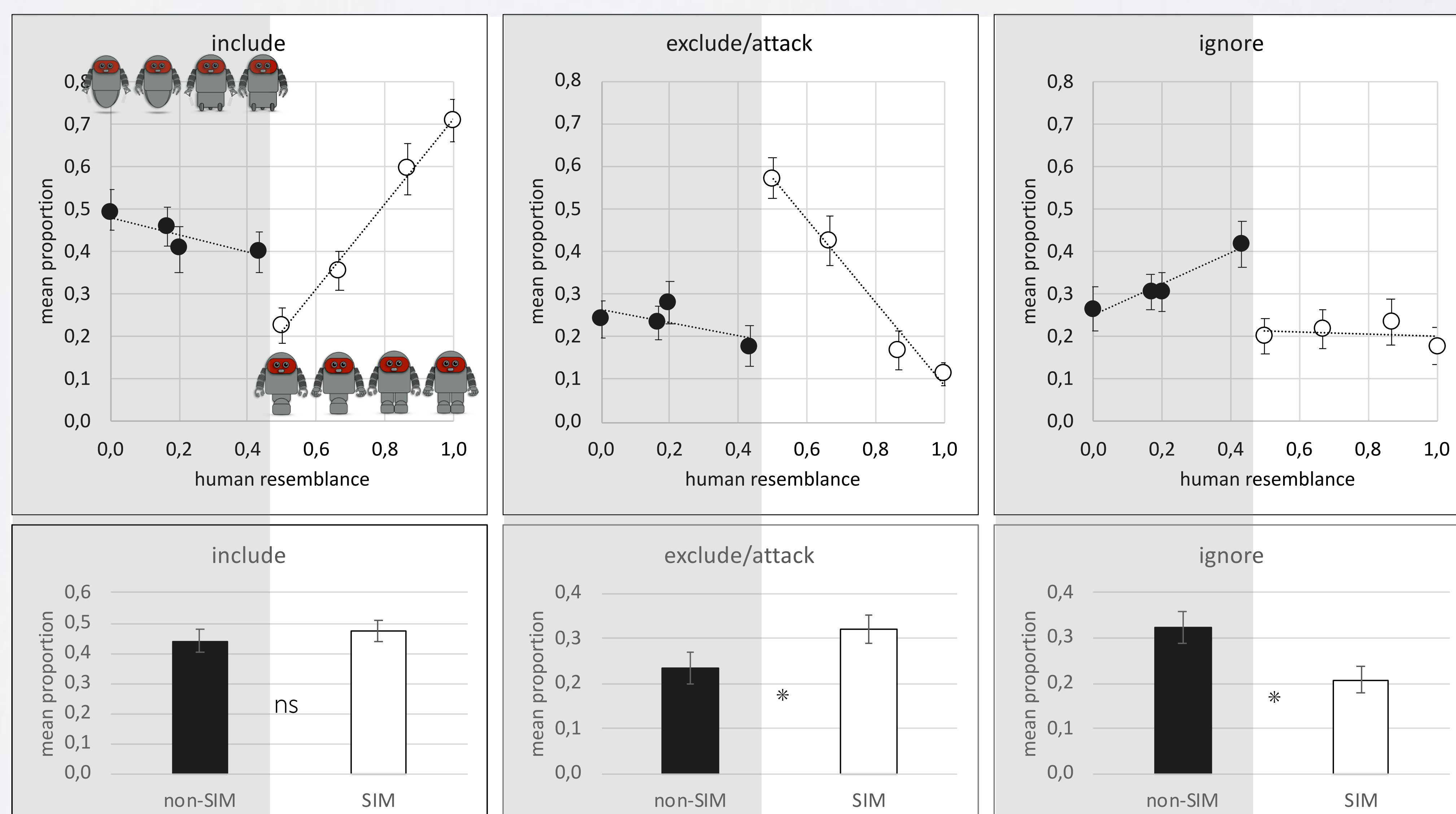


Results

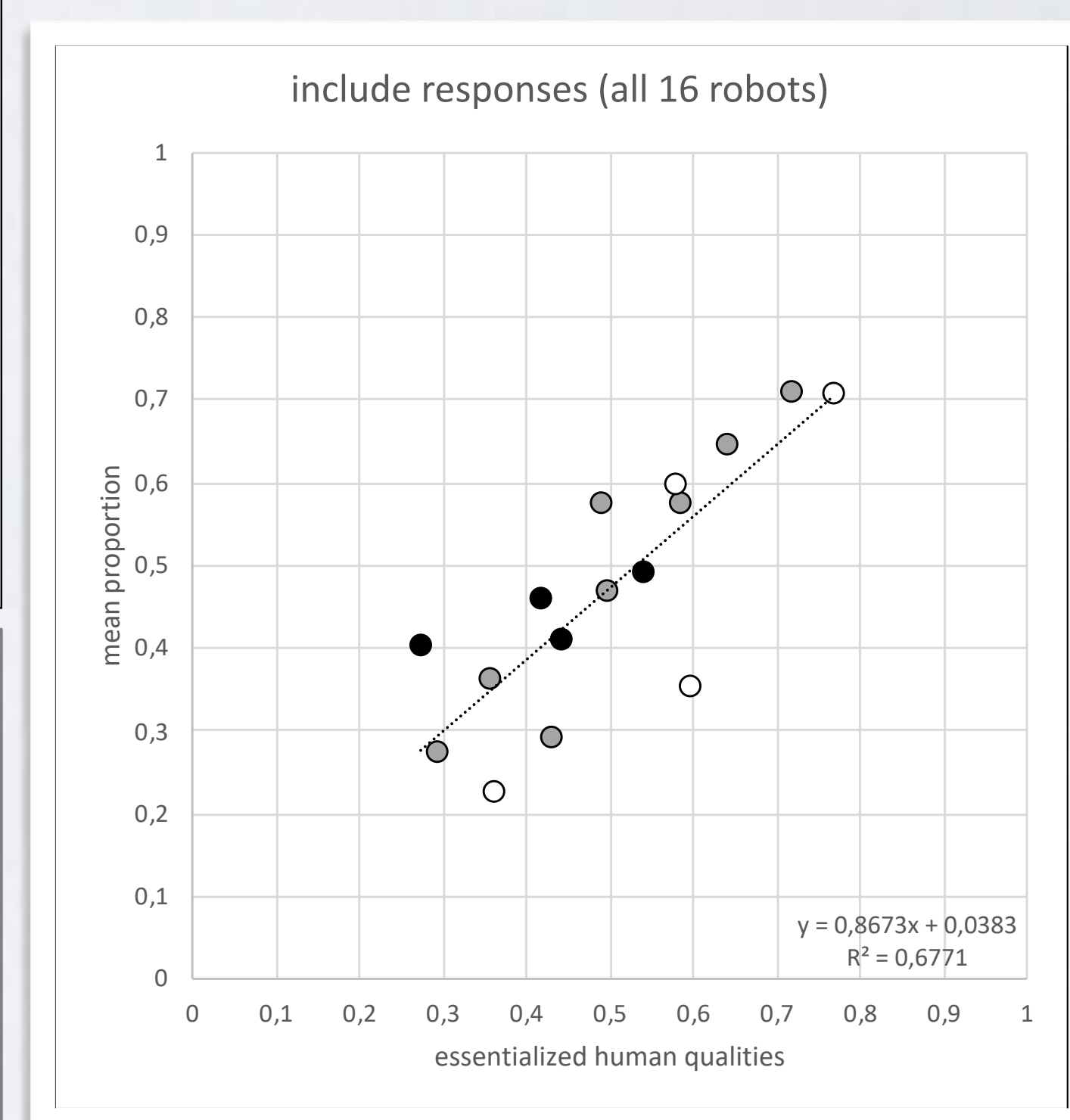
Human Resemblance Ratings



Social Reactions to the Robots



Perceived Essentialized Human Qualities Predict Acceptability



Conclusion

- **Non-simulatable** functions are reacted to differently than **simulatable** functions.
- **Abusive** behaviors is seen for robots with **simulatable** functions of **lesser human resemblance**.
- Robots with **non-simulable** functions are **ignored rather than abused**.
- **Essentialized qualities** (but not human resemblance) predict robot's **acceptability**.

Unless social robots perfectly mimic humans, it is safer to provide them with functions that are not in the human repertoire.