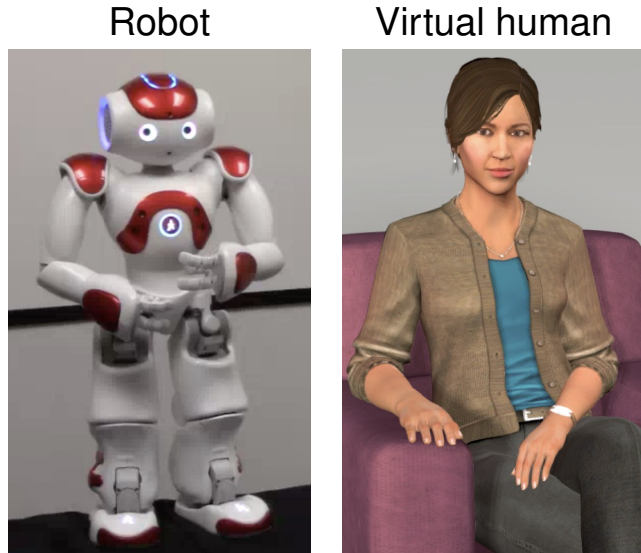


Corpus of human-agent dialogues

Task	Dialogue partner		
	Robot	Vhuman	Both
Desert Survival	21	19	
Lunar Survival	173	21	
Save the Art	154	121	40
Ice-breaker	96	21	

Dialogue partners:



Dialogue types:

- Social influence (3 ranking tasks)
- Ice-breaker

Additional conditions (some dialogues):

- Conversational errors
- Agent arguments (informational or normative)
- Agent presentation (autonomous or not)

Composition:

- Audio (partly transcribed)
- Video
- Time-stamped agent utterances
- Item rankings (in ranking tasks)
- Rapport questionnaire

Familiarity increases social influence  
Higher rapport with robot than with virtual human  
Similar influence for robot and virtual human (Artstein et al., FLAIRS 2017)

More feedback with robot than with virtual human  
More feedback in ice-breaker than ranking tasks (Hee et al., MMSYM 2017)

Conversational errors reduce influence (Lucas et al., HAI 2017)  
Effect of errors depends on their timing (Lucas et al., HRI 2018)

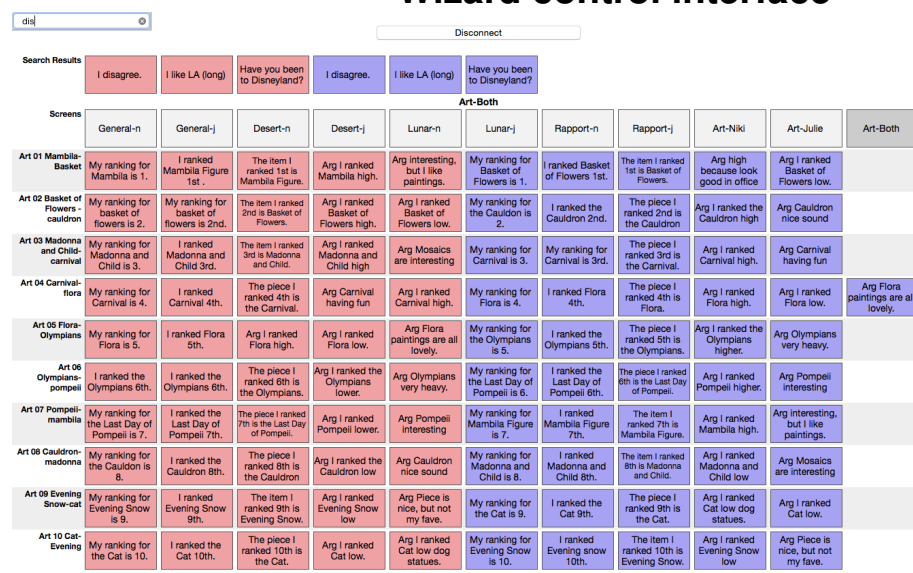
Informational arguments are more influential than normative arguments  
Informational arguments are more influential when participants believe agent is autonomous (Khooshabeh and Lucas, Frontiers in Psychology 2018)

Example ranking task: "Save the Art"

You are one of three crisis managers for the Los Angeles County Art Museum art evacuation mission. A fire is heading towards the museum. While all the people can be successfully evacuated, there is only a limited amount of transport available to save the art. You have been able to requisition 10 transport vehicles, which will arrive in 15 minutes. Each of the vehicles can carry only one piece of art, for insurance reasons. Unfortunately, only one vehicle can approach the loading area at a time, and you do not know exactly when the fire will arrive, so it is important to rank the paintings in order of priority for saving. Your task is to rank the 10 art pieces according to their importance for saving. After your initial rankings you may have a conversation with two other managers, and you will have a chance to update your rankings. Sort the items below so that the most important item is placed first, the second most important is placed second, and so on through to number 10 for the least important.



Wizard control interface



The buttons in the second row are used to change screens; the remaining buttons play individual utterances. The top row of buttons is the output of the text search in the top left corner. Red buttons control the robot, blue control the virtual human. The label on each button is a mnemonic; the full utterance text appears as a tooltip.

Photo from an experimental session: The participant ranks items on an iPad Pro, and the wizard is in a separate room.

