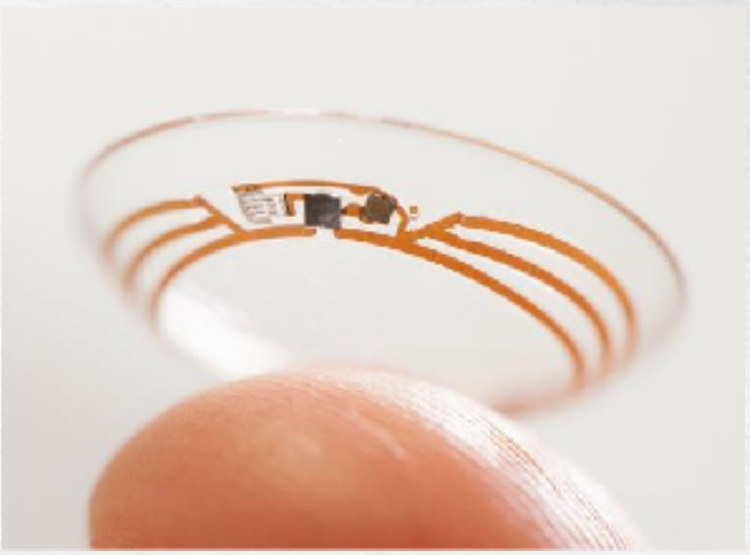
EMBODIED INTERACTIONS WITH ROBOTIC AGENTS

Leila Takayama

UCSC Psychology

October 9, 2017



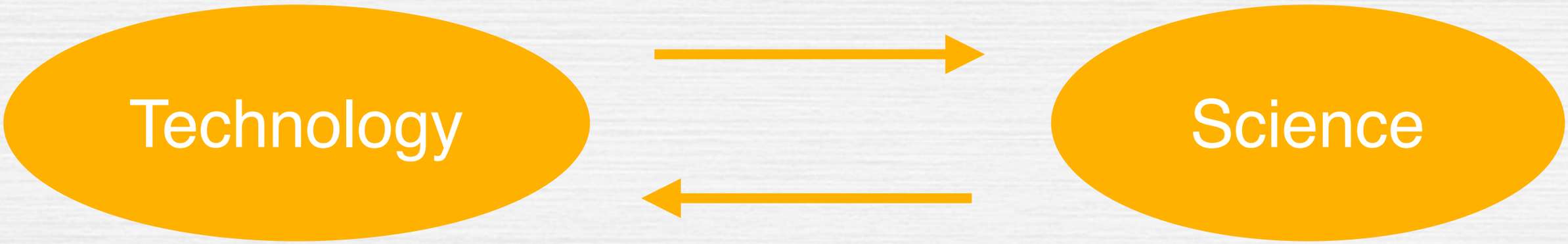
Leila Takayama

senior user experience researcher

RESEARCH & DEVELOPMENT

Empirical technologies

Technically justified science



Systematic technology

Pure science

Polanyi

EMBODIED VIRTUALITY

"The process of drawing computers out of their electronic shells"

- MARK WEISER (1991)

HUMAN-COMPUTER INTERACTION

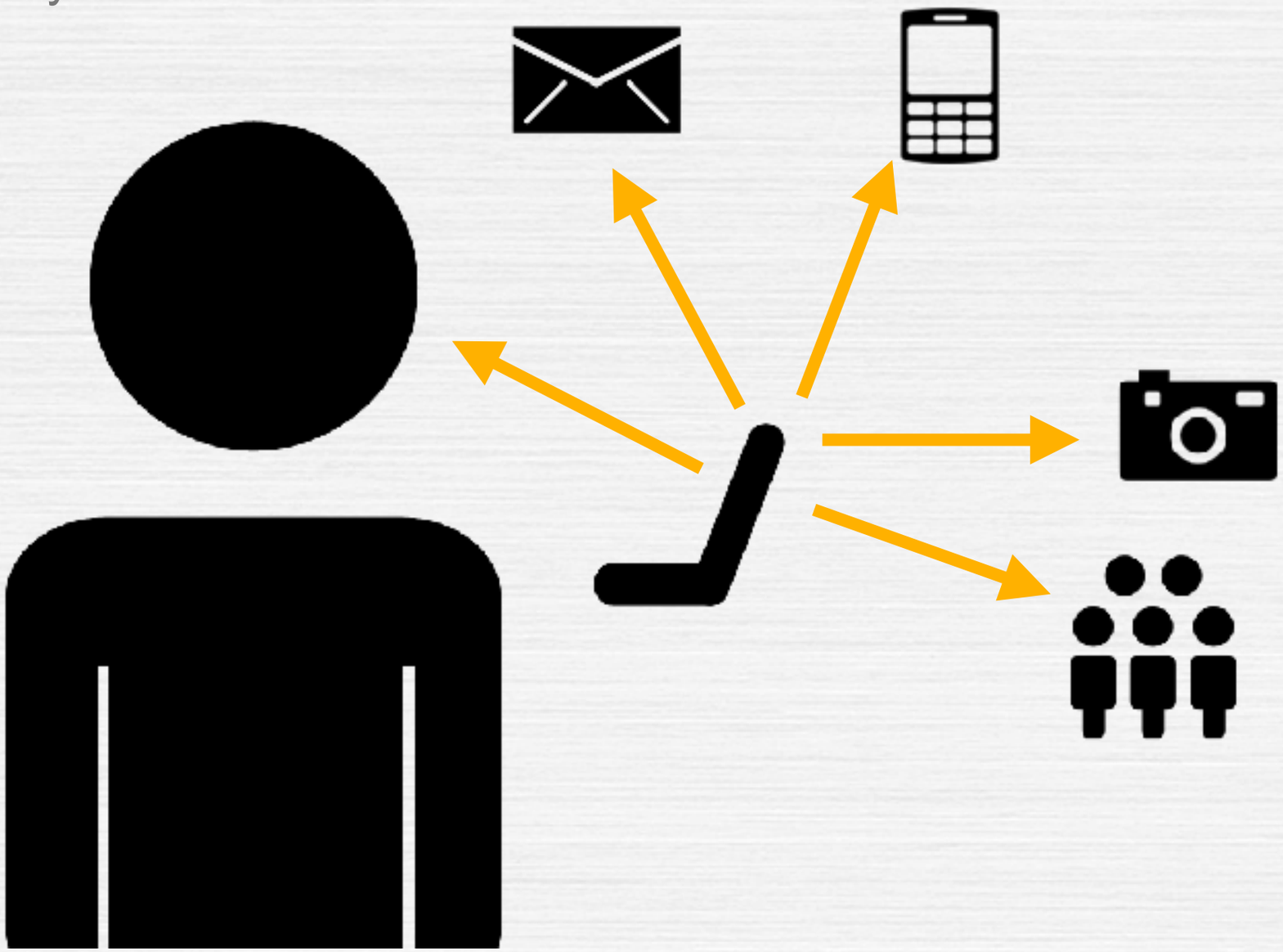
EMBODIED VIRTUALITY

virtual reality

HUMAN-COMPUTER INTERACTION

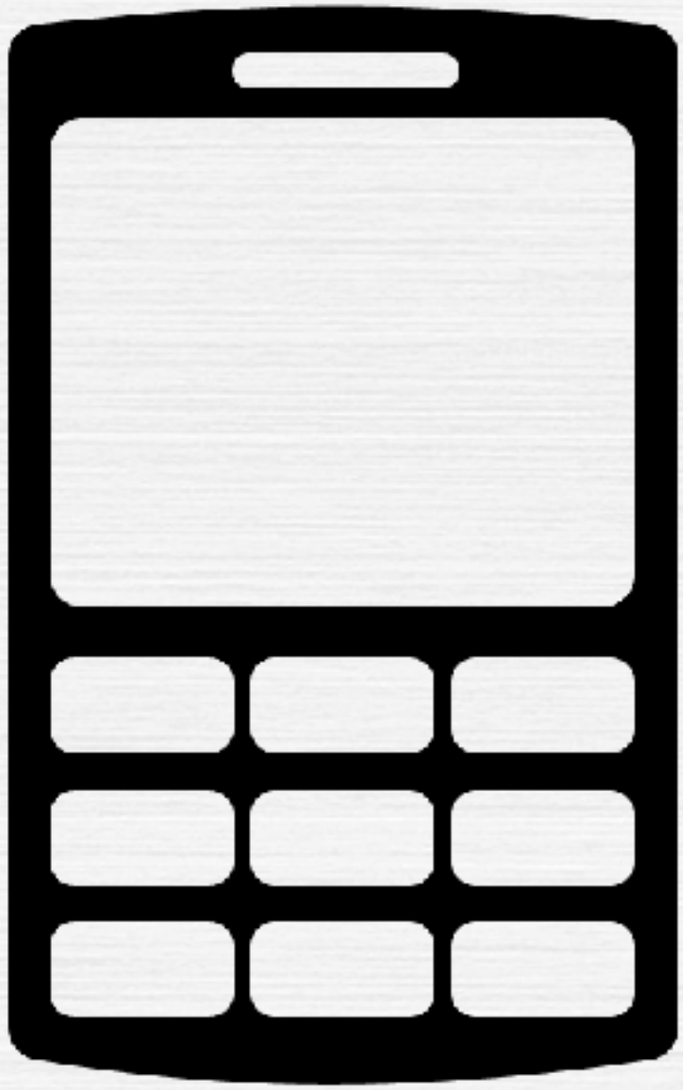
EMBODIED VIRTUALITY

not virtual reality



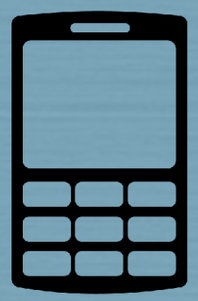
HUMAN-COMPUTER INTERACTION

JUST A TOOL?

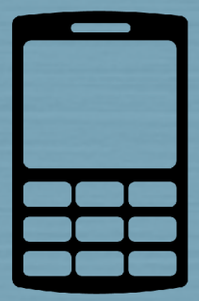


MAKING SENSE OF

APPARENT AGENCY



Invisible
-in-use



Just
a tool

Agentic
object

Takayama, L. (2011). Perspectives on agency: Interacting with and through personal robots. In Zacarias, M. & Oliveira, J. V. (Eds.), Human-Computer Interaction: The Agency Perspective. Springer.

MAKING SENSE OF

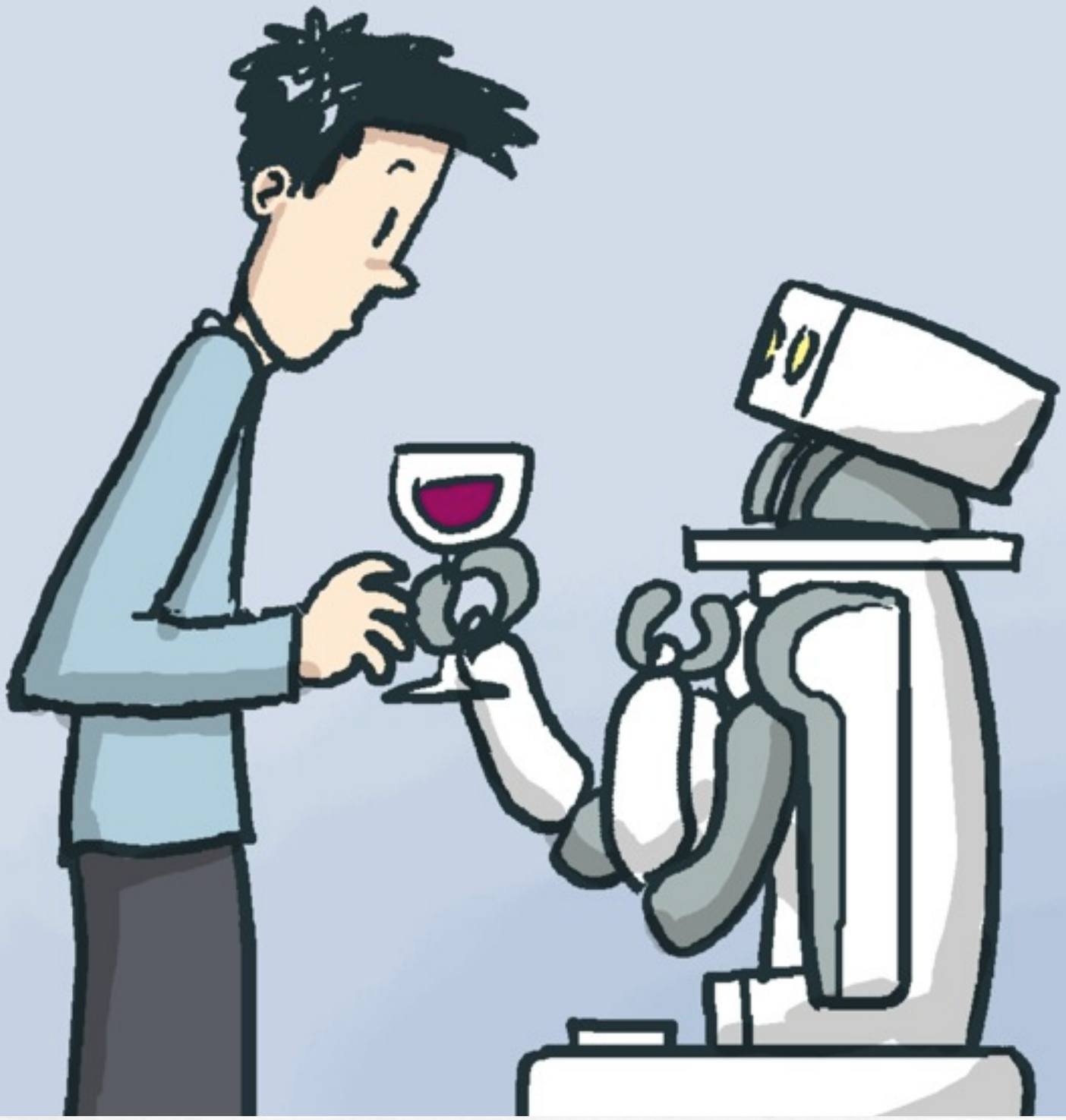
APPARENT AGENCY

Interacting through

Controlling

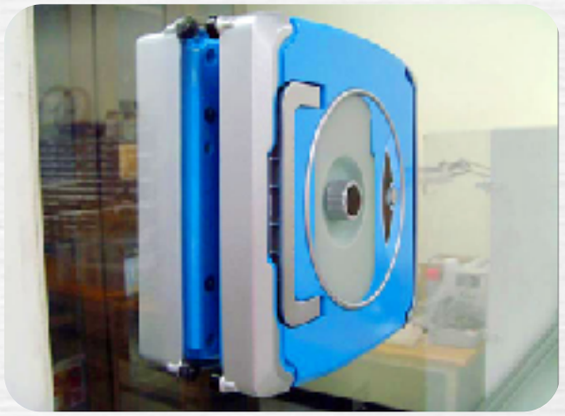
Interacting with

Takayama, L. (2011). Perspectives on agency: Interacting with and through personal robots. In Zacarias, M. & Oliveira, J. V. (Eds.), Human-Computer Interaction: The Agency Perspective. Springer.



