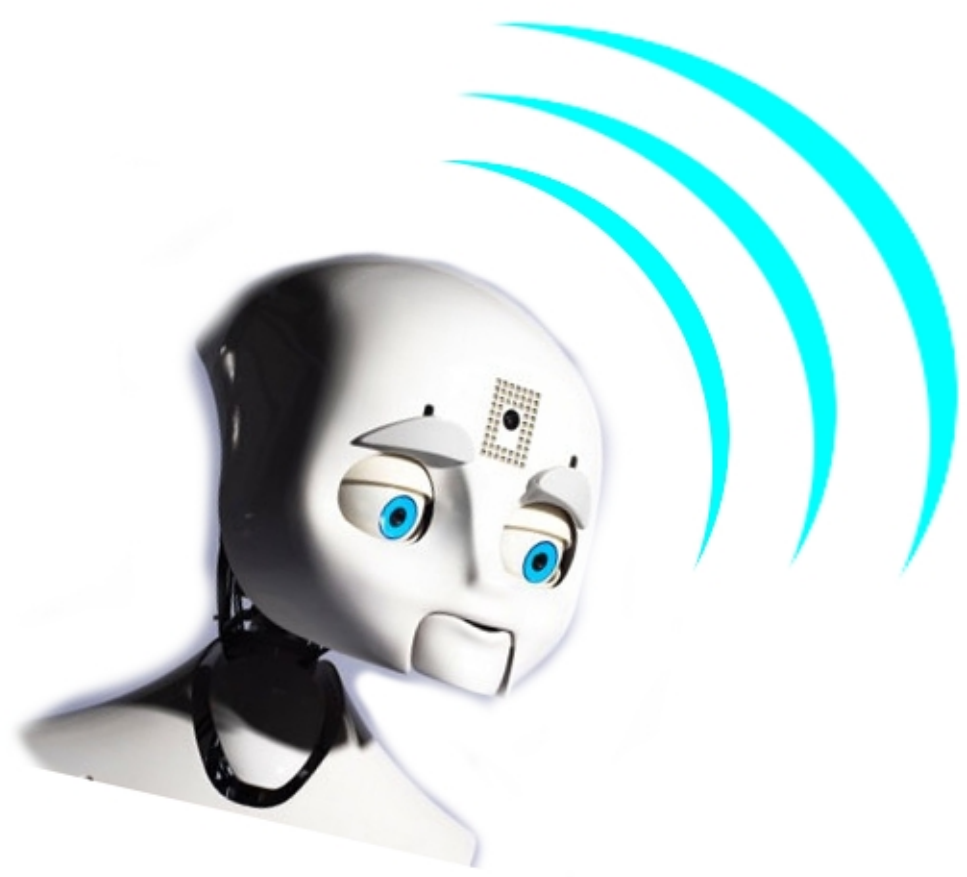# Is Robot Telepathy Acceptable?
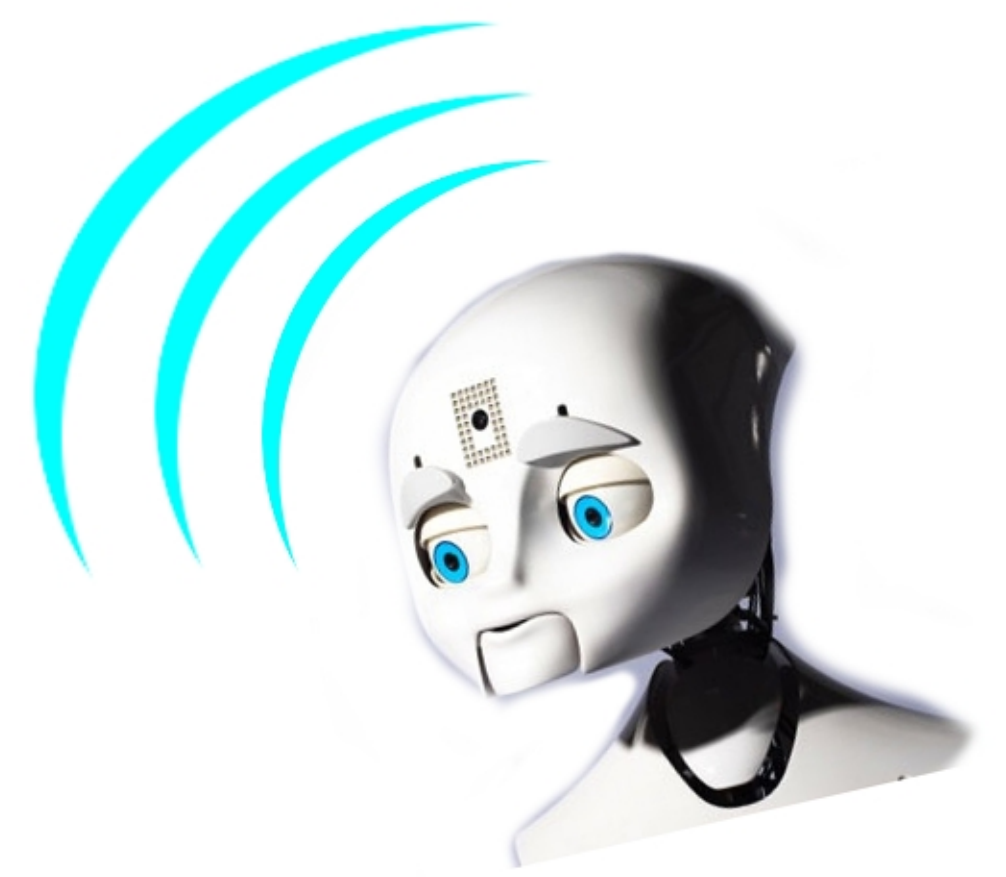
Tom Williams, Priscilla Briggs, Nathaniel Pelz, Matthias Scheutz