Two-party interaction

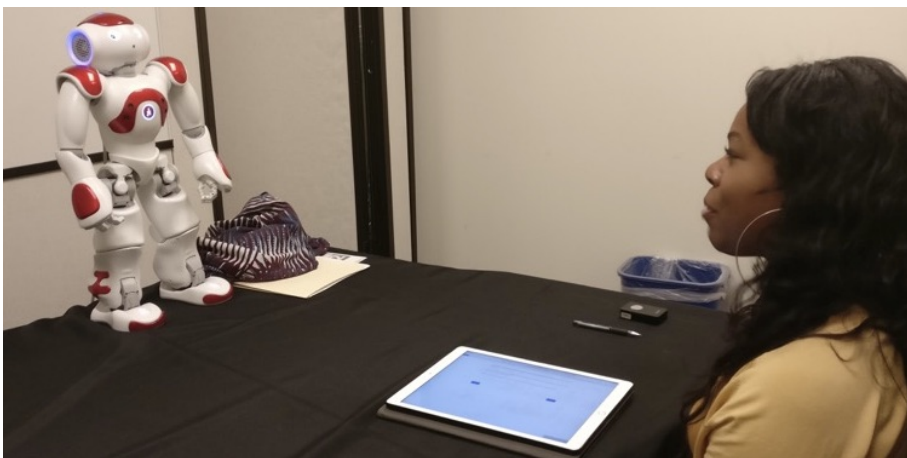
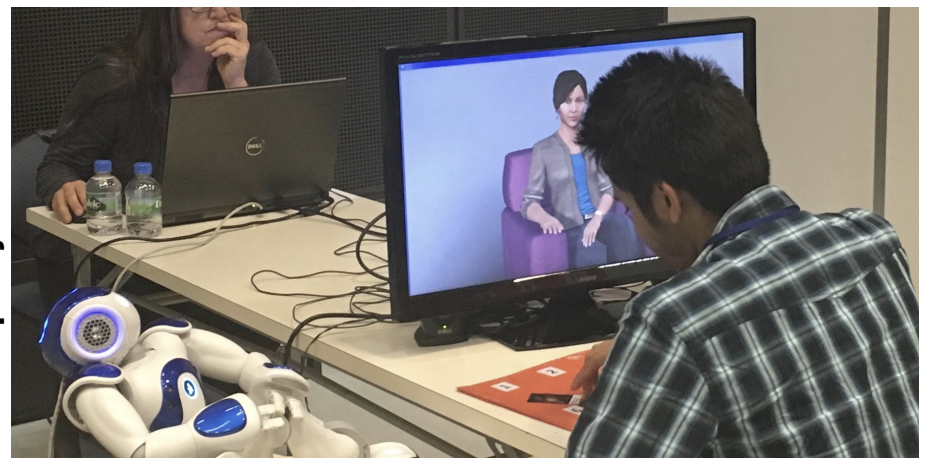


Photo taken at a demo: The participant is ranking the items using physical cards, and the wizard is in the background.

Three-party interaction



Desert survival

**Niki (robot)** Nice to meet you.  
**Participant** Nice to meet you too. About the items on the list, do you have any feedback?  
**Niki** I ranked the mirror first.  
**Participant** I'm sorry?  
**Niki** I ranked this highest because we need it to signal for help.  
**Participant** Could you repeat that?  
**Niki** I ranked the mirror first.  
**Participant** Oh, you put the mirror first.  
**Participant** Okay. Why would you do the mirror first?  
**Niki** I ranked this highest because we need it to signal for help.  
**Participant** Right, but wouldn't water be more important than that?  
**Niki** No. Not really.  
**Participant** Hmm.  
**Niki** I ranked the water third.  
**Participant** What was your second one then? Because I put water...  
**Niki** My ranking for the overcoat is 2.

Ice-breaker

**Julie (virtual human)** How are you?  
**Participant** I'm fine. How are you?  
**Julie** I'm fine.  
**Julie** What's your name?  
**Participant** My name's Sue.  
**Julie** Nice to meet you.  
**Participant** Same here.  
**Julie** Where are you from?  
**Participant** Originally here in Los Angeles.  
**Julie** I'm from California, too.  
**Participant** Okay.  
**Julie** I like the weather in L.A.  
**Participant** Yes.  
**Julie** I also like that there are restaurants from every country here. And, of course, I love Disneyland!  
**Participant** I agree. I love Disneyland too.  
**Julie** Have you ever been to Disneyland?  
**Participant** Yes. Many, many times.  
**Julie** Good for you.

Lunar survival (with errors)

**Participant** What's third?  
**Niki (robot)** I ranked the oxygen first.  
**Participant** Okay. Which one is third?  
**Niki** I ranked the stellar map third.  
**Participant** Why?  
**Niki** I ranked the stellar map third because we will need it for navigation when we walk.  
**Participant** Okay. What's next?  
**Niki** <Silence>  
**Participant** Which one do you want to do next?  
**Niki** I ranked the food concentrate fourth.  
**Participant** Okay. Why fourth?  
**Niki** I'm sorry, I didn't hear you.

Save the Art (3-party)

**Niki (robot)** My ranking for Mambila Figure is one.  
**Niki** I ranked this high because it was fragile and made from wood.  
**Participant** Okay.  
**Julie (virtual human)** Hello again.  
**Participant** Hi.  
**Julie** The piece I ranked first was Basket of Flowers.  
**Participant** And why...  
**Julie** I ranked this high because I think it would look good in my office.  
**Participant** I see. Okay. Well, I could see how the wood would be fragile. I would think that the oil would be fragile too though, which there's several oil paintings...  
**Julie** I agree.  
**Participant** How about you, Niki? Do you see how oil might be important to save high up?  
**Niki** Yes.