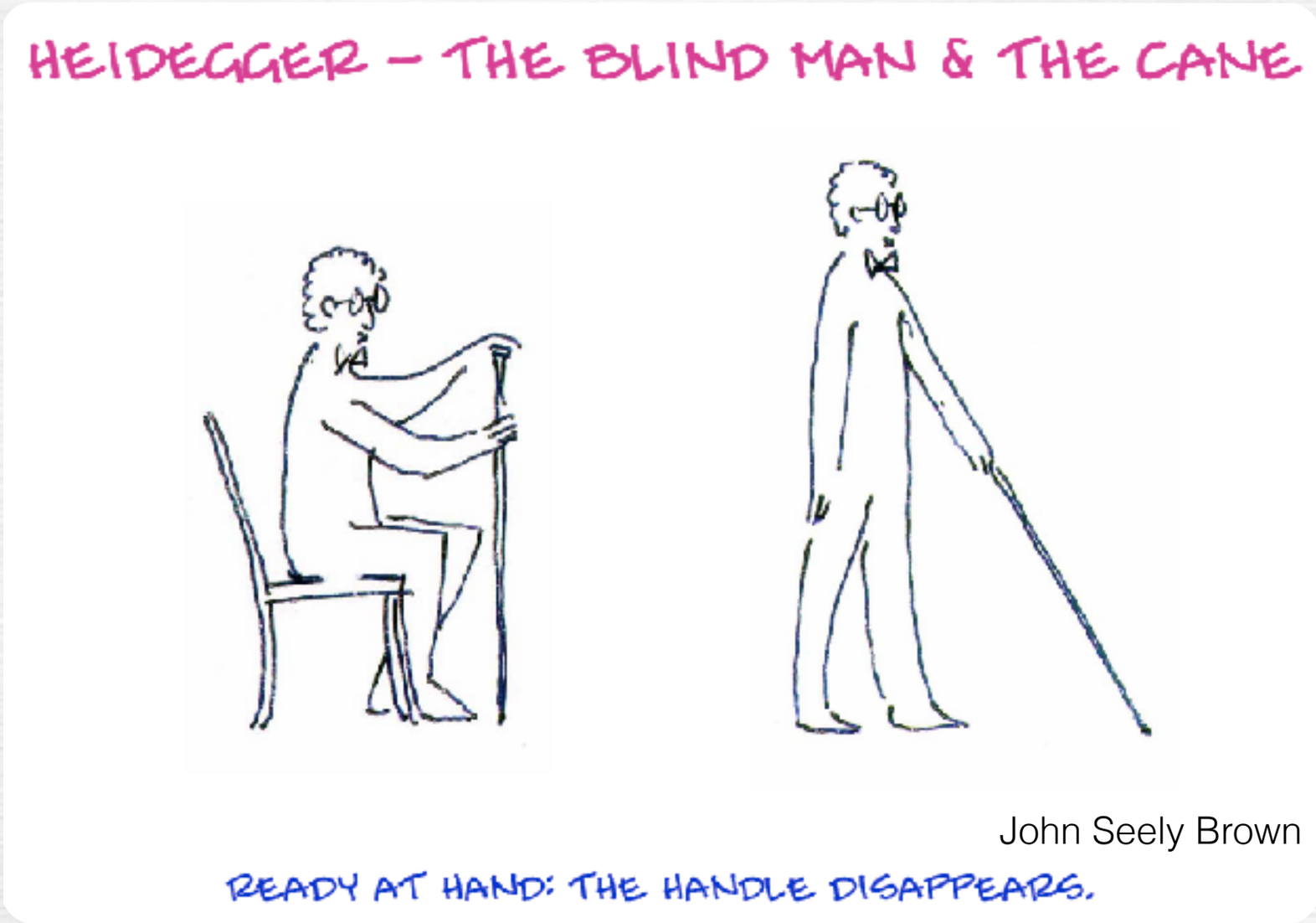
HUMAN-COMPUTER INTERACTION

AGENTIC OBJECTS



HUMAN-COMPUTER INTERACTION

INVISIBLE IN USE

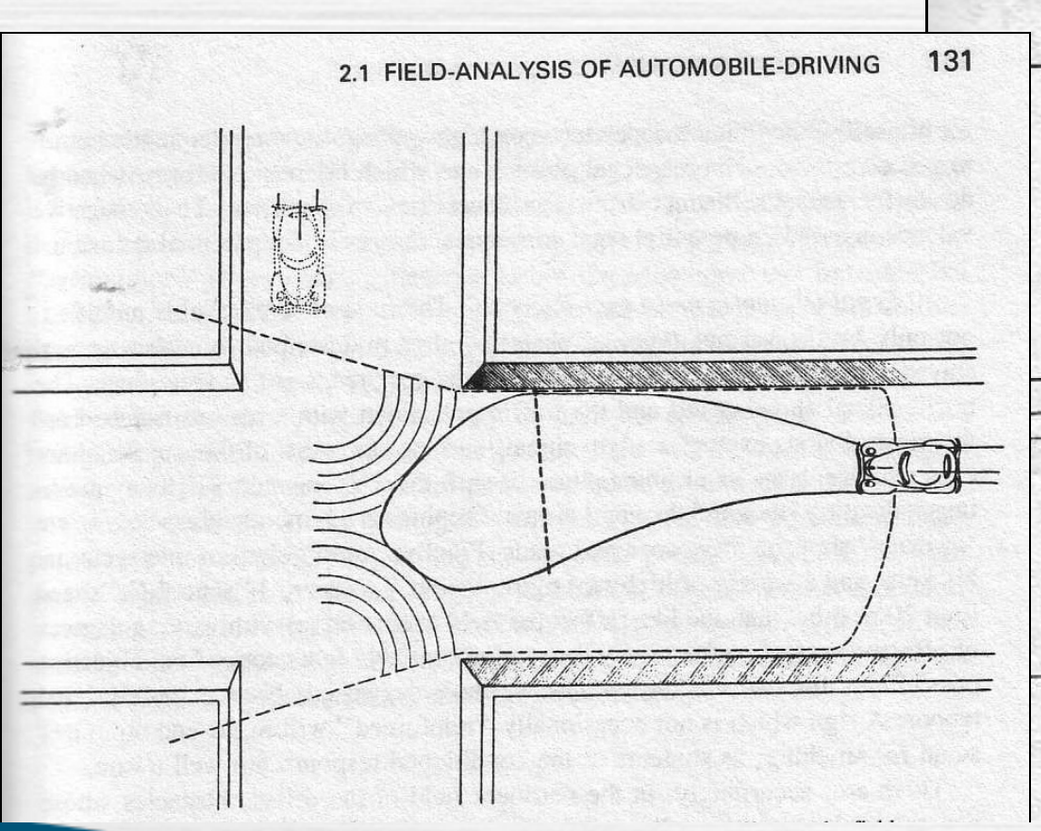


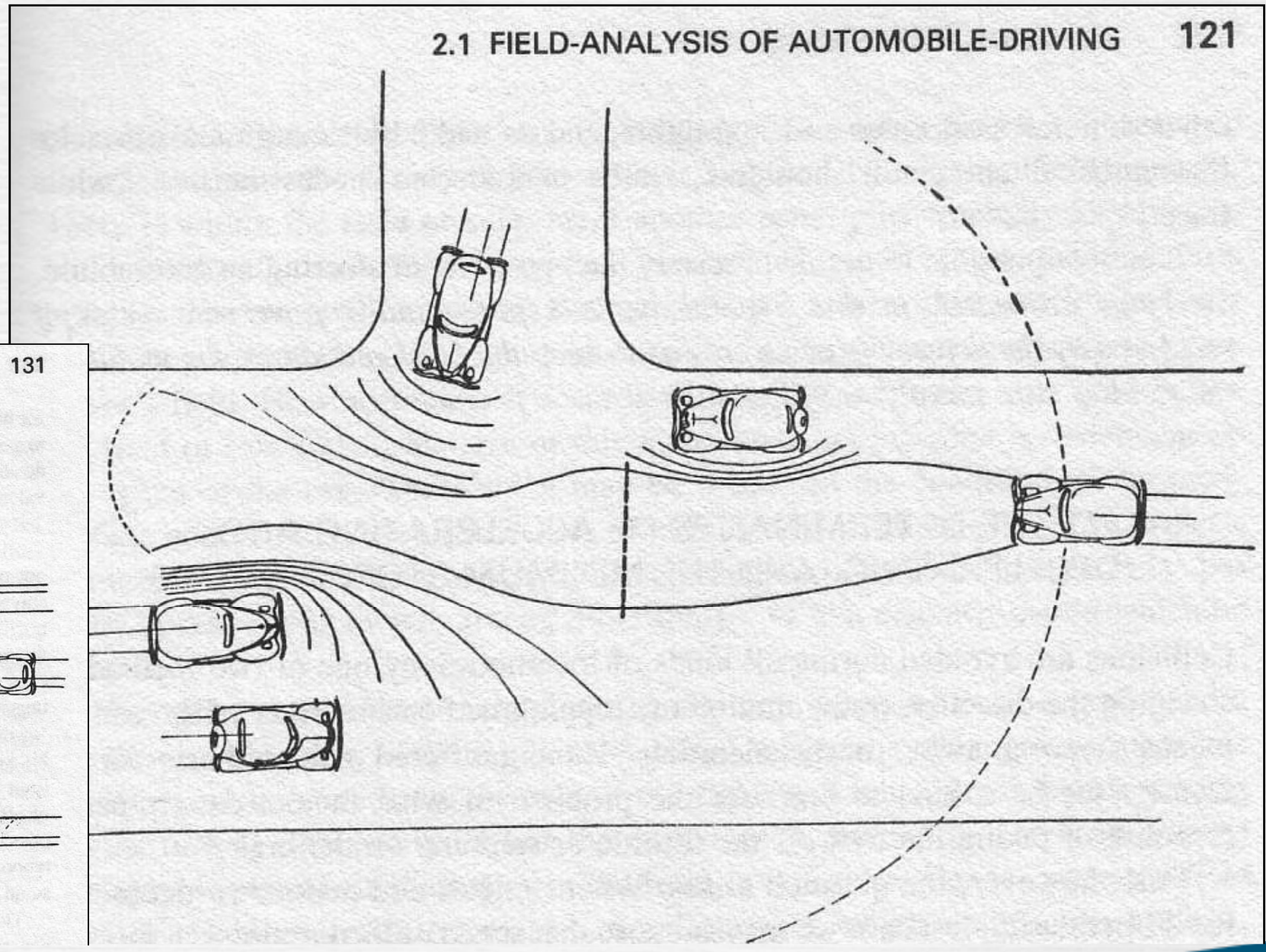
Hubert Dreyfuss
Terry Winograd
Fernando Flores
Martin Heidegger
Hans Georg Gadamer
Michael Polanyi
Merleau-Ponty

HUMAN-COMPUTER INTERACTION

INVISIBLE IN USE

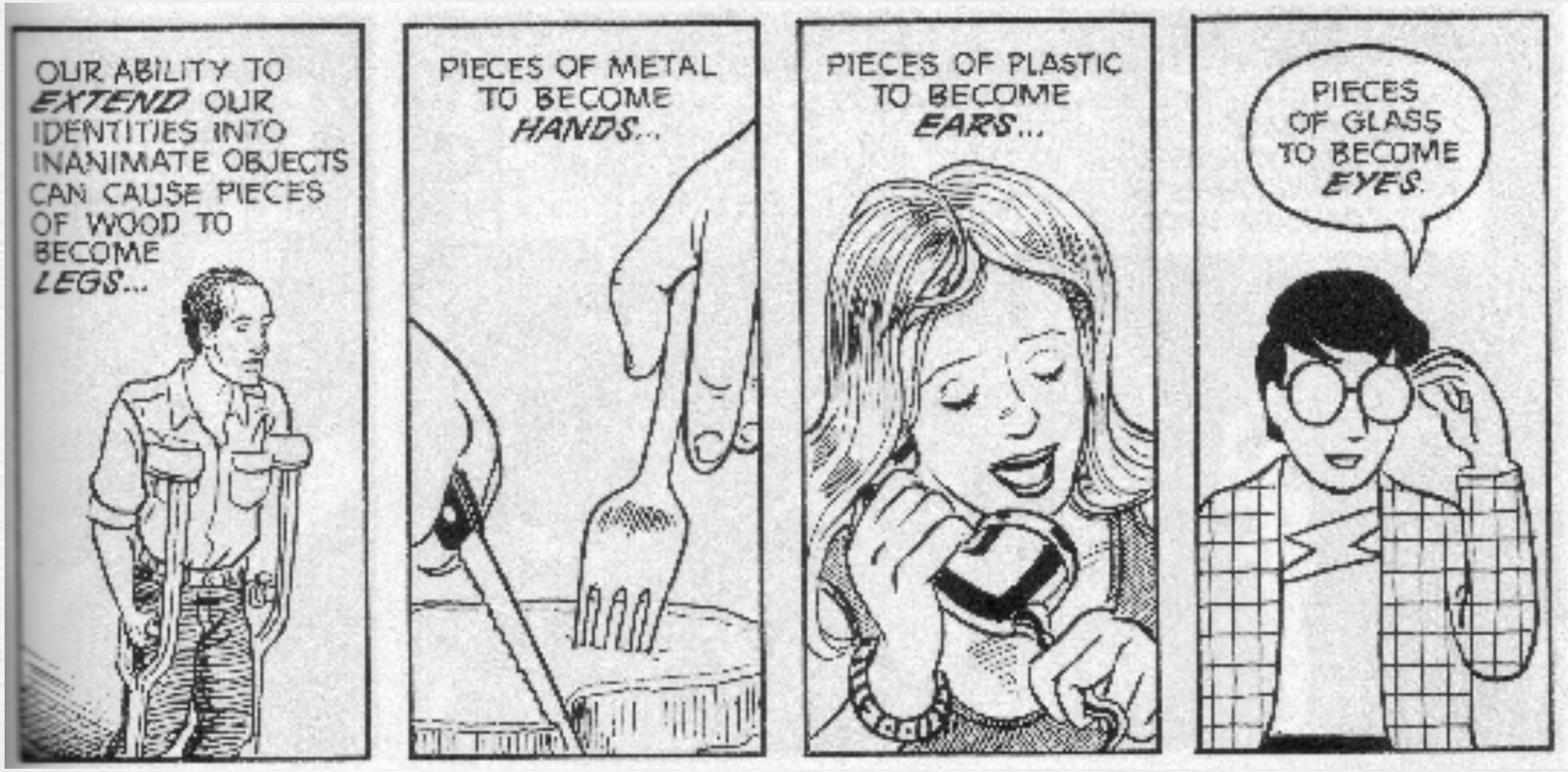
James Gibson





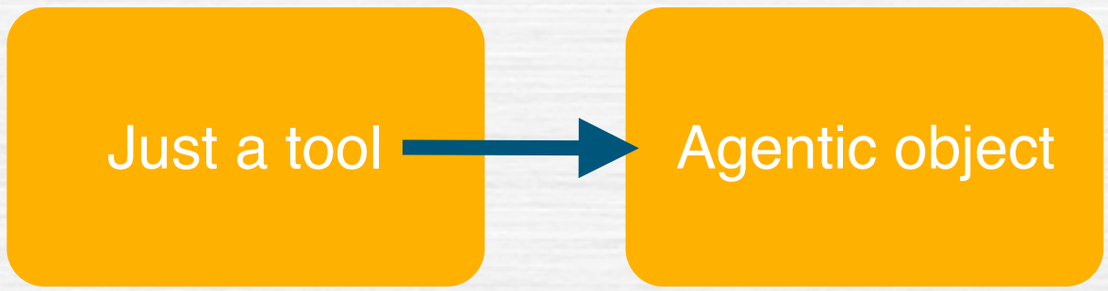
HUMAN-COMPUTER INTERACTION

INVISIBLE IN USE



McCloud

INTERACTING WITH AGENTIC OBJECTS



Willow Garage


PR2

INTERACTING WITH

ROBOTIC AGENTS

Question:
How does expectation setting influence people's perspectives on personal robots?

Paepcke, S. & Takayama, L. (2010). Judging a bot by its cover: An experiment on expectation setting for personal robots. Proceedings of Human-Robot Interaction Conference: HRI 2010, Osaka, JP, 45-52.

INTERACTING WITH

ROBOTIC AGENTS

12
ABC
14

Confirmation bias

Paepcke, S. & Takayama, L. (2010). Judging a bot by its cover: An experiment on expectation setting for personal robots. Proceedings of Human-Robot Interaction Conference: HRI 2010, Osaka, JP, 45-52.

INTERACTING WITH

ROBOTIC AGENTS

Self-fulfilling prophecies

Paepcke, S. & Takayama, L. (2010). Judging a bot by its cover: An experiment on expectation setting for personal robots. Proceedings of Human-Robot Interaction Conference: HRI 2010, Osaka, JP, 45-52.

INTERACTING WITH

ROBOTIC AGENTS

Under promise and over deliver

"Customers unfailingly prefer less aggressive promising... that are honored" (Peters)

"**Aibo** means partner or pal"

"**Pleo** dinosaur can change his mind and his mood, just as you do"

Paepcke, S. & Takayama, L. (2010). Judging a bot by its cover: An experiment on expectation setting for personal robots. Proceedings of Human-Robot Interaction Conference: HRI 2010, Osaka, JP, 45-52.

INTERACTING WITH

ROBOTIC AGENTS

This robot has many people-sensing and interactive capabilities.

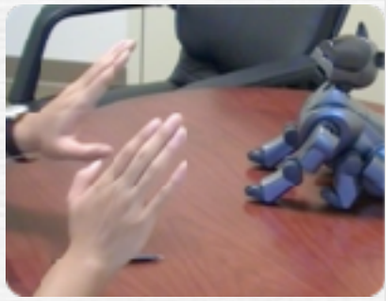
vs.

This robot does not have many people-sensing and interactive capabilities.

Paepcke, S. & Takayama, L. (2010). Judging a bot by its cover: An experiment on expectation setting for personal robots. Proceedings of Human-Robot Interaction Conference: HRI 2010, Osaka, JP, 45-52.

INTERACTING WITH

ROBOTIC AGENTS

N=24	Expectation Setting: High	Expectation Setting: Low
Robot Type: 	3 women, 3 men	3 women, 3 men
Robot Type: 	3 women, 3 men	3 women, 3 men

Paepcke, S. & Takayama, L. (2010). Judging a bot by its cover: An experiment on expectation setting for personal robots. Proceedings of Human-Robot Interaction Conference: HRI 2010, Osaka, JP, 45-52.