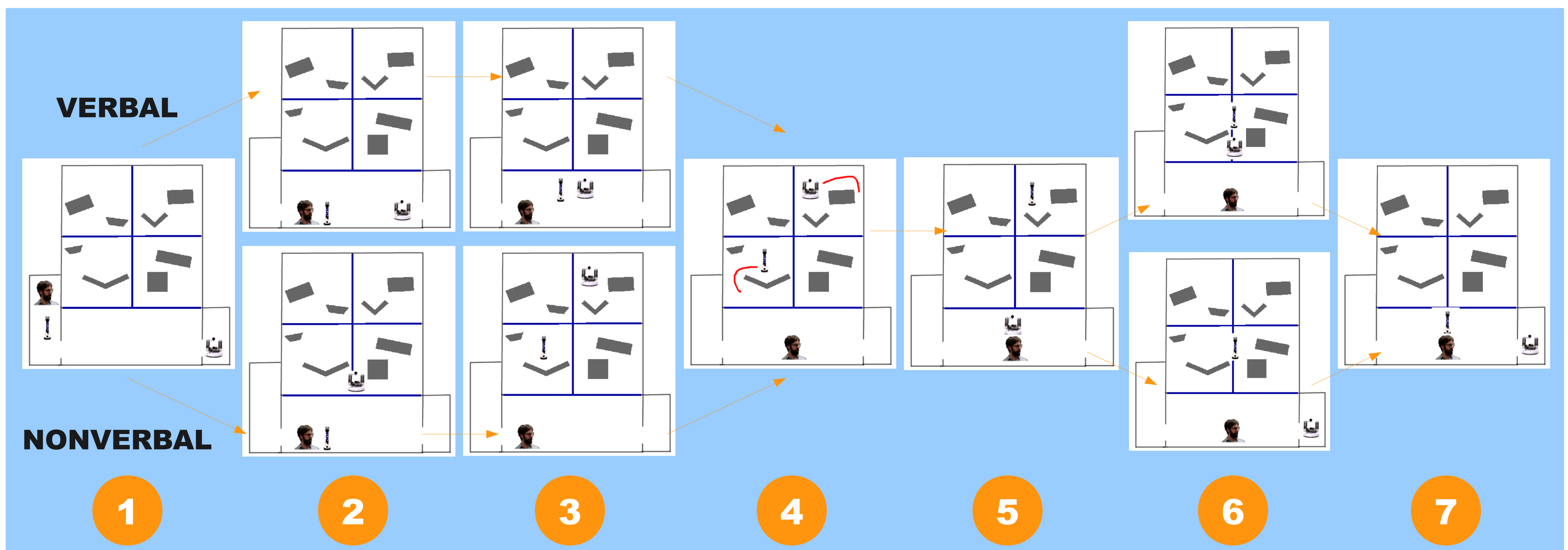Human-Robot Interaction Laboratory   ●   Tufts University   ●   200 Boston Ave, Medford MA, USA