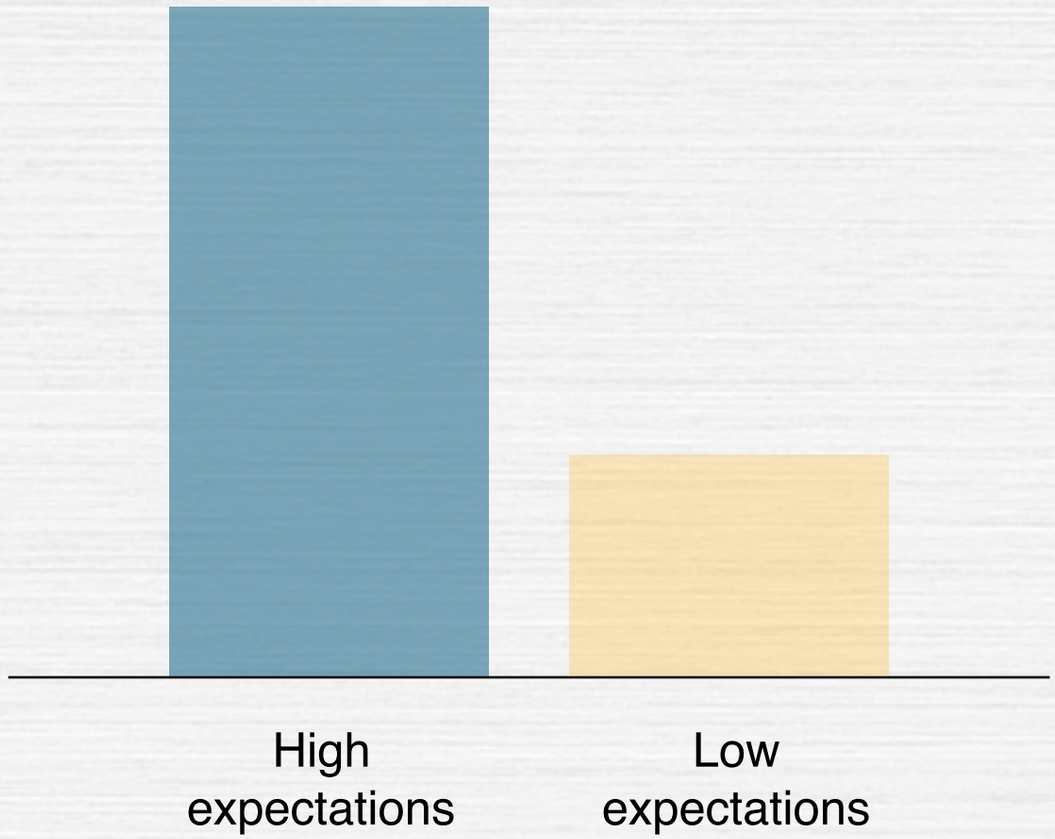
INTERACTING WITH

ROBOTIC AGENTS

Hypothesis

H1

Beliefs about robot capabilities
before interacting with robot



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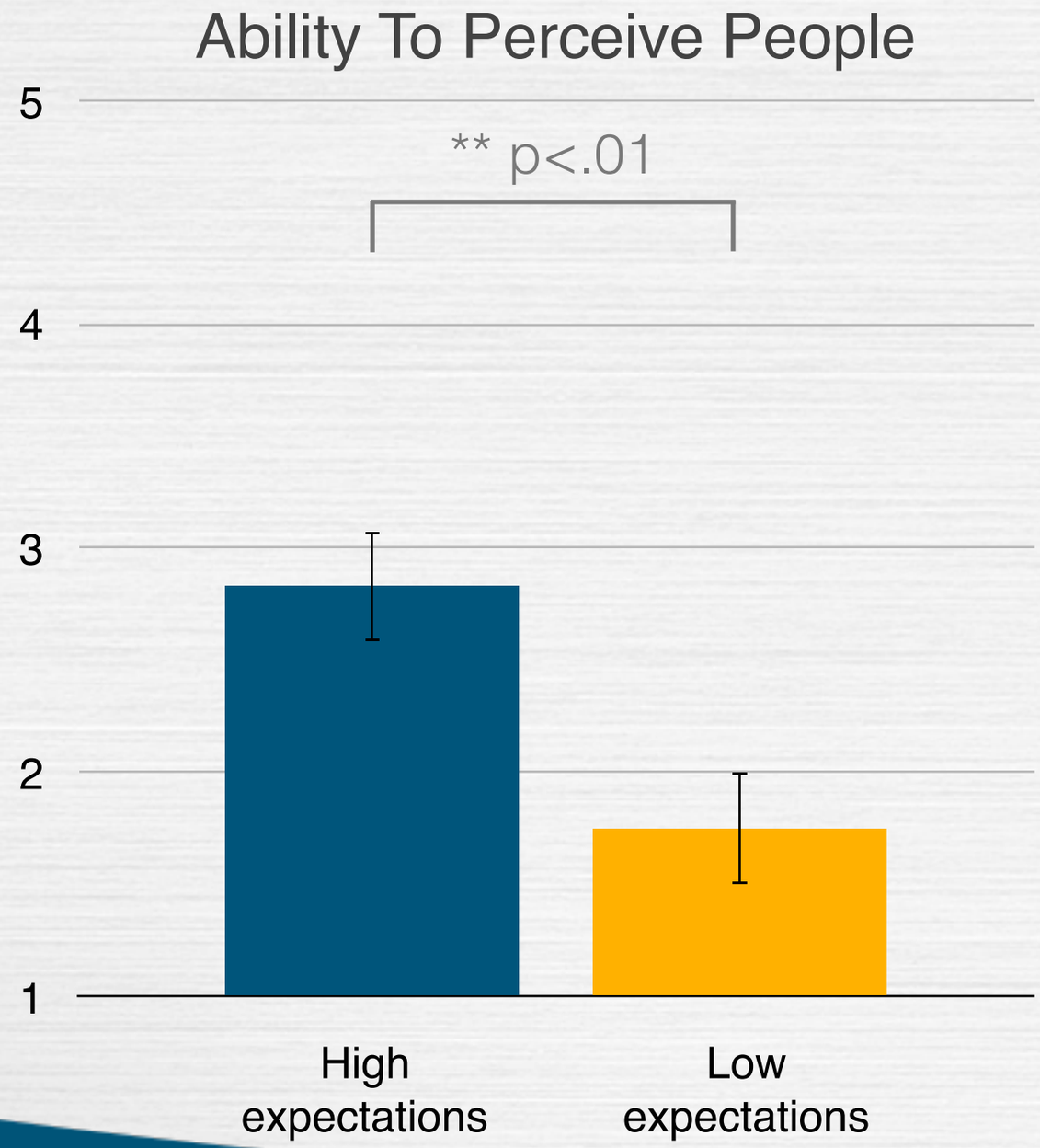
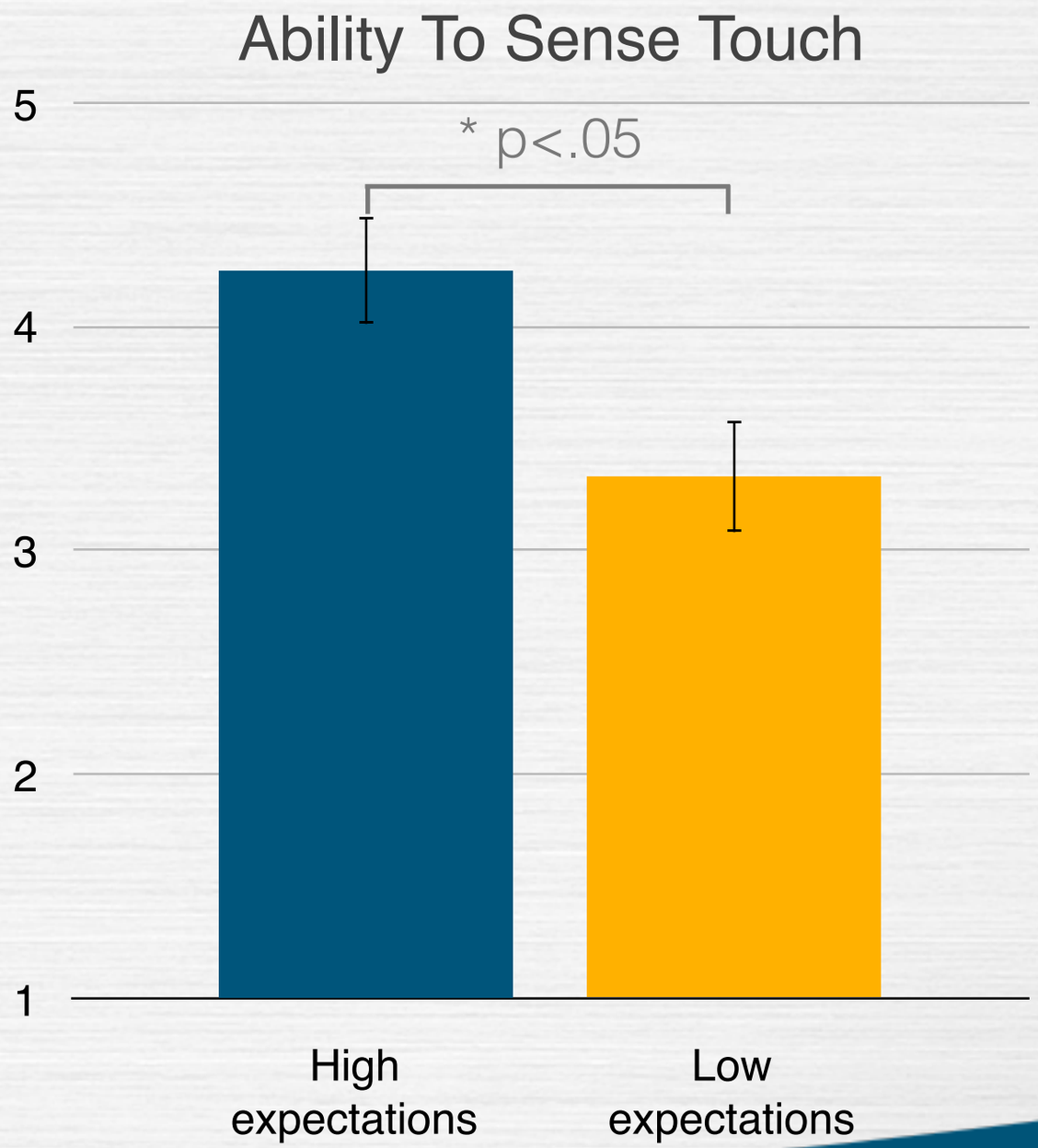
INTERACTING WITH

ROBOTIC AGENTS

Results





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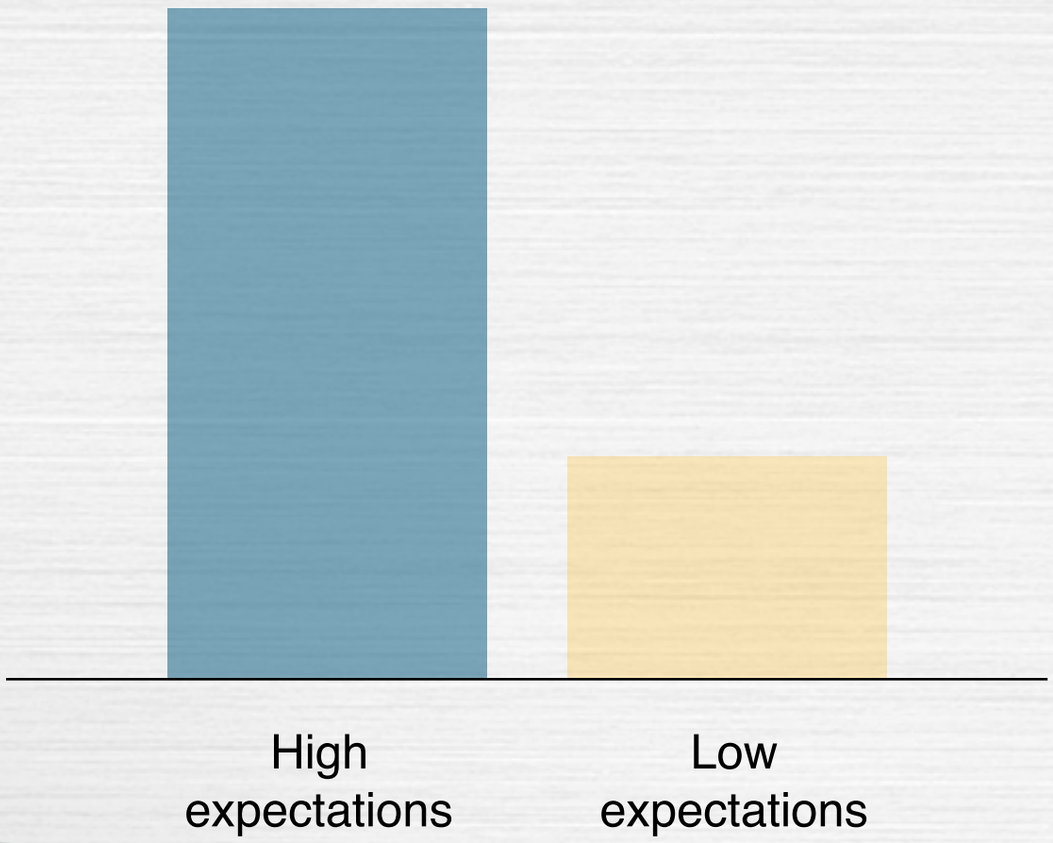
INTERACTING WITH

ROBOTIC AGENTS

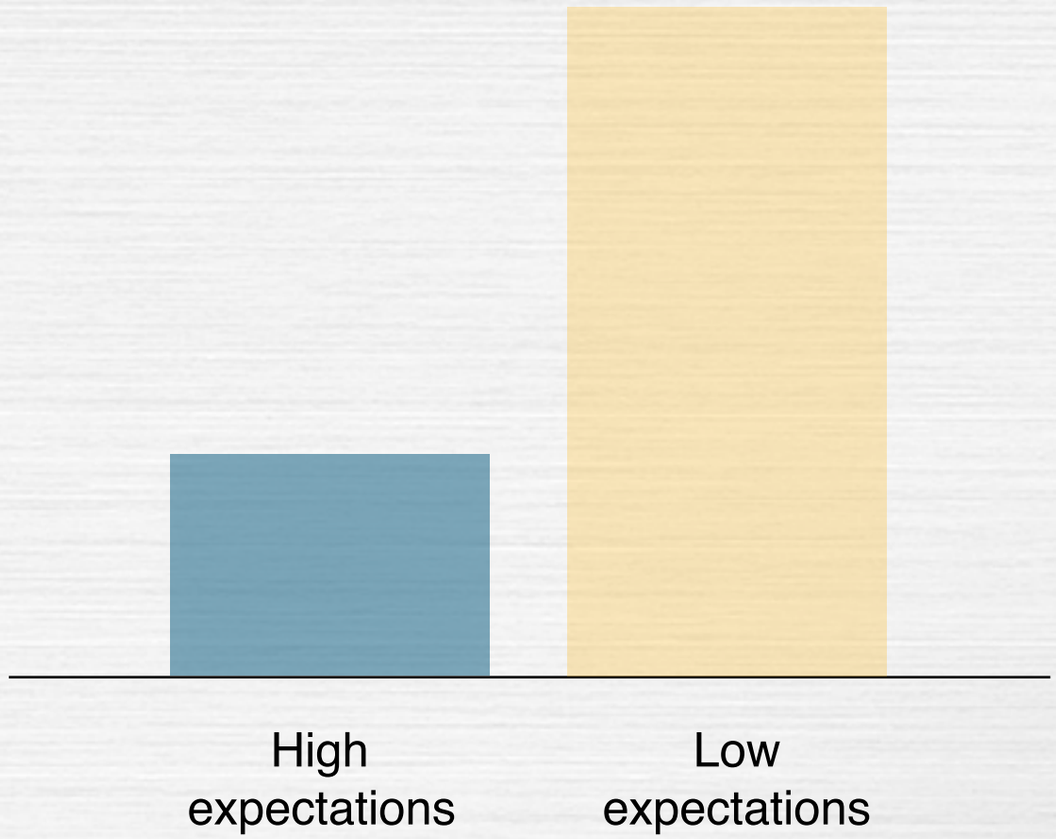
Competing Hypotheses

H2a (Psych theories)
Beliefs about robot capabilities
after interacting with robot



vs.

H2b (Business theory)
Beliefs about robot capabilities
after interacting with robot



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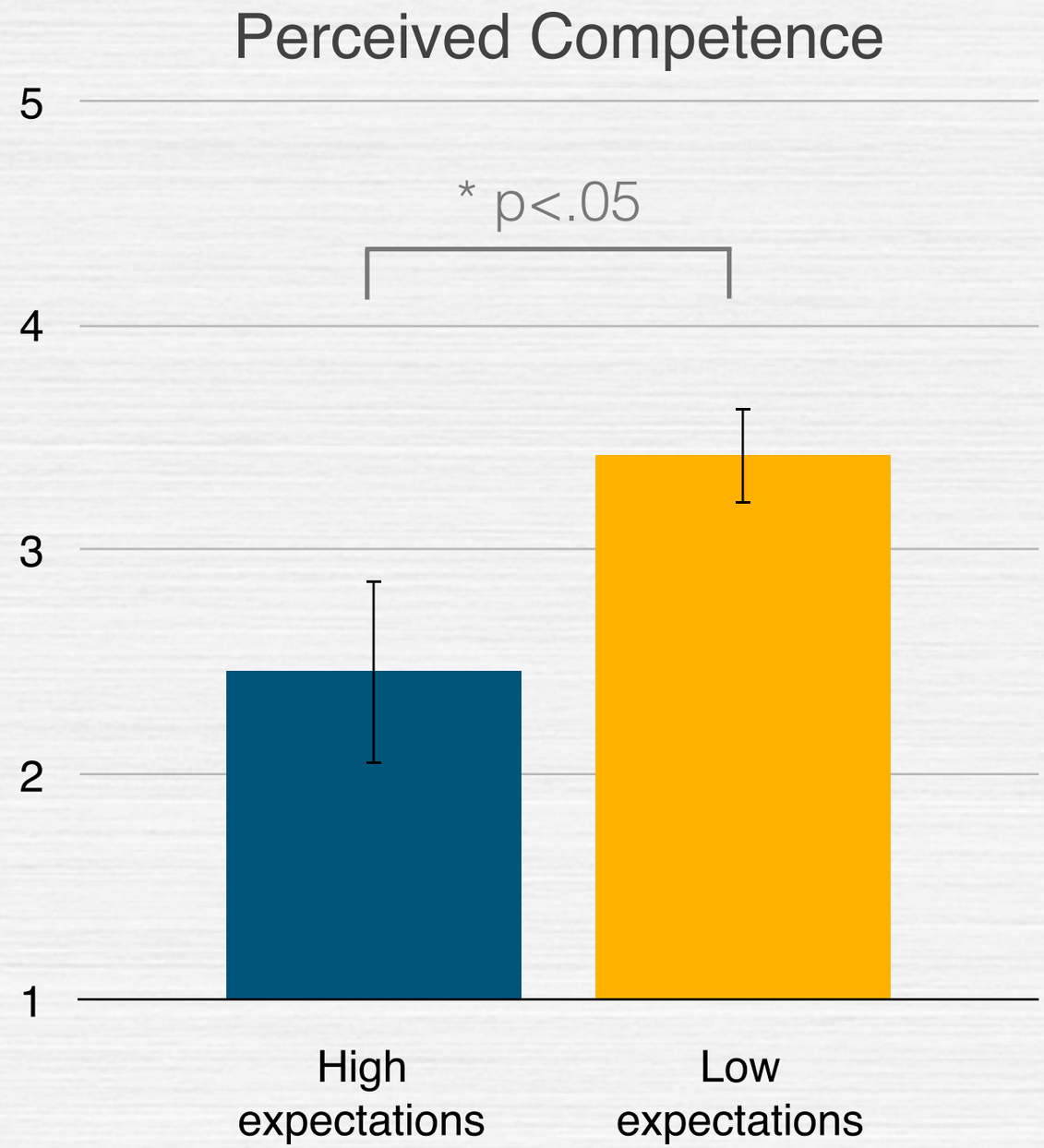
INTERACTING WITH

ROBOTIC AGENTS

Results



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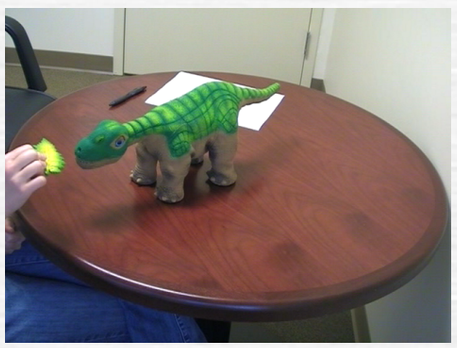
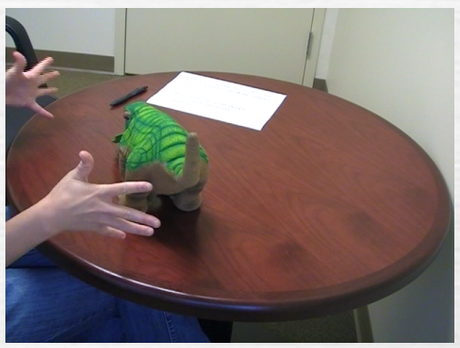
INTERACTING WITH

ROBOTIC AGENTS

“Do you want this leaf?”
Pleo makes a sound.
“Leaf?”
She puts the leaf in Pleo’s mouth. Pleo leans toward the leaf.
“Oh, that’s cool. It seems to understand leaf.”
Pleo makes a sound.
“What about tree? Cookie?”





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INTERACTING WITH

ROBOTIC AGENTS

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INTERACTING WITH

ROBOTIC AGENTS

Implications for design & theory

Robot marketing

Don’t over promise

Robotic facework

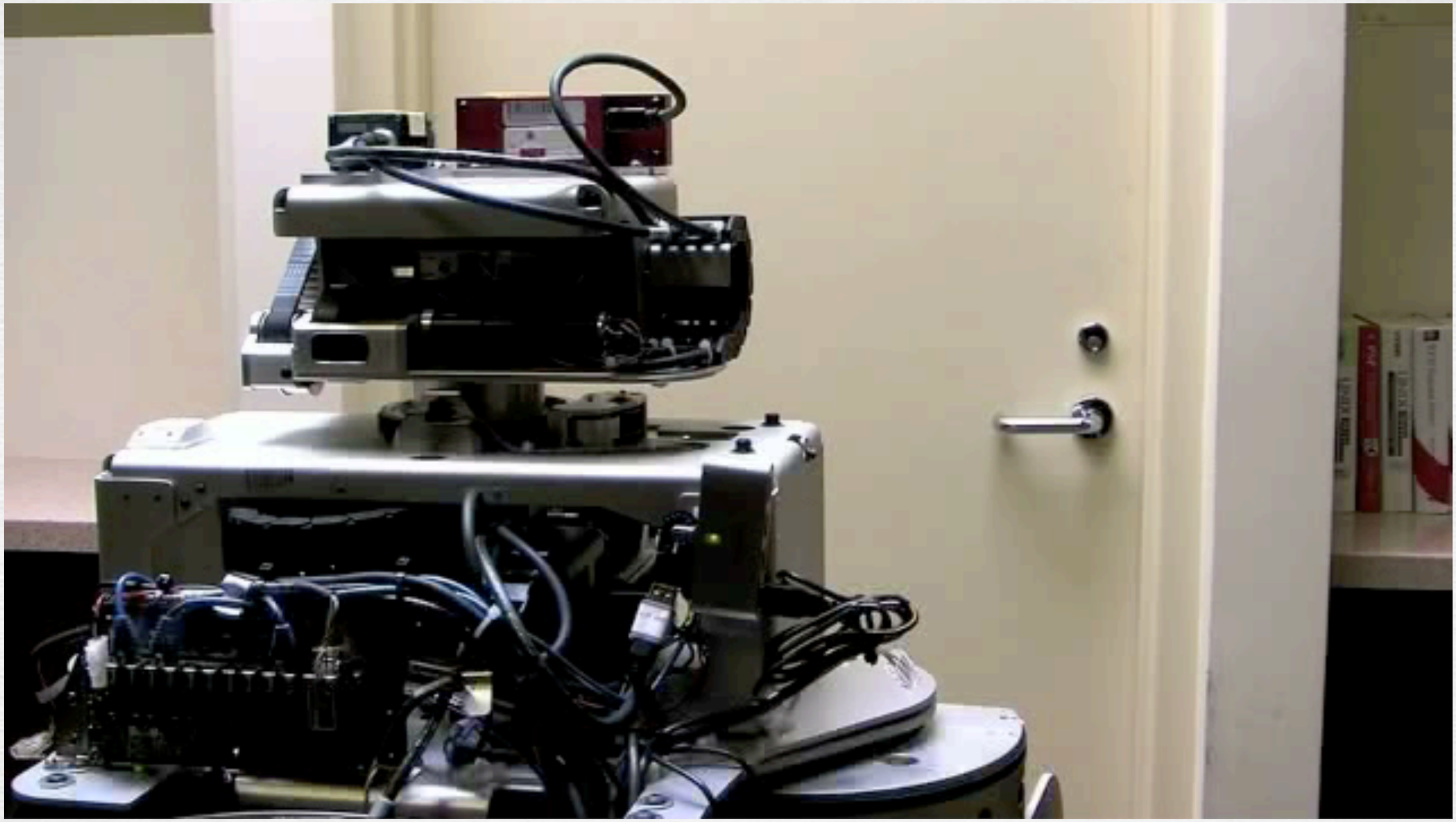
Setting expectations matters

Paepcke, S. & Takayama, L. (2010). Judging a bot by its cover: An experiment on expectation setting for personal robots. Proceedings of Human-Robot Interaction Conference: HRI 2010, Osaka, JP, 45-52.