Investigating Effects of Nonverbal Robot-Robot Communication on Human-Robot Interaction

Should "robot telepathy" be considered an "uncanny action" to be avoided? We examine this question through a scenario in which one robot must relay information from a human to another robot in order to complete its task.
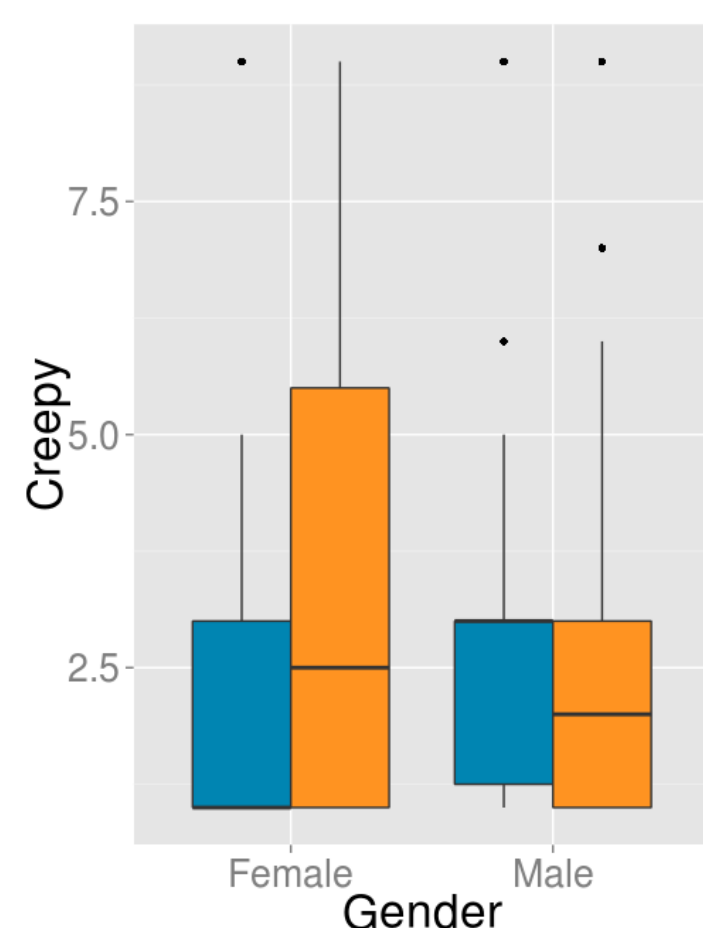
The Experiment

1. Participant gives **VGO** instructions for itself, and instructions to relay to **ROOMPI.**
2. Participant and **VGO** enter experiment room. In **VERBAL** condition, **ROOMPI** is observed entering room. In **NONVERBAL** condition, **ROOMPI** is observed carrying out instructions given to **VGO** by the participant.

3. In **VERBAL** condition, robots approach each other, and **VGO** informs **ROOMPI** of its orders. In **NONVERBAL** condition, **VGO** follows suit and begins to carry out its orders.
4. Both robots carry out their orders.

5. The first robot to finish reports back to the participant.
6. In **VERBAL** condition, the robot finds the other robot, and tells them what to do when done. In **NONVERBAL** condition, the robot simply exits the room.