INTERACTING WITH AGENTIC OBJECTS

ROBOT READABILITY

Agentic object



Takayama, L., Dooley, D., & Ju, W. (2011). Expressing thought: Improving robot readability with animation principles. Proceedings of Human-Robot Interaction Conference: HRI 2011, Lausanne, CH, 69-76.

ROBOT READABILITY

Questions:

(How) can we use animation principles to systematically improve the readability of robot behaviors? How do people respond to robot behaviors that are goal-oriented (as opposed to purely task-oriented)?

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INTERACTING WITH AGENTIC OBJECTS

ROBOT READABILITY

This is video 4 of 8

Please play the video clip showing a robot engaged in action. Then, answer the questions about the video clip.

1. Please describe what you see happening in this clip.

2a. Please describe what you think the robot is trying to do in the video.

2b. How confident do you feel about your answer to question 2a?

Not Sure At All ○ ○ ○ ○ ○ ○ ○ Absolutely Sure

3. If you were the person depicted with the robot in the clip, what would you do immediately after seing the robot do what happened in the clip?

4. Please rate the robot in the video based on the following parameters:

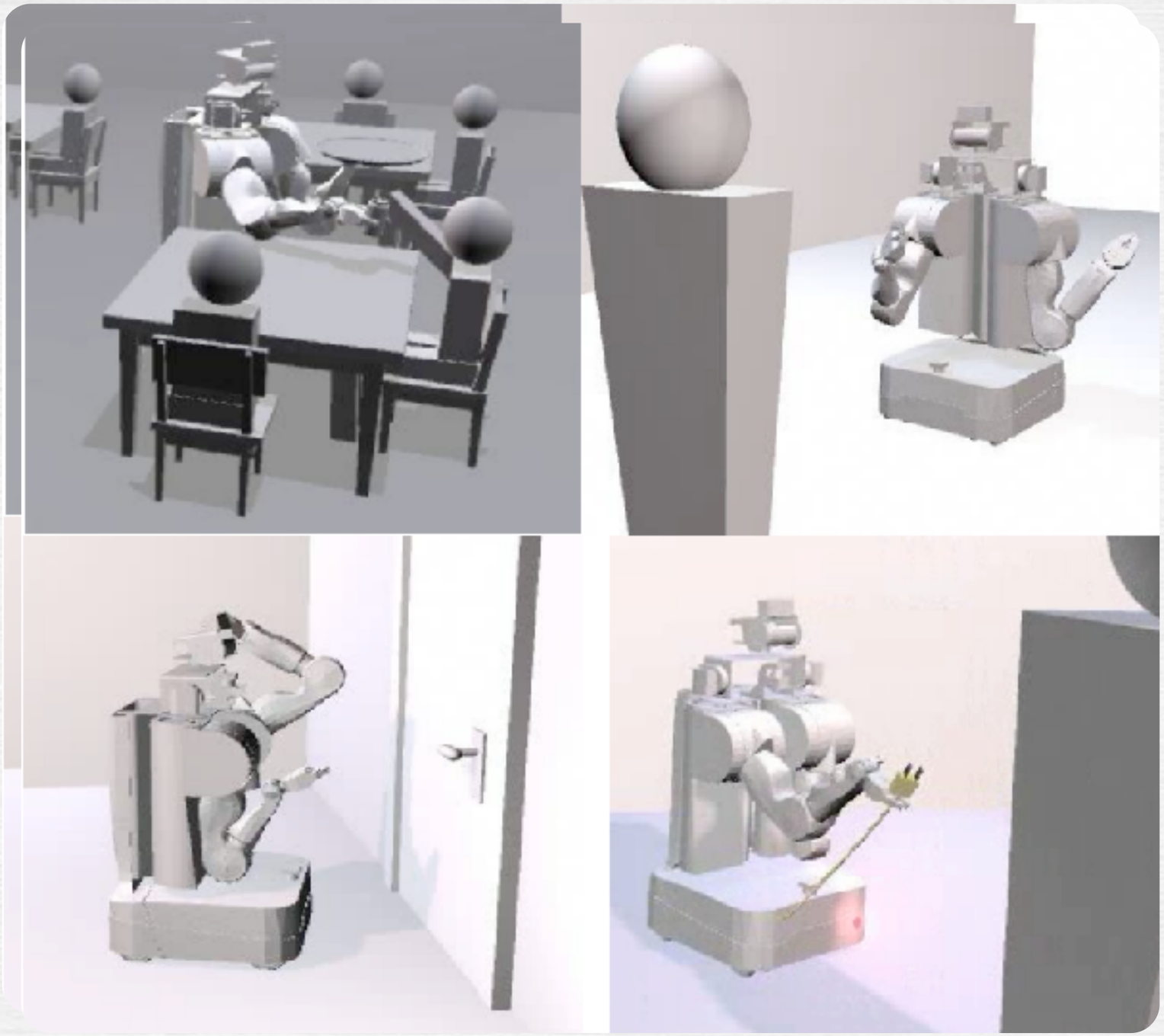
Unappealing	○	○	○	○	○	○	○	Very Appealing
Unintelligent	○	○	○	○	○	○	○	Very Intelligent
Incompetent	○	○	○	○	○	○	○	Very Competent
Subordinate to you	○	○	○	○	○	○	○	Superior to you
Very unsafe	○	○	○	○	○	○	○	Very safe
Not approachable	○	○	○	○	○	○	○	Very approachable
Not confident	○	○	○	○	○	○	○	Very confident

Next

Takayama, L., Dooley, D., & Ju, W. (2011). Expressing thought: Improving robot readability with animation principles. Proceedings of Human-Robot Interaction Conference: HRI 2011, Lausanne, CH, 69-76.

INTERACTING WITH AGENTIC OBJECTS

ROBOT READABILITY



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INTERACTING WITH AGENTIC OBJECTS

ROBOT READABILITY

N=273		Showing forethought: None	Showing forethought: Forethought
Showing reaction	None	50% success 50% failure on task	50% success 50% failure on task
	Reaction	50% success 50% failure on task	50% success 50% failure on task

Takayama, L., Dooley, D., & Ju, W. (2011). Expressing thought: Improving robot readability with animation principles. Proceedings of Human-Robot Interaction Conference: HRI 2011, Lausanne, CH, 69-76.

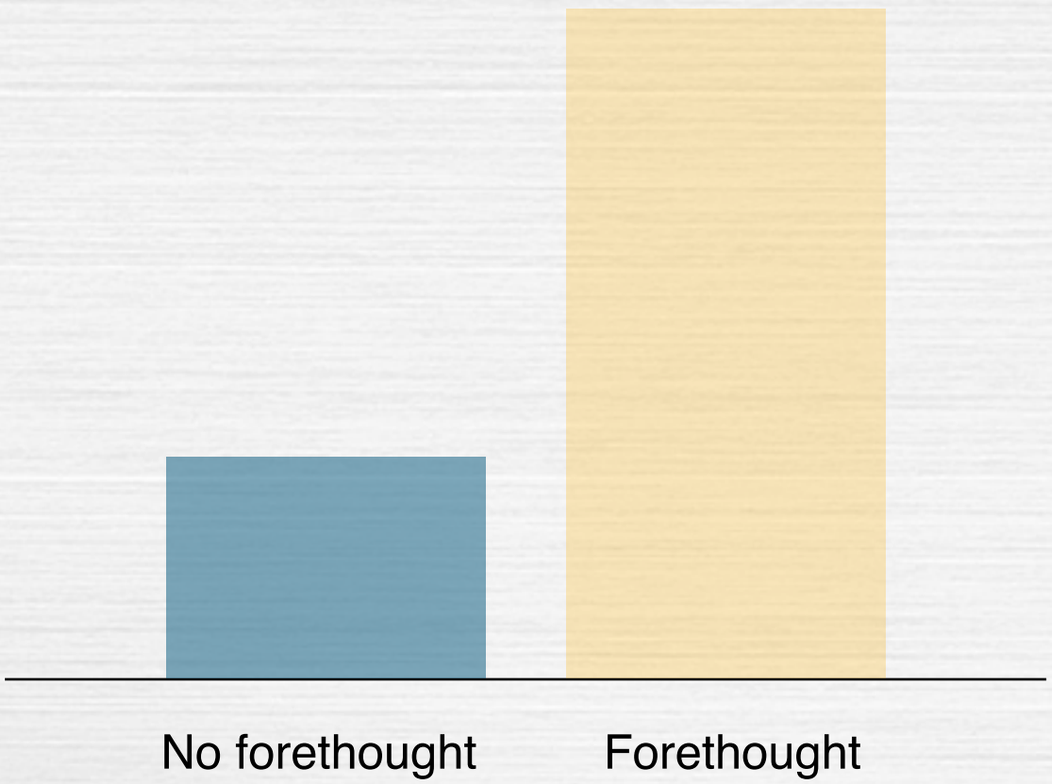
INTERACTING WITH AGENTIC OBJECTS

ROBOT READABILITY

Hypotheses

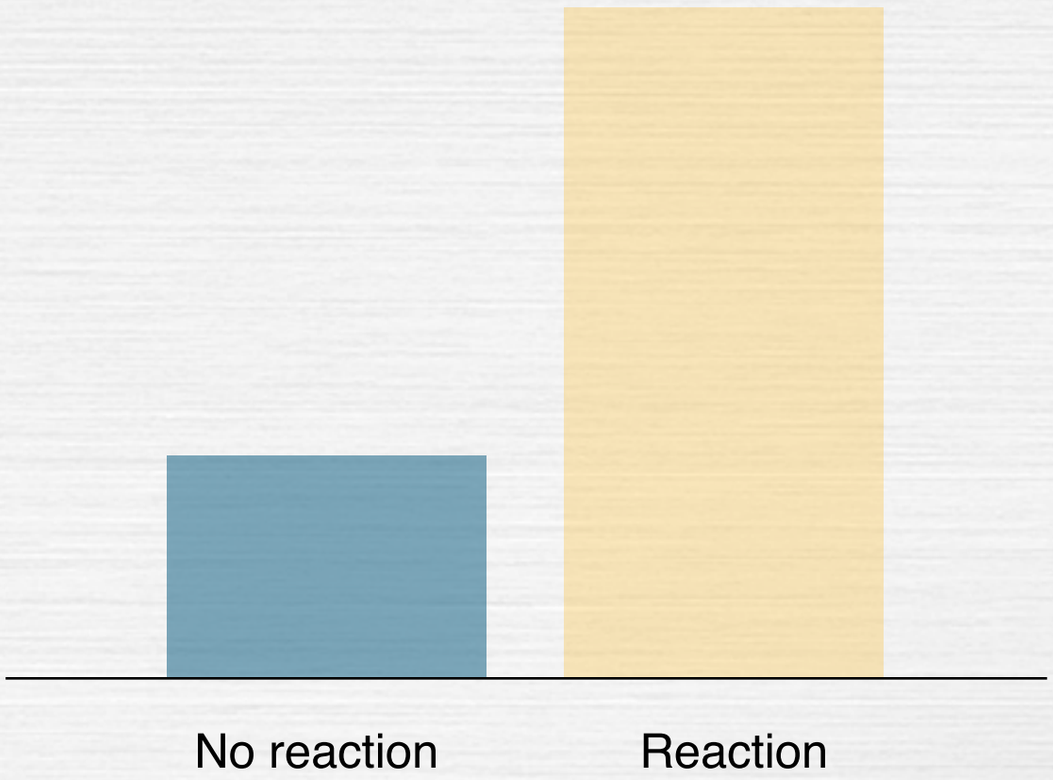
H1

More positive responses to showing forethought



H2

More positive responses to showing reactions



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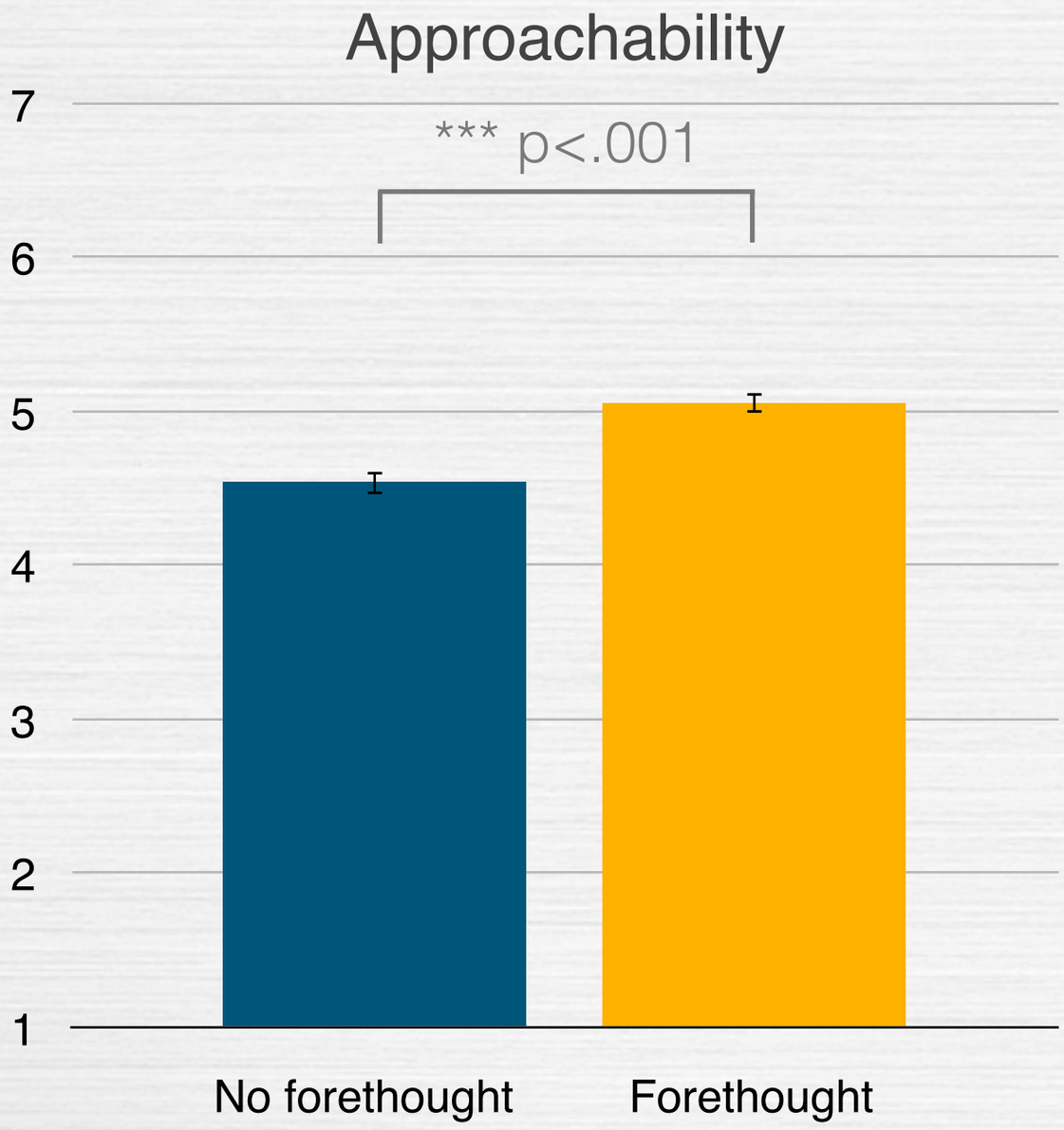
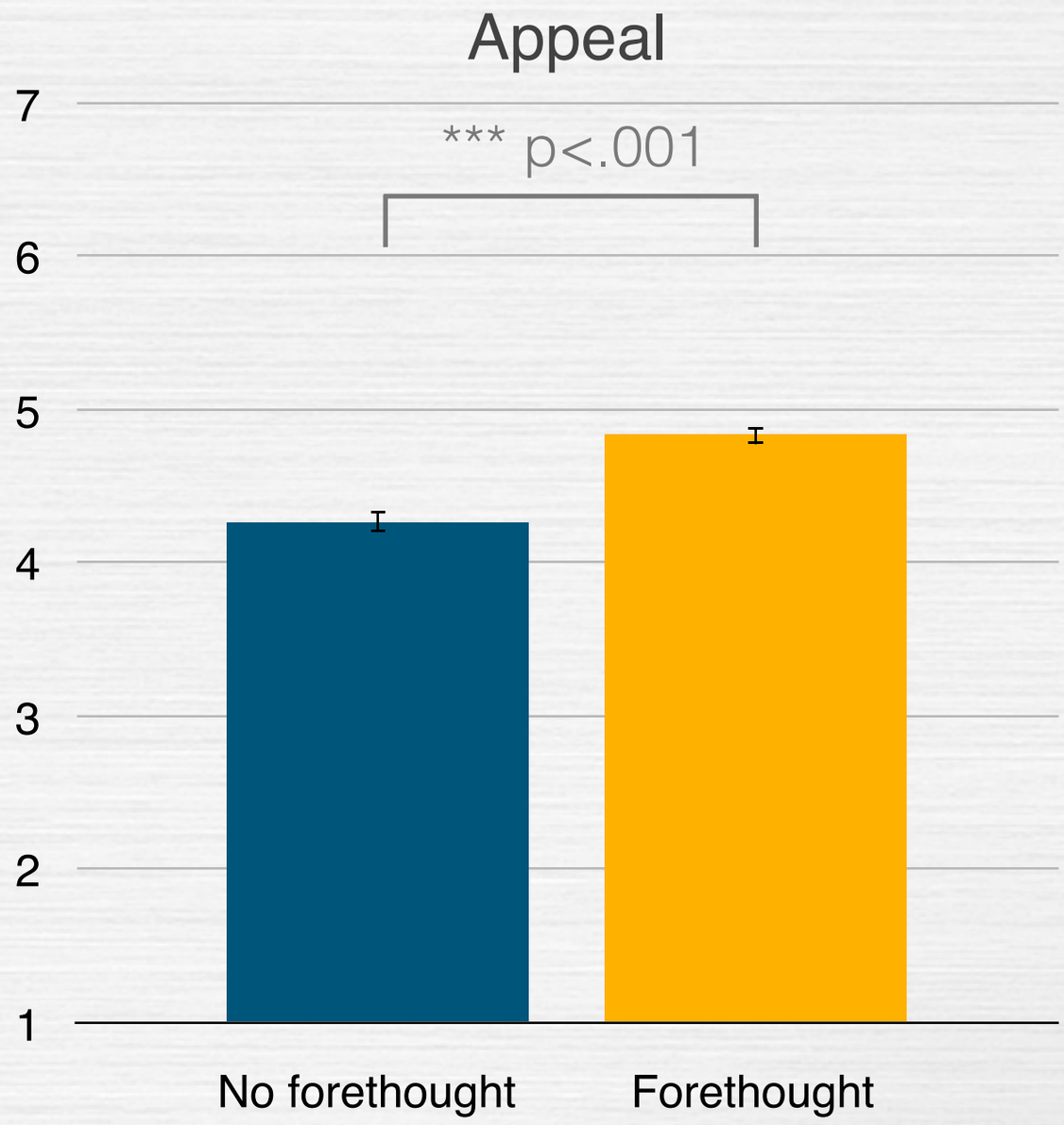
INTERACTING WITH AGENTIC OBJECTS