7. The second robot reports back to the participant, and informs them that the other robot has told them to return to the original room for another survey.
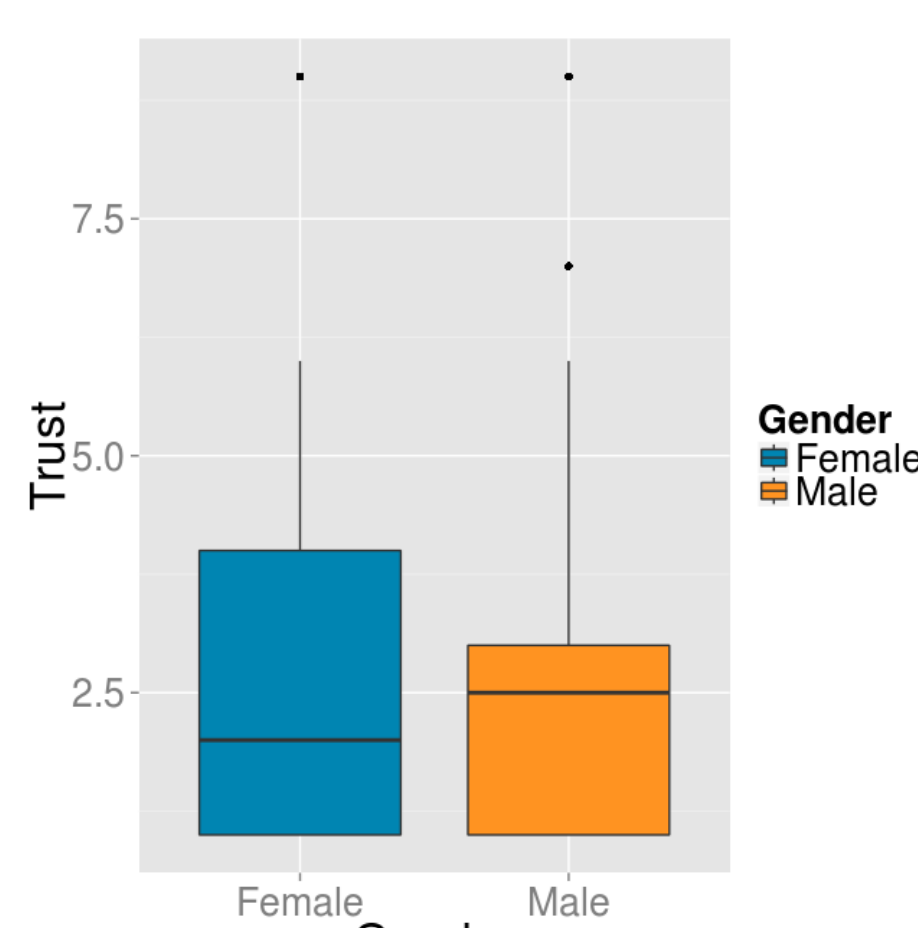

VERBAL

NONVERBAL

1   2   3   4   5   6   7

The Results

We originally hypothesized that in the nonverbal condition, the robots would be rated as **less trustworthy, less cooperative, creepier**, and **more efficient**. However, our results did not support these hypotheses; no significant differences were found directly between the two conditions, although other effects related to these hypotheses were found.

This led to the conclusion that robots may be able to communicate with each other nonverbally without negative consequences.

Results of ANCOVA:
DV: Creepiness
Between IVs: Gender, Condition
Within IV: Robot
Covariate: Attributed robot gender
$F_{(1,24)}=4.32$, $p=0.048$

Results of ANCOVA:
DV: Trustworthiness
Between IVs: Gender, Condition
Within IV: Robot
Covariate: Attributed robot gender
$F_{(1,24)}=3.10$, $p=0.091$

In addition, we found a large number of robot- and gender-specific effects unrelated to our original hypotheses, regarding issues such as human-likeness, capability, helpfulness, and confusion.

Why did participants rate the two robots so differently, and why did we find so many gender-specific effects?

Was it the morphology of the two robots, or the difference in interaction between the two robots?

To Contact Us

For more information about and other studies from the Human-Robot Interaction Laboratory, visit **www.hrilab.org**.

Tom Williams   thomas_e.williams@tufts.edu
Priscilla Briggs   priscilla.briggs@tufts.edu
Nathaniel Pelz   nathaniel.pelz@tufts.edu
Matthias Scheutz   matthias.scheutz@tufts.edu

Tufts UNIVERSITY · 1852

Ongoing Work

Due to the large number of robot-specific effects, we decided to run a follow-up study to investigate whether our findings still held when the robots were appropriately counterbalanced. The results of this follow-up study (not yet published) indicate that participants rated **nonverbal communication** as **significantly creepier** than **verbal communication**.