ROBOT READABILITY

Results



$F(1,262)=12.48$, $p<.001$, $\eta^2=.03$



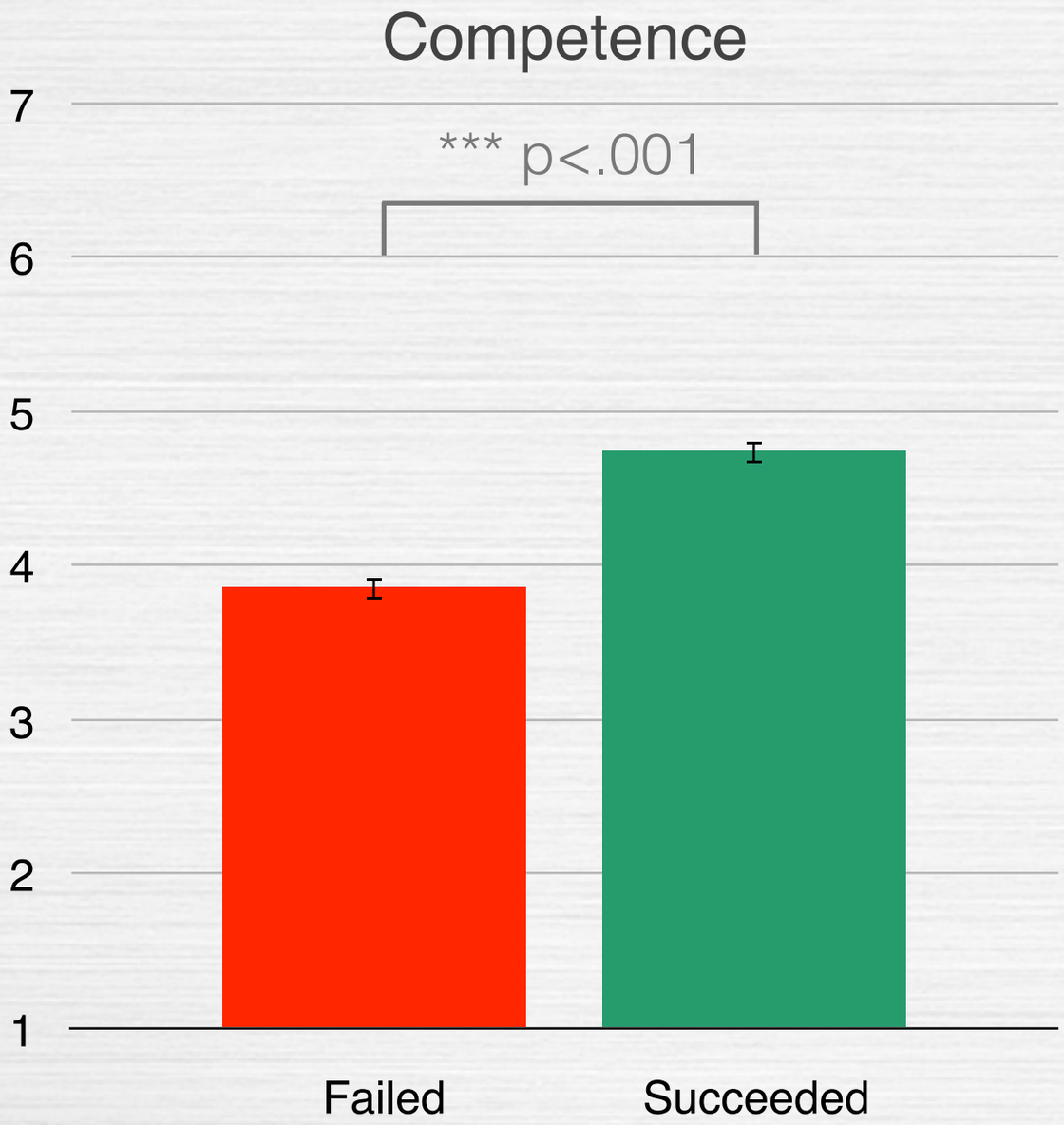
$F(1,265)=16.51$, $p<.001$, $\eta^2=.03$

Takayama, L., Dooley, D., & Ju, W. (2011). Expressing thought: Improving robot readability with animation principles. Proceedings of Human-Robot Interaction Conference: HRI 2011, Lausanne, CH, 69-76.

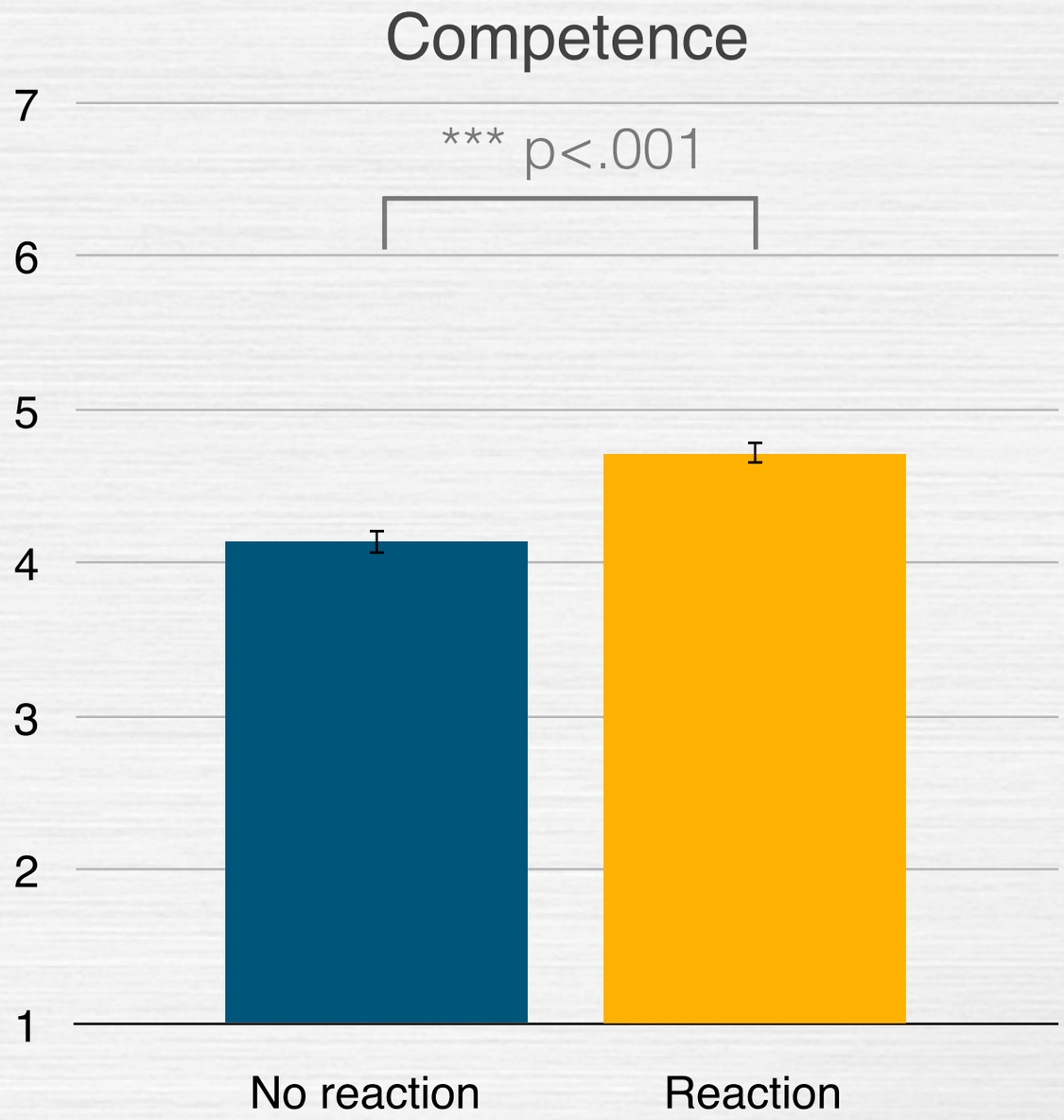
INTERACTING WITH AGENTIC OBJECTS

ROBOT READABILITY

Results



$F(1,797)=135.71$, $p<.001$



$F(1,267)=28.12$, $p<.001$

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INTERACTING WITH AGENTIC OBJECTS

ROBOT READABILITY

Implications for design & theory

Robot behavior

Add behavior showing forethought

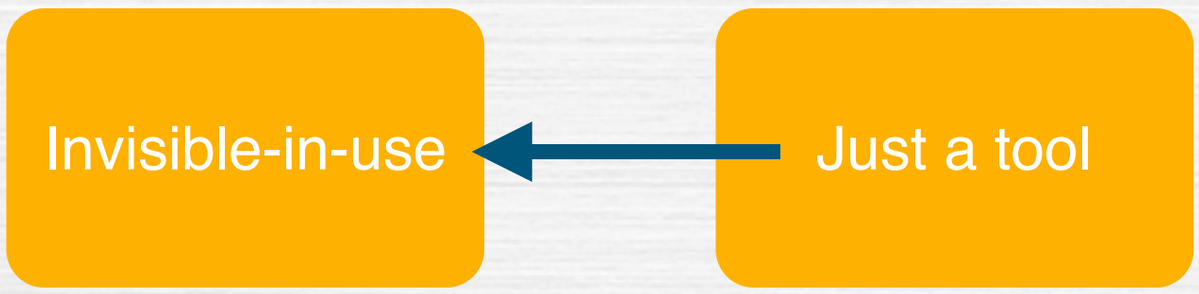
Add reactions to success

Goal-oriented emotional expression

Emotional expression as *functional* behavior

Takayama, L., Dooley, D., & Ju, W. (2011). Expressing thought: Improving robot readability with animation principles. Proceedings of Human-Robot Interaction Conference: HRI 2011, Lausanne, CH, 69-76.

INTERACTING THRU AGENTIC OBJECTS



THE PROBLEM

REMOTE PRESENCE

THE PROBLEM

REMOTE PRESENCE

A SOLUTION

REMOTE PRESENCE

Mobile remote presence

A SOLUTION

REMOTE PRESENCE

RELATED WORK

REMOTE PRESENCE

COMMERCIAL PRODUCTS

REMOTE PRESENCE

HUMANOID ROBOTS

REMOTE PRESENCE

VOCABULARY

REMOTE PRESENCE

INTERACTING THRU REMOTE PRESENCE

IN GROUP

Questions:

How does visual and verbal framing affect in-group behaviors in the use of MRP systems? Are there ways to improve how much locals treat remote pilots as teammates?

Rae, I., Takayama, L., & Mutlu, B. (2012). One of the gang: Supporting in-group behavior for embodied mediated communication. Proceedings of Human Factors in Computing Systems: CHI 2012, Austin, TX.

INTERACTING THRU REMOTE PRESENCE

IN GROUP

Visual framing manipulation

Rae, I., Takayama, L., & Mutlu, B. (2012). One of the gang: Supporting in-group behavior for embodied mediated communication. Proceedings of Human Factors in Computing Systems: CHI 2012, Austin, TX.

INTERACTING THRU REMOTE PRESENCE

IN GROUP

Experiment setting

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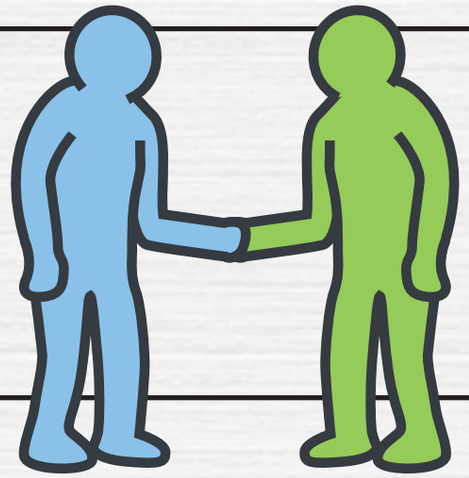
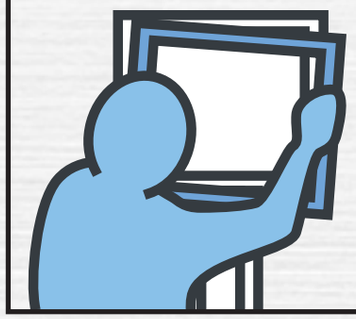
INTERACTING THRU REMOTE PRESENCE

IN GROUP

Study protocol

Meet with out-group confederate





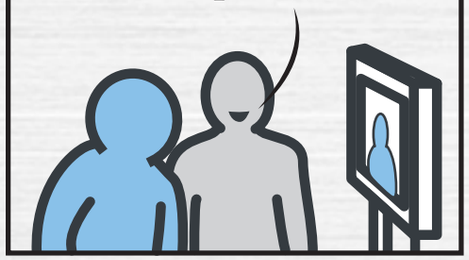
Personalize the system

Desert survival task:

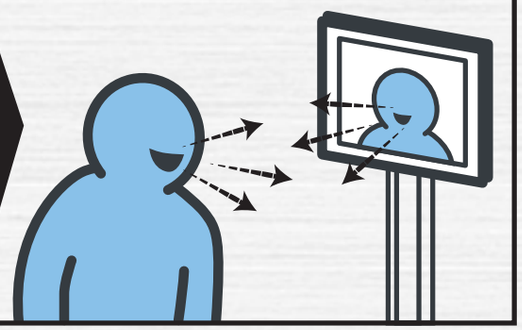
initial ranking

Framing

Interdependent!

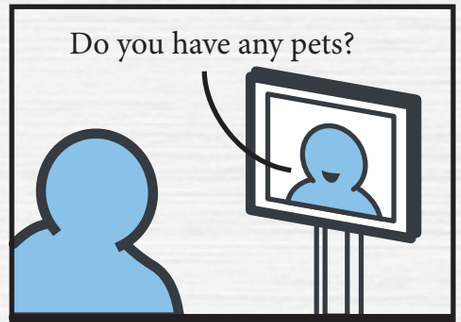


Ranking discussion



Desert survival task:

final ranking



Disclosure interview

E N D

Rae, I., Takayama, L., & Mutlu, B. (2012). One of the gang: Supporting in-group behavior for embodied mediated communication. Proceedings of Human Factors in Computing Systems: CHI 2012, Austin, TX.

INTERACTING THRU REMOTE PRESENCE

IN GROUP

		Visual framing: No decorating	Visual framing: Decorating
Verbal framing	Independent scoring	5 women, 5 men	5 women, 5 men
	Inter-dependent scoring	5 women, 5 men	5 women, 5 men

N=40

Rae, I., Takayama, L., & Mutlu, B. (2012). One of the gang: Supporting in-group behavior for embodied mediated communication. Proceedings of Human Factors in Computing Systems: CHI 2012, Austin, TX.

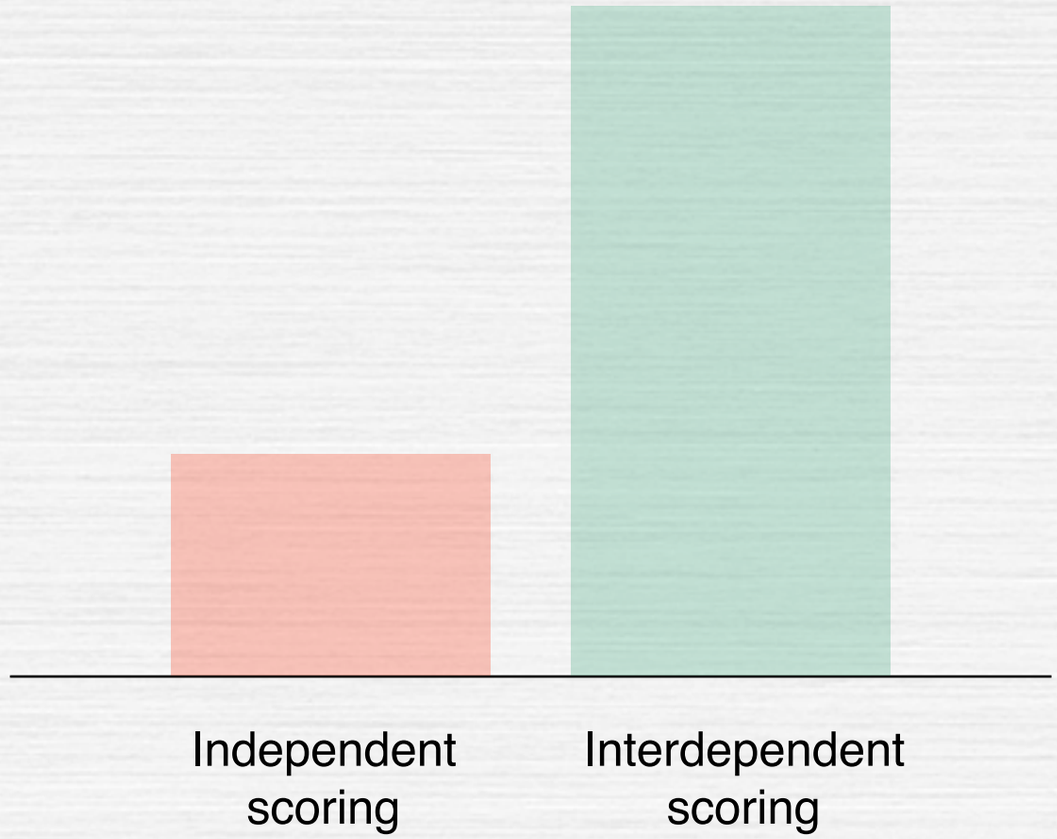
INTERACTING THRU REMOTE PRESENCE

IN GROUP

Hypothesis

H1

Positive responses

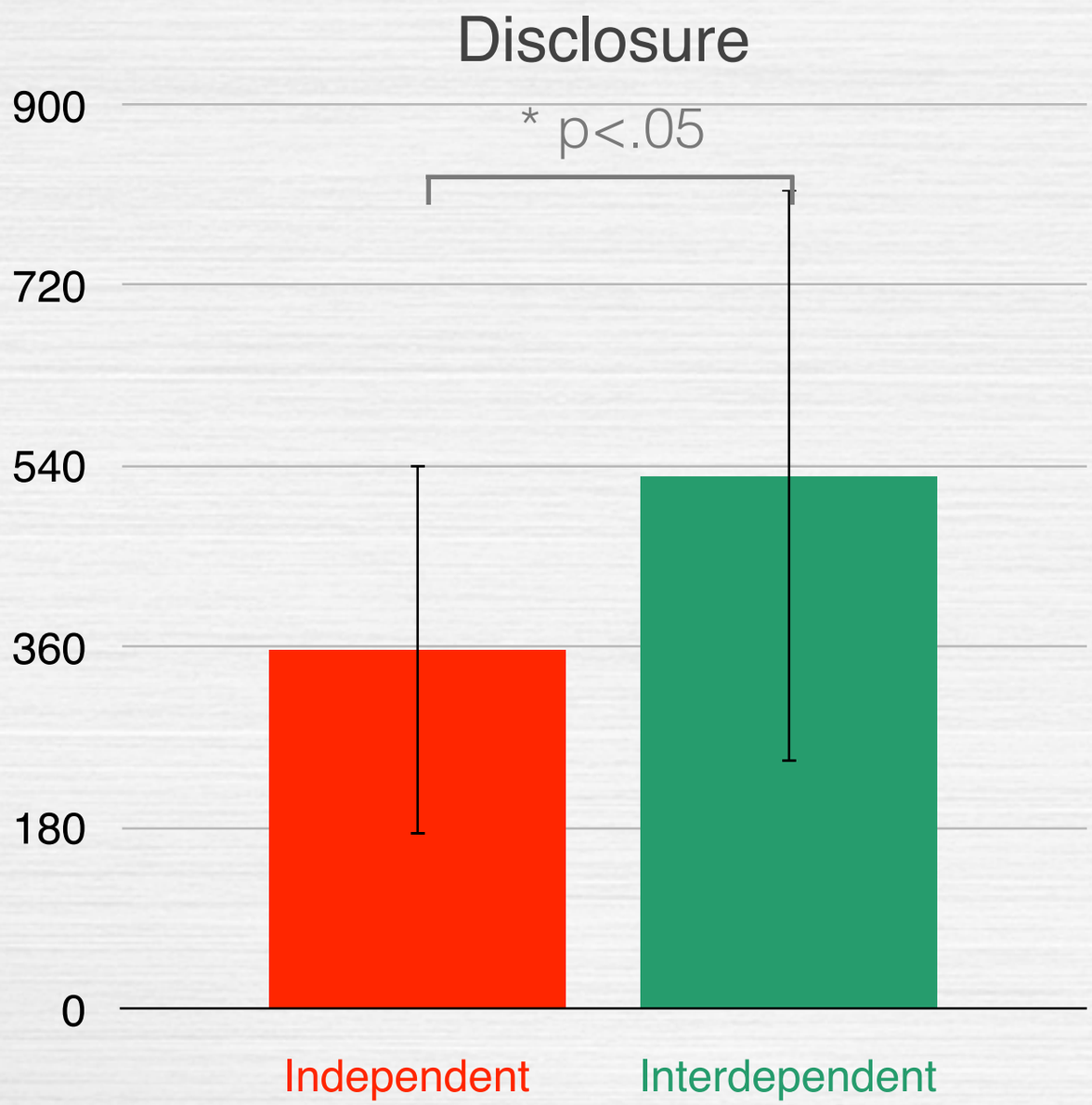


Rae, I., Takayama, L., & Mutlu, B. (2012). One of the gang: Supporting in-group behavior for embodied mediated communication. Proceedings of Human Factors in Computing Systems: CHI 2012, Austin, TX.

INTERACTING THRU REMOTE PRESENCE

IN GROUP

Results



$F(1,35)=4.85$, $p<.05$, $\eta^2=.12$

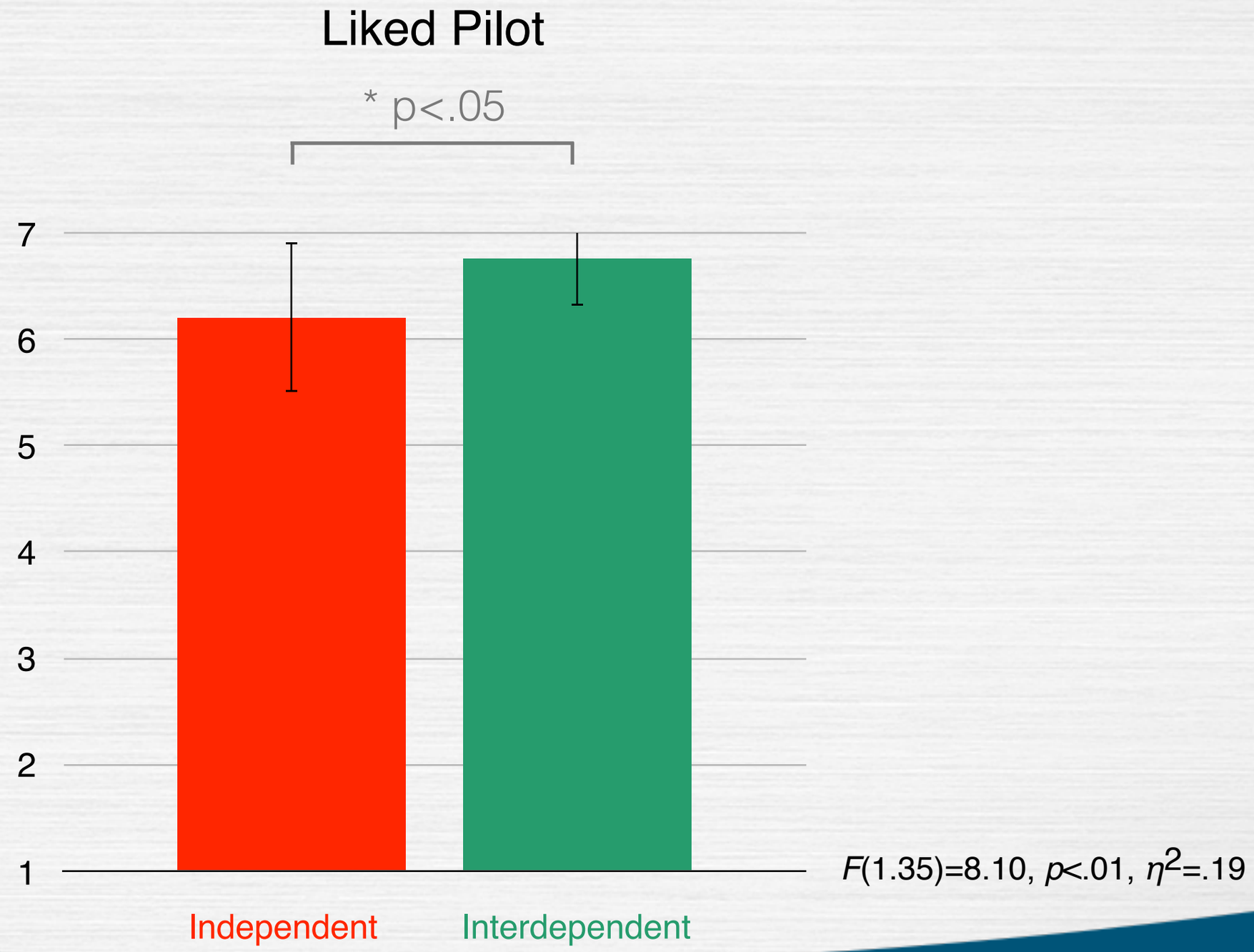
$F(1,35)=4.32$, $p<.05$, $\eta^2=.10$

Rae, I., Takayama, L., & Mutlu, B. (2012). One of the gang: Supporting in-group behavior for embodied mediated communication. Proceedings of Human Factors in Computing Systems: CHI 2012, Austin, TX.

INTERACTING THRU REMOTE PRESENCE

IN GROUP

Results



Rae, I., Takayama, L., & Mutlu, B. (2012). One of the gang: Supporting in-group behavior for embodied mediated communication. Proceedings of Human Factors in Computing Systems: CHI 2012, Austin, TX.

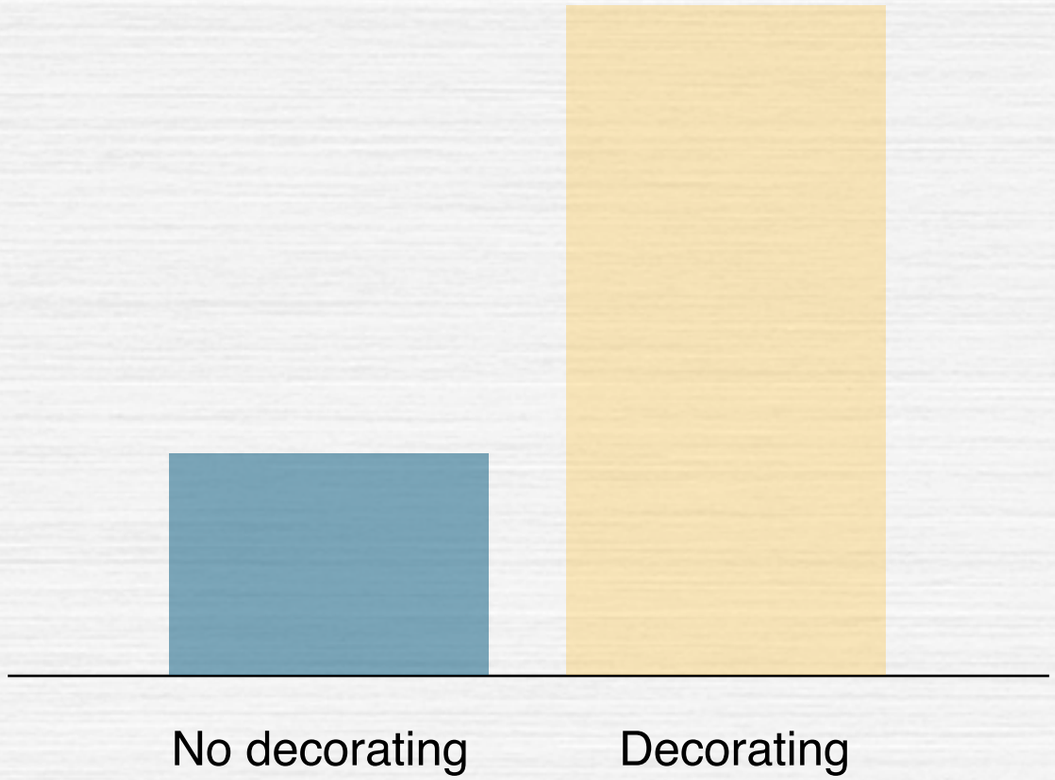
INTERACTING THRU REMOTE PRESENCE

IN GROUP

Hypothesis

H2

Positive responses



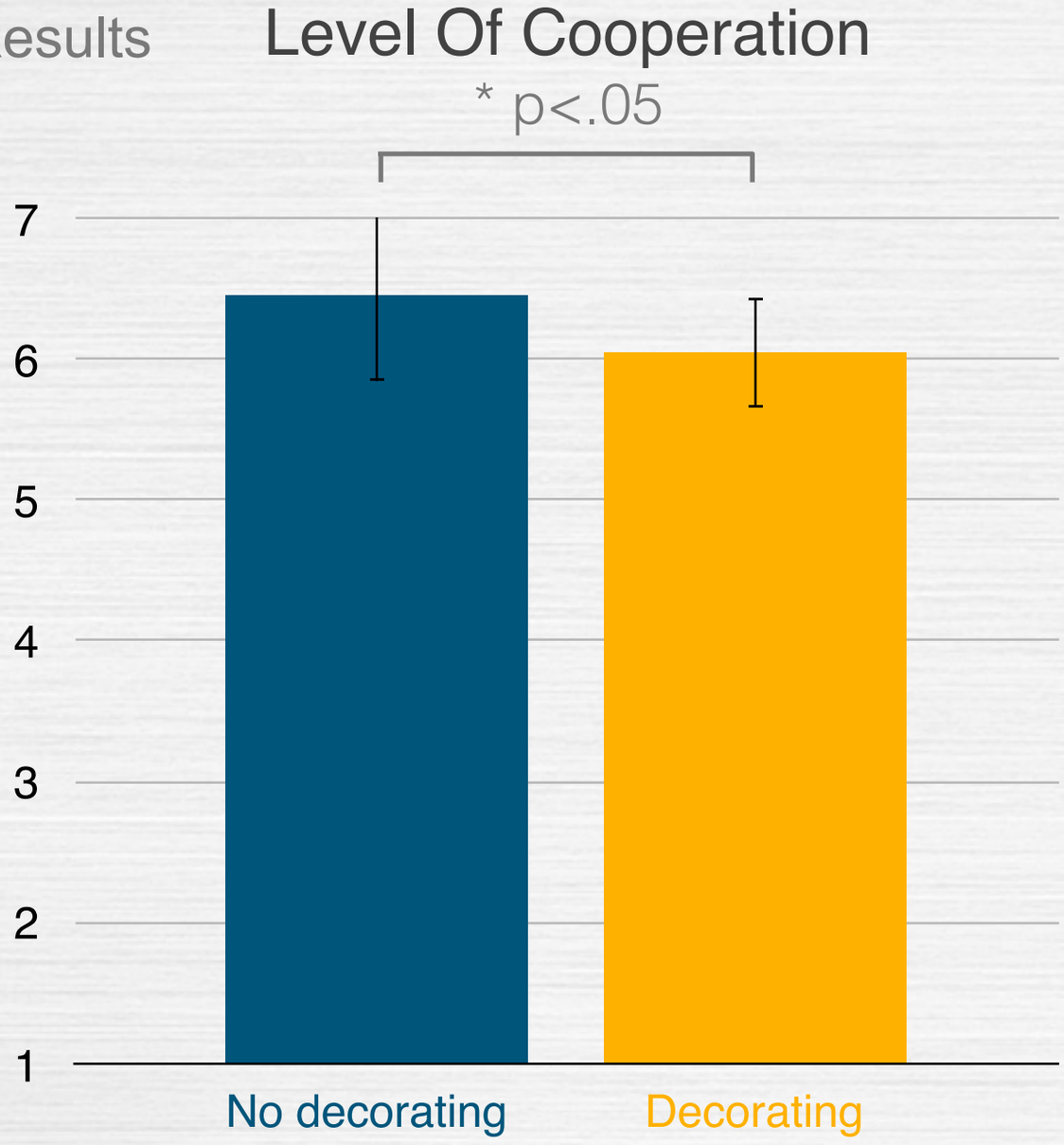
Rae, I., Takayama, L., & Mutlu, B. (2012). One of the gang: Supporting in-group behavior for embodied mediated communication. Proceedings of Human Factors in Computing Systems: CHI 2012, Austin, TX.

INTERACTING THRU REMOTE PRESENCE

IN GROUP

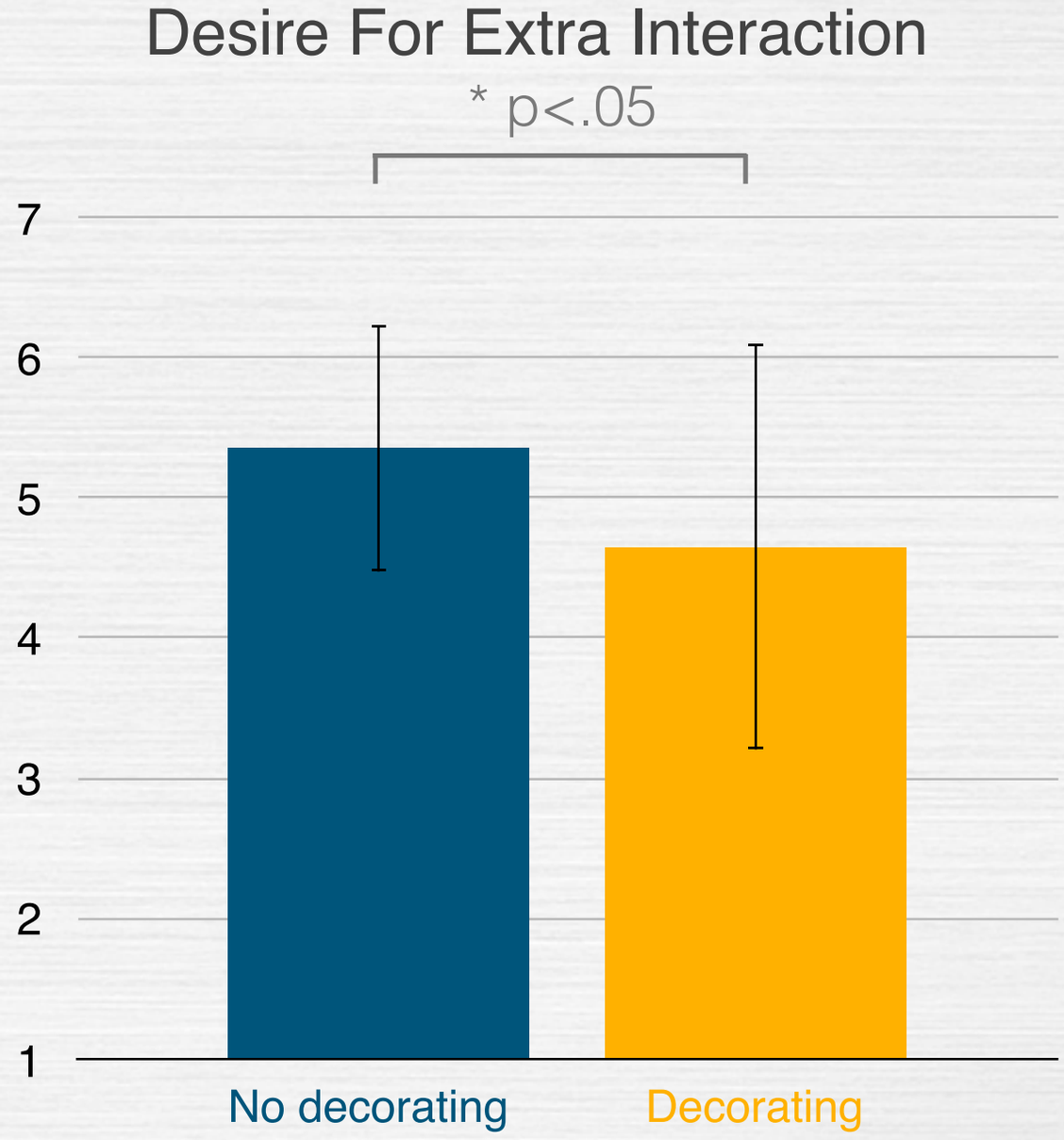
Results

Level Of Cooperation



$F(1,35)=5.68$, $p<.05$, $\eta^2=.14$

Desire For Extra Interaction



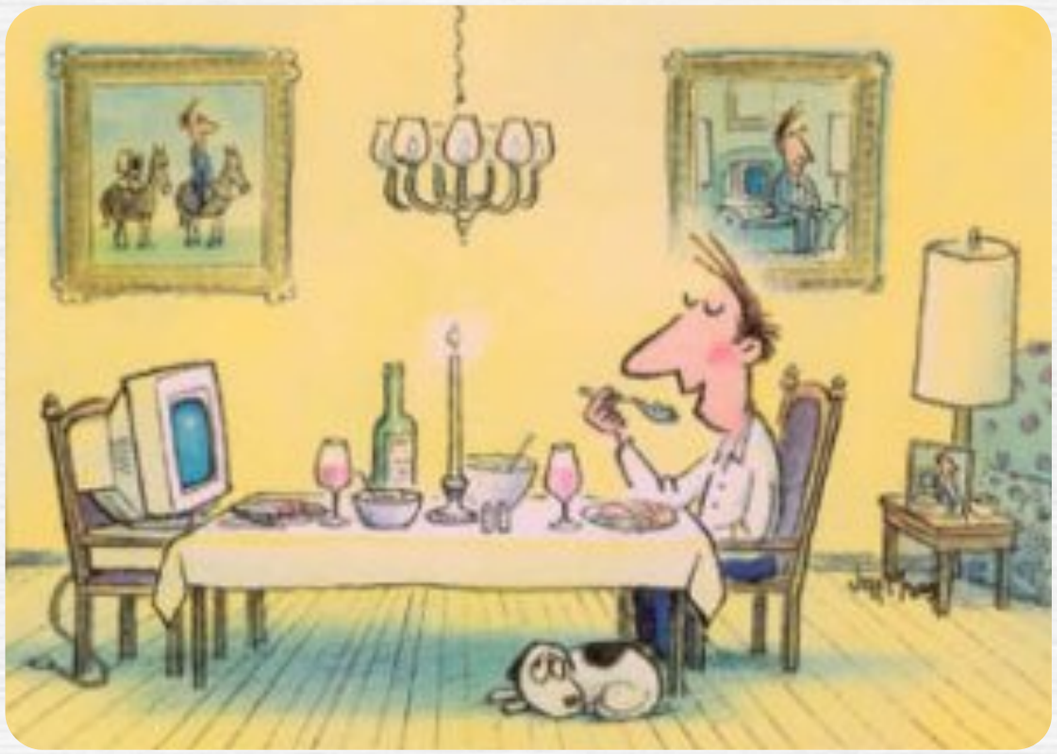
$F(1,35)=4.65$, $p<.05$, $\eta^2=.12$

Rae, I., Takayama, L., & Mutlu, B. (2012). One of the gang: Supporting in-group behavior for embodied mediated communication. Proceedings of Human Factors in Computing Systems: CHI 2012, Austin, TX.

INTERACTING THRU REMOTE PRESENCE

IN GROUP

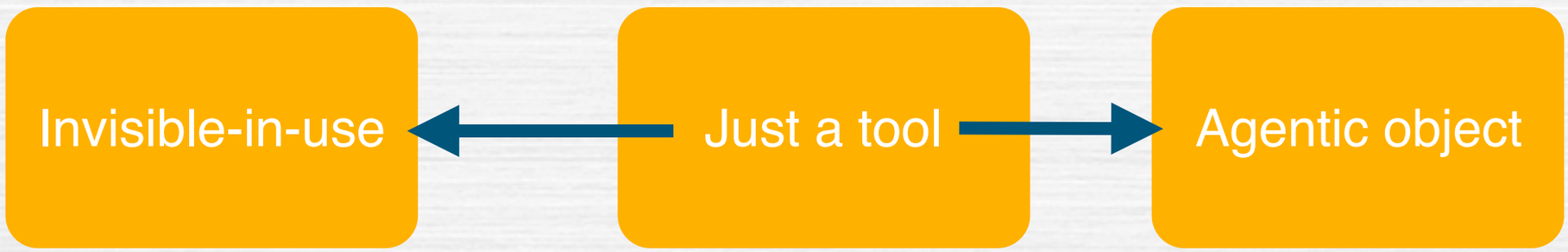
Implications for theory



Rae, I., Takayama, L., & Mutlu, B. (2012). One of the gang: Supporting in-group behavior for embodied mediated communication. Proceedings of Human Factors in Computing Systems: CHI 2012, Austin, TX.

INTERACTING

THRU & WITH AGENTIC OBJECTS



INTERACTING THRU AND WITH

MIXING METAPHORS

Questions:

How are people making sense of their interactions through MRP systems? Why are breakdowns happening?

Takayama, L. & Go, J. (2012). Mixing metaphors in mobile remote presence. Proceedings of Computer Supported Cooperative Work: CSCW 2012, Seattle, WA, 495-504.

INTERACTING THRU AND WITH

MIXING METAPHORS

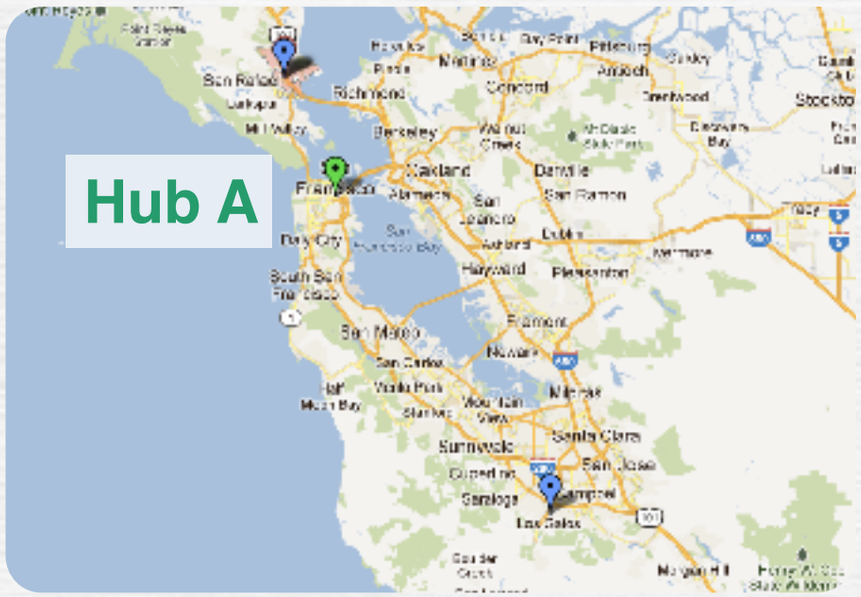
	Role of Pilot	Distance from Local Site (Miles)	Commonly Used Communication Tool	Persistent Video Connection?
Company A	Executive, VP	50, 15	Email, Skype, Telepresence room	No
Company B	Software Developer, VP	>1200, >2900	Skype, Project tracker	Yes, but usually off
Company C	Project Director, Software Engineerings, System Admin	>2500, >800, >3000, >8000	Email, IRC	Yes
Company D	Electrical Engineer	>2000	Email, Skype, Phone	No

Takayama, L. & Go, J. (2012). Mixing metaphors in mobile remote presence. Proceedings of Computer Supported Cooperative Work: CSCW 2012, Seattle, WA, 495-504.

INTERACTING THRU AND WITH

MIXING METAPHORS

Companies and Locations



Takayama, L. & Go, J. (2012). Mixing metaphors in mobile remote presence. Proceedings of Computer Supported Cooperative Work: CSCW 2012, Seattle, WA, 495-504.

INTERACTING THRU AND WITH

MIXING METAPHORS

Breakdowns

"You can't just turn off the robot in the middle of the floor!"

Then, "Who's there? Wake up!"

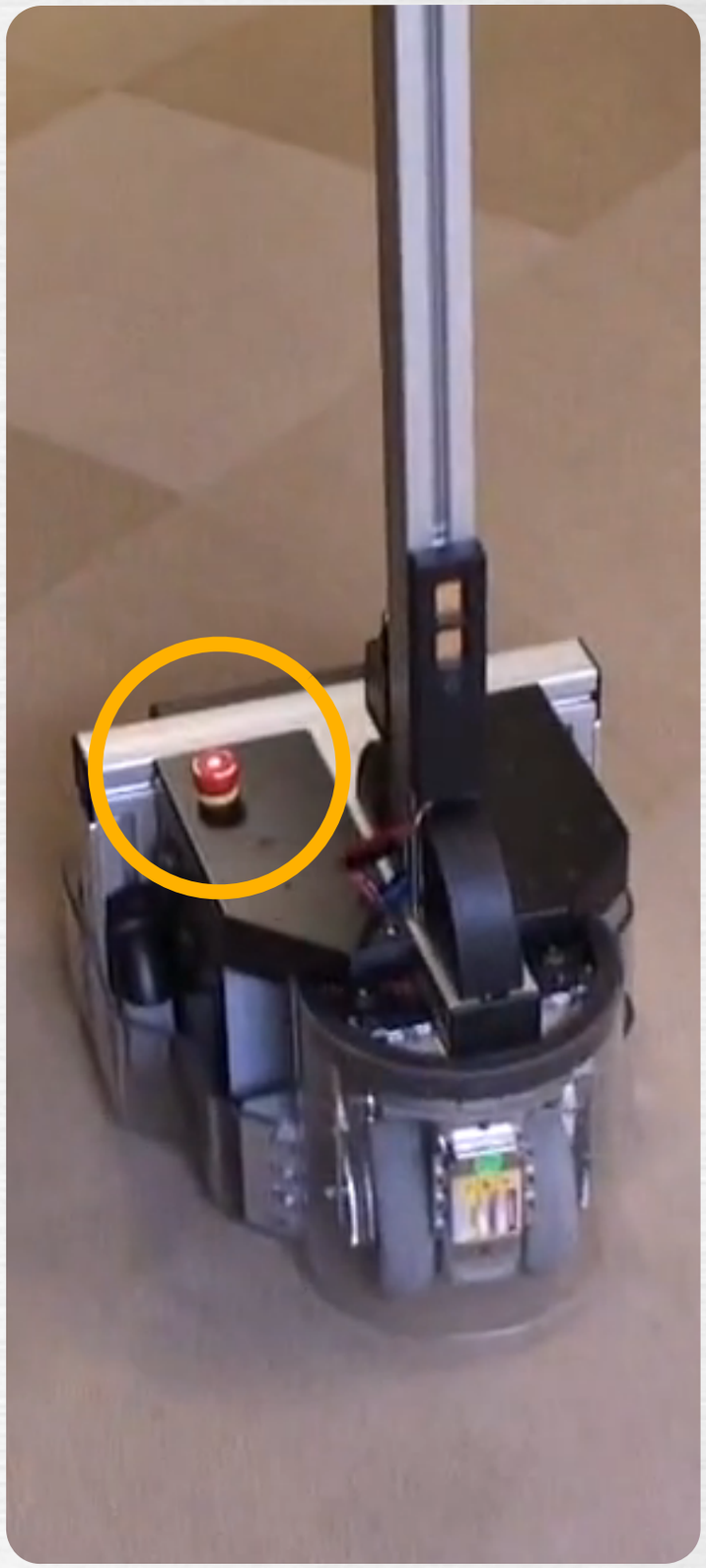
Takayama, L. & Go, J. (2012). Mixing metaphors in mobile remote presence. Proceedings of Computer Supported Cooperative Work: CSCW 2012, Seattle, WA, 495-504.

INTERACTING THRU AND WITH

MIXING METAPHORS

Breakdowns

"Stay away from my buttons!"



Takayama, L. & Go, J. (2012). Mixing metaphors in mobile remote presence. Proceedings of Computer Supported Cooperative Work: CSCW 2012, Seattle, WA, 495-504.

INTERACTING THRU AND WITH

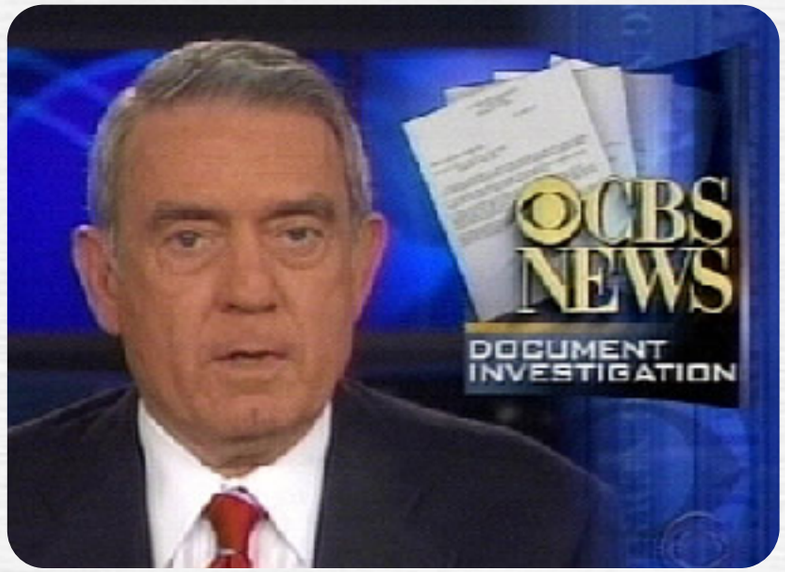
MIXING METAPHORS

Useful theories

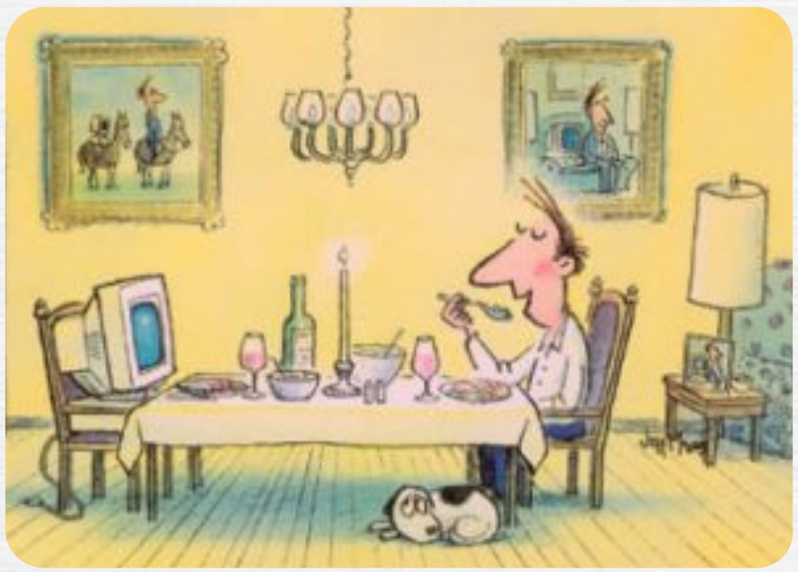

The New York Times.

ARMISTICE SIGNED, END OF THE WAR!
BERLIN SEIZED BY REVOLUTIONISTS;
NEW CHANCELLOR BEGS FOR ORDER;
OUSTED KAISER FLEES TO HOLLAND

Source orientation



Computers as social actors



Actor network theory

Takayama, L. & Go, J. (2012). Mixing metaphors in mobile remote presence. Proceedings of Computer Supported Cooperative Work: CSCW 2012, Seattle, WA, 495-504.

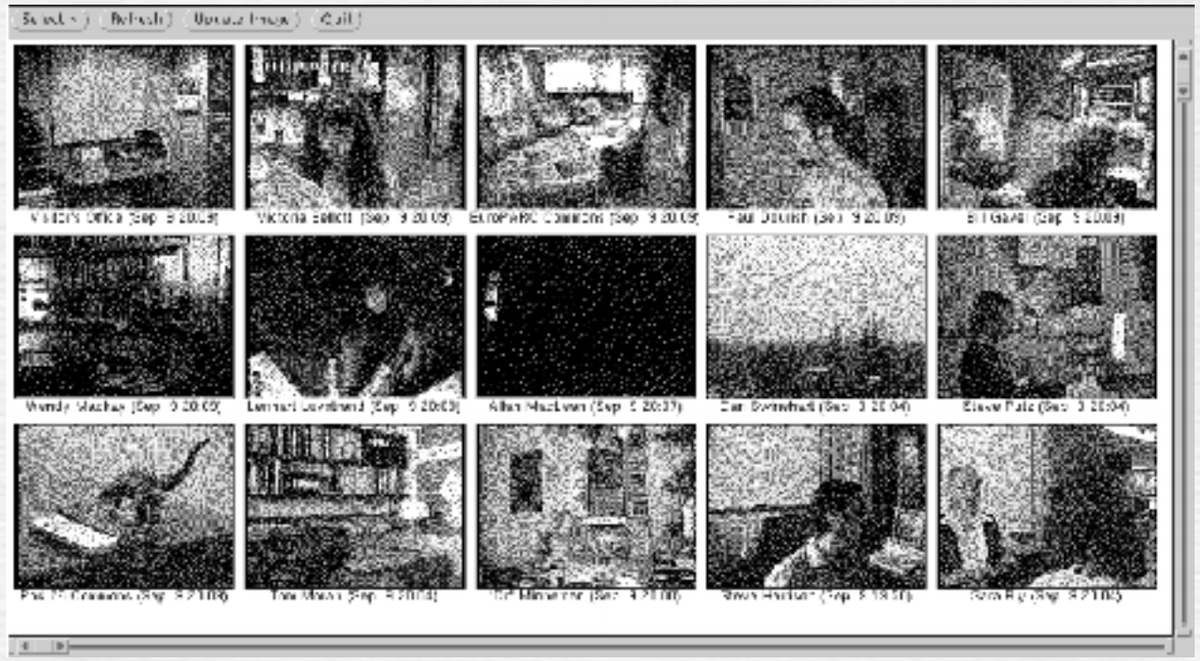
INTERACTING THRU AND WITH

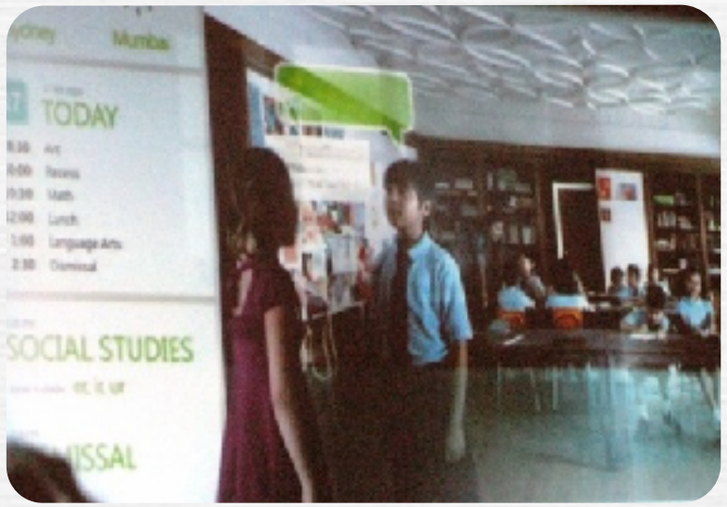
MIXING METAPHORS

Existing metaphors

Spaces

Windows





Takayama, L. & Go, J. (2012). Mixing metaphors in mobile remote presence. Proceedings of Computer Supported Cooperative Work: CSCW 2012, Seattle, WA, 495-504.

INTERACTING THRU AND WITH

MIXING METAPHORS

Existing metaphors

Proxies

Avatars

Takayama, L. & Go, J. (2012). Mixing metaphors in mobile remote presence. Proceedings of Computer Supported Cooperative Work: CSCW 2012, Seattle, WA, 495-504.

INTERACTING THRU AND WITH

MIXING METAPHORS

Methods

Intake interviews

Contextual Inquiry Observations

Ongoing interviews

}

Transcriptions

Field Notes

Photos

Videos

Takayama, L. & Go, J. (2012). Mixing metaphors in mobile remote presence. Proceedings of Computer Supported Cooperative Work: CSCW 2012, Seattle, WA, 495-504.

INTERACTING THRU AND WITH

MIXING METAPHORS

Observations

Human oriented behavior (Site A)

Takayama, L. & Go, J. (2012). Mixing metaphors in mobile remote presence. Proceedings of Computer Supported Cooperative Work: CSCW 2012, Seattle, WA, 495-504.

INTERACTING THRU AND WITH

MIXING METAPHORS

Observations

Somewhat human oriented behavior (Site C)

Takayama, L. & Go, J. (2012). Mixing metaphors in mobile remote presence. Proceedings of Computer Supported Cooperative Work: CSCW 2012, Seattle, WA, 495-504.

INTERACTING THRU AND WITH

MIXING METAPHORS

Observations

Human oriented behavior (Site C)

Takayama, L. & Go, J. (2012). Mixing metaphors in mobile remote presence. Proceedings of Computer Supported Cooperative Work: CSCW 2012, Seattle, WA, 495-504.

INTERACTING THRU AND WITH

NON-HUMANLIKE METAPHORS

Media

“Skype on wheels”

“Robot in” to the meeting

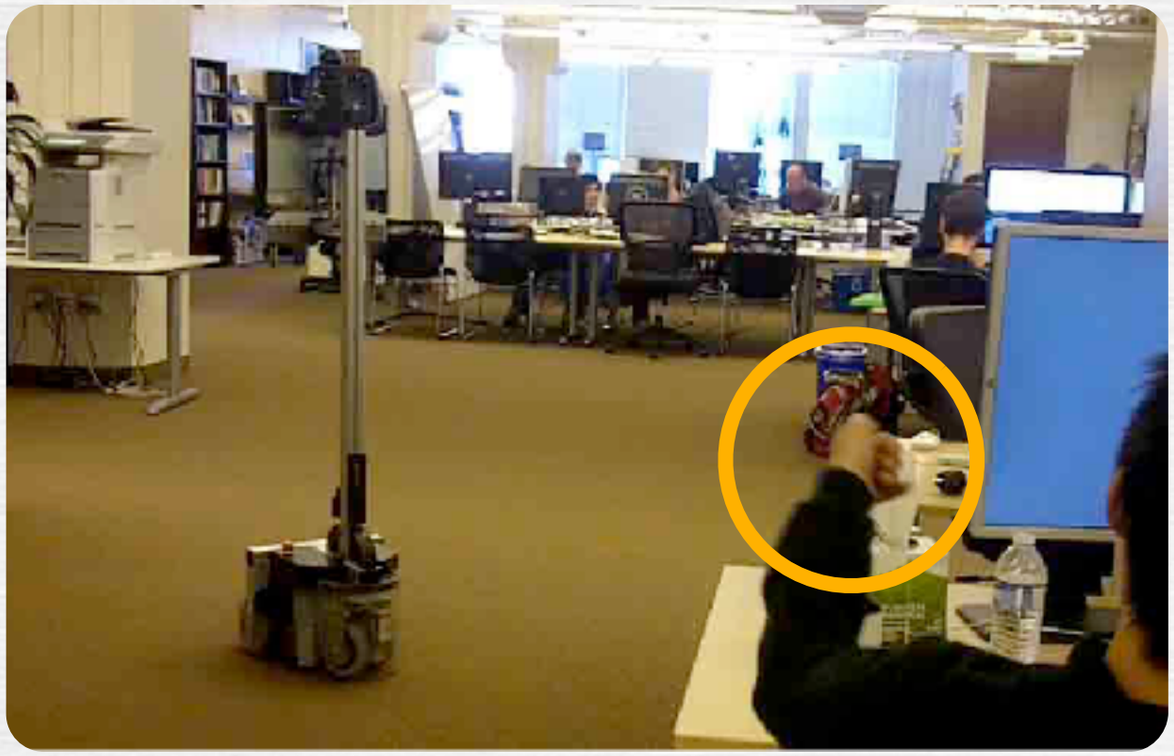
“It's more of a video conferencing thing than a robot thing”

Takayama, L. & Go, J. (2012). Mixing metaphors in mobile remote presence. Proceedings of Computer Supported Cooperative Work: CSCW 2012, Seattle, WA, 495-504.

INTERACTING THRU AND WITH

NON-HUMANLIKE METAPHORS

Robot



"What you need is a robot mute button."

"So if … there's a meeting, we would go to his office and the robot would roll up in his place."

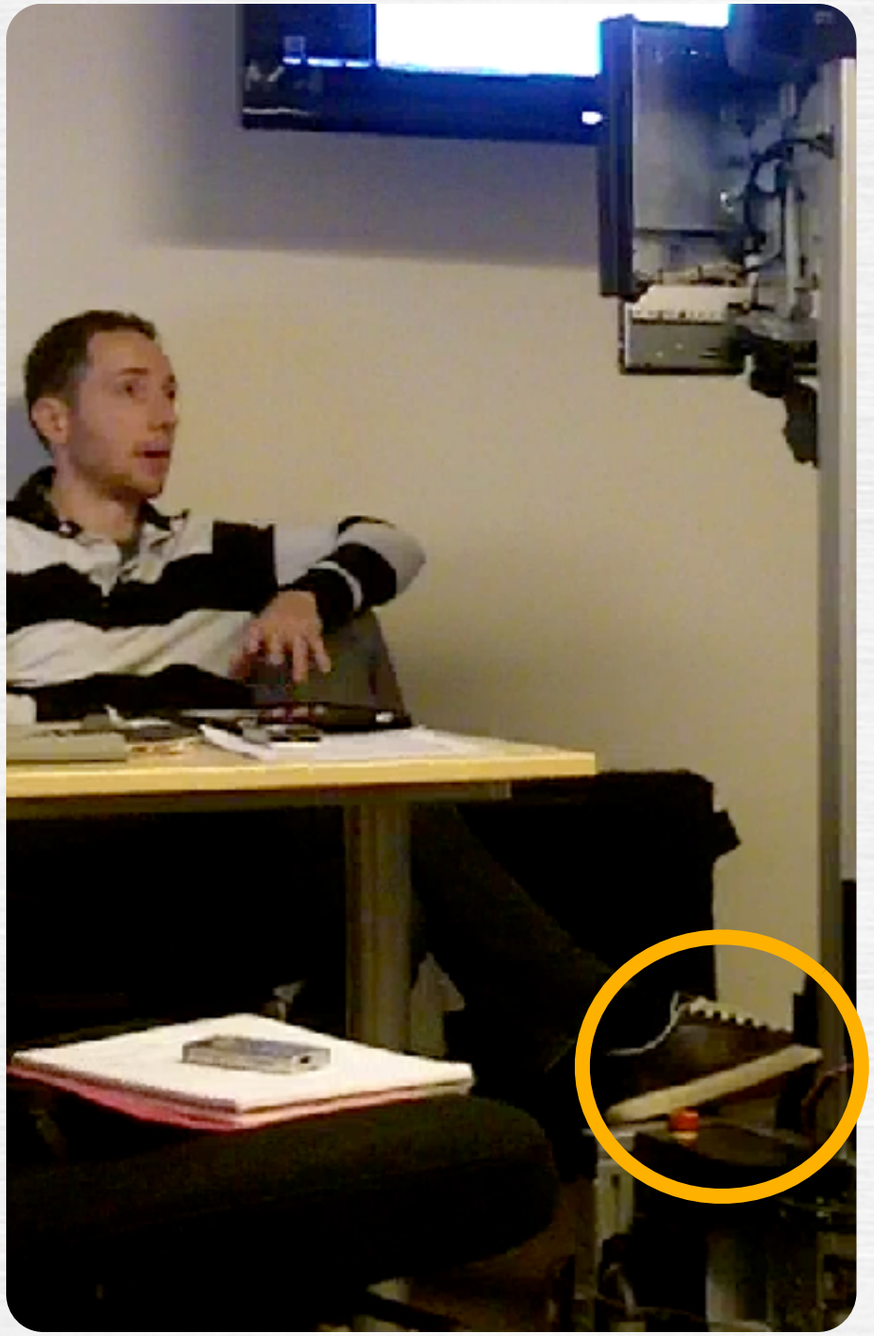
"Anything else? Anybody? Robot?"

Takayama, L. & Go, J. (2012). Mixing metaphors in mobile remote presence. Proceedings of Computer Supported Cooperative Work: CSCW 2012, Seattle, WA, 495-504.

INTERACTING THRU AND WITH

NON-HUMANLIKE METAPHORS

Object



"Who is in it?"

"Who is inhabiting it?"

"It's big and loud and bangs into things like doors. It's also a distraction when it's moving around."

Takayama, L. & Go, J. (2012). Mixing metaphors in mobile remote presence. Proceedings of Computer Supported Cooperative Work: CSCW 2012, Seattle, WA, 495-504.

INTERACTING THRU AND WITH

NON-HUMANLIKE METAPHORS

Person

"There was an Ambassador training tour and the volume was scratchy. I had the idea in mind that maybe I should have stopped [Pilot A2] and play with the knobs, but I didn't do it…"

"It's as if he's there... I treat him as if he's right there. I don't think I act any differently."

Takayama, L. & Go, J. (2012). Mixing metaphors in mobile remote presence. Proceedings of Computer Supported Cooperative Work: CSCW 2012, Seattle, WA, 495-504.

INTERACTING THRU AND WITH

NON-HUMANLIKE METAPHORS

Person with disabilities

Pilot wants a “medical bracelet” to let locals know when the robot needed help

It doesn’t have arms

“One meeting ended and I had to sit there to wait around to get help with opening the door. I don't know how to deal with that really.”

Locals helped pilots with

Navigating “turn to the left forty degrees”

Seeing emailing photos of whiteboard to pilot

Hearing speaking loudly and/or leaning in

Moving pushing robot to charging station

Takayama, L. & Go, J. (2012). Mixing metaphors in mobile remote presence. Proceedings of Computer Supported Cooperative Work: CSCW 2012, Seattle, WA, 495-504.

INTERACTING THRU AND WITH

NON-HUMANLIKE METAPHORS

Human-like orientations

↑ Pilot responsibility

↑ Pilot expectations of personal rights

Nonhuman-like orientations

↓ Pilot responsibility

↓ Pilot expectations of personal rights

Pilot C1: Losing WiFi connectivity

“gets kind of embarrassing because you end up being dead”

“How fast can this thing go?!”

Takayama, L. & Go, J. (2012). Mixing metaphors in mobile remote presence. Proceedings of Computer Supported Cooperative Work: CSCW 2012, Seattle, WA, 495-504.

INTERACTING THRU AND WITH

NON-HUMANLIKE METAPHORS

Implications for design

Shared metaphors matter

Humanlike metaphors can go too far

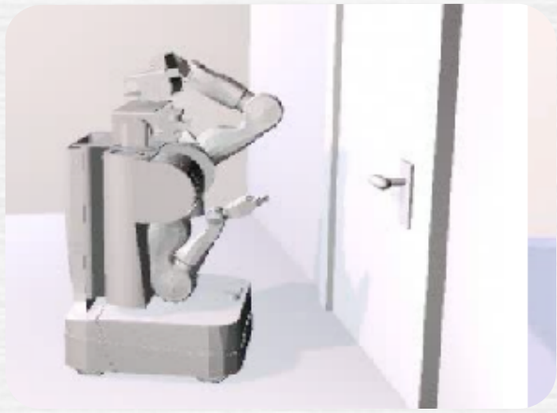
Focus upon the remote person

Pilot A2:
“We know that we’re really successful when the robot becomes invisible and it’s just about the people there.”

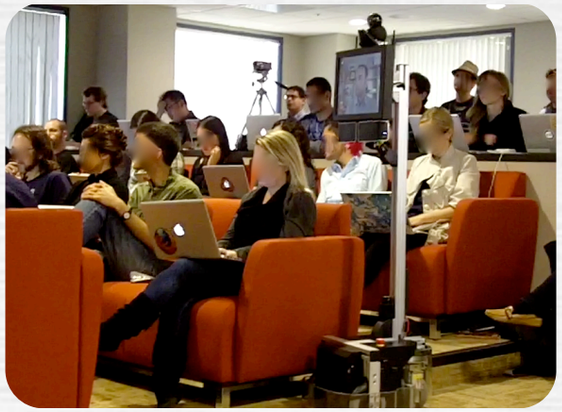
Takayama, L. & Go, J. (2012). Mixing metaphors in mobile remote presence. Proceedings of Computer Supported Cooperative Work: CSCW 2012, Seattle, WA, 495-504.

INTERACTING...

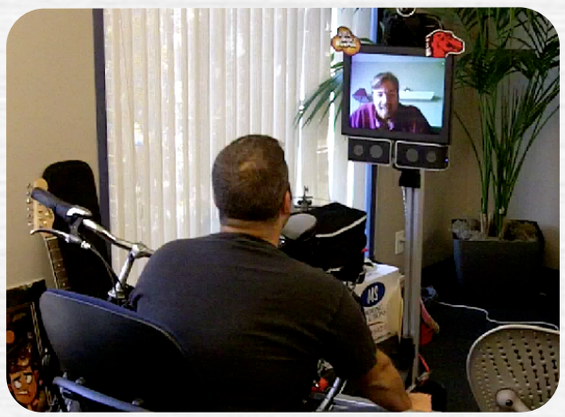
WITH
AGENTIC OBJECTS



THRU
AGENTIC OBJECTS



THRU & WITH
AGENTIC OBJECTS



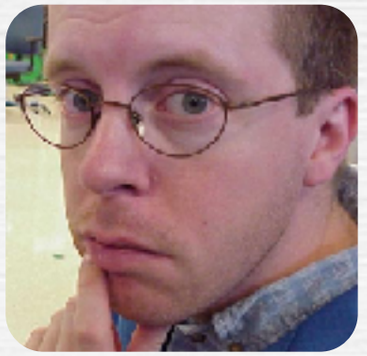
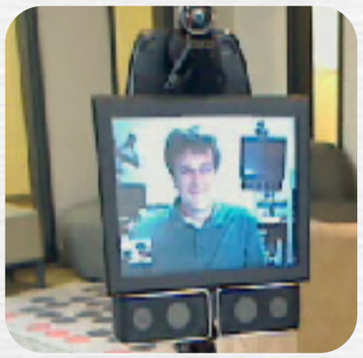
COLLABORATORS









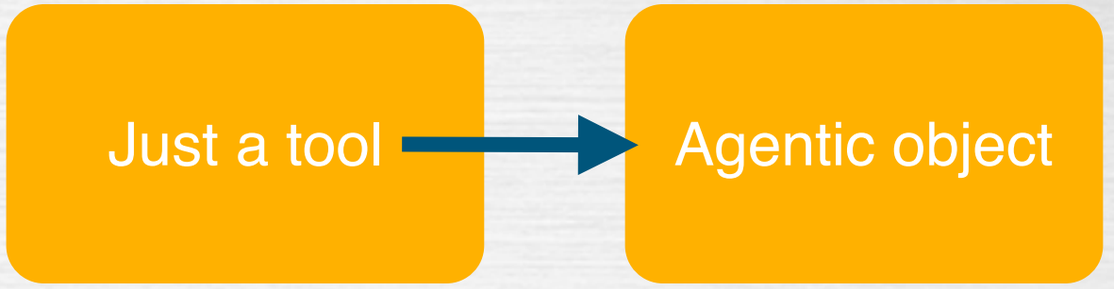






FUTURE WORK

MAKING SENSE OF

AGENTIC OBJECTS

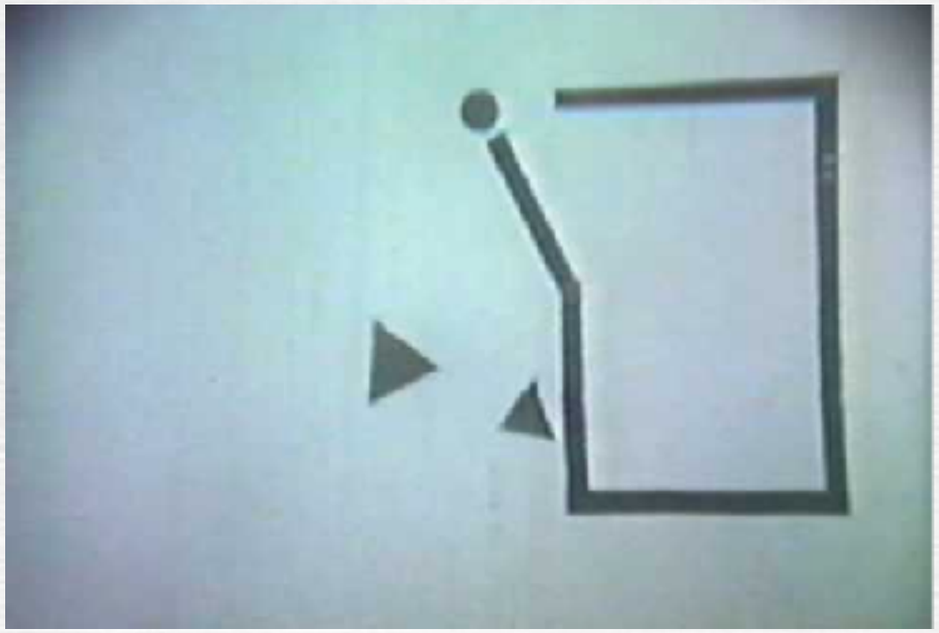


How do people make sense of and orient toward the source of a robotic agent?
Issues: responsibility, credibility, earning trust

What are the ways that autonomous capabilities can extend human capabilities? How should they be used?
Issues: de-skilling, up-skilling, shared autonomy

How do people make sense of robot utterances and gestures?
Issues: CASA, pragmatics, morphologies

PERCEIVED AGENCY

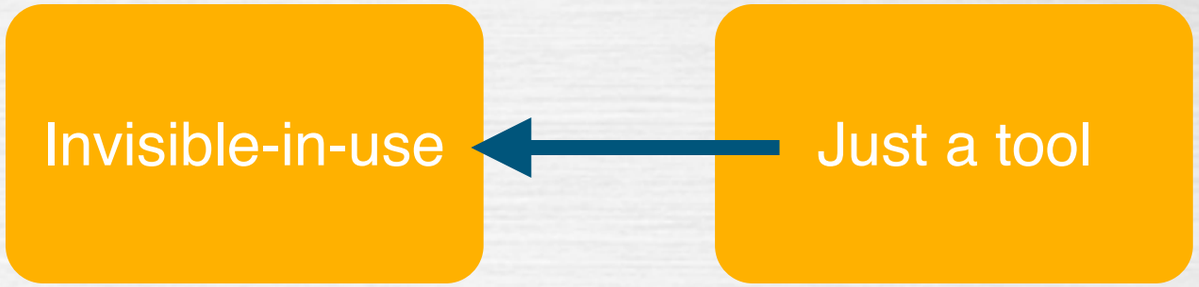


SO WHAT?

Takayama, L. (Under Review). Tracing the influencers and ideas of ubiquitous computing. Journal of Personal and Ubiquitous Computing.

UNDERSTANDING HOW AGENT OBJECTS BECOME

INVISIBLE IN USE

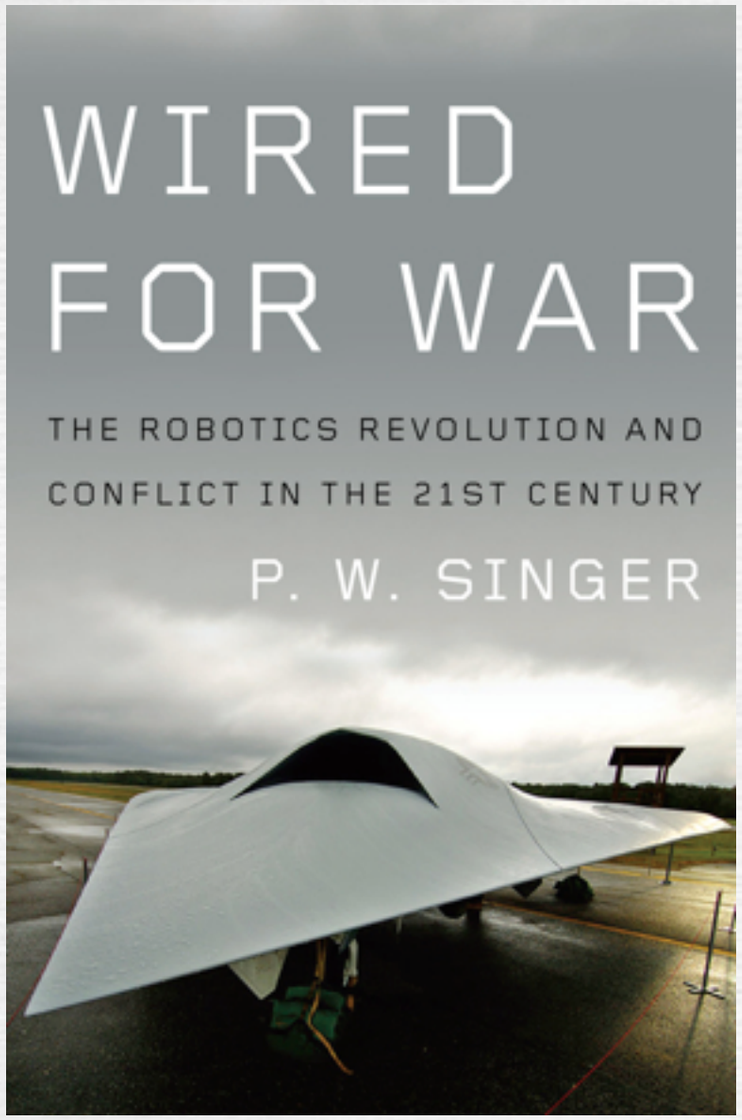


If offline cognition is body based, then what happens to human cognition when one has incorporated a new technology into one's body? Ecological Psychology

As children grow up with different kinds of self-extending technologies, what are the implications for the development of a sense of self and of agency?

How do people build empathy through mediated experiences (e.g., being physically shorter)?

SO WHAT?


WIRED
FOR WAR
THE ROBOTICS REVOLUTION AND
CONFLICT IN THE 21ST CENTURY
P. W. SINGER

MAHALO

takayama@ucsc.edu
Social Sciences 2, Room 381
Fall 2017 office hours: Tuesdays 1-3pm
by appointment Tuesdays 1-2:30pm
drop-ins Tuesdays 2:30-3pm