



HRI Openings: Approach Paths and Dialogue Timing

Akim Williams, Rosa Lutz, Katherine Hsiao, Nicholas Santer, and Leila Takayama



Overview

Robot-mediated communication is now popular for attending work, conferences, and other interpersonal events remotely. But, because this is a new mode of communication, even starting a conversation can be unfamiliar. Some basic robot-mediated interactions are not fully understood by users, locals, and the literature.

Few studies have looked at approach paths of telepresence robots. None have investigated dialogue timing preferences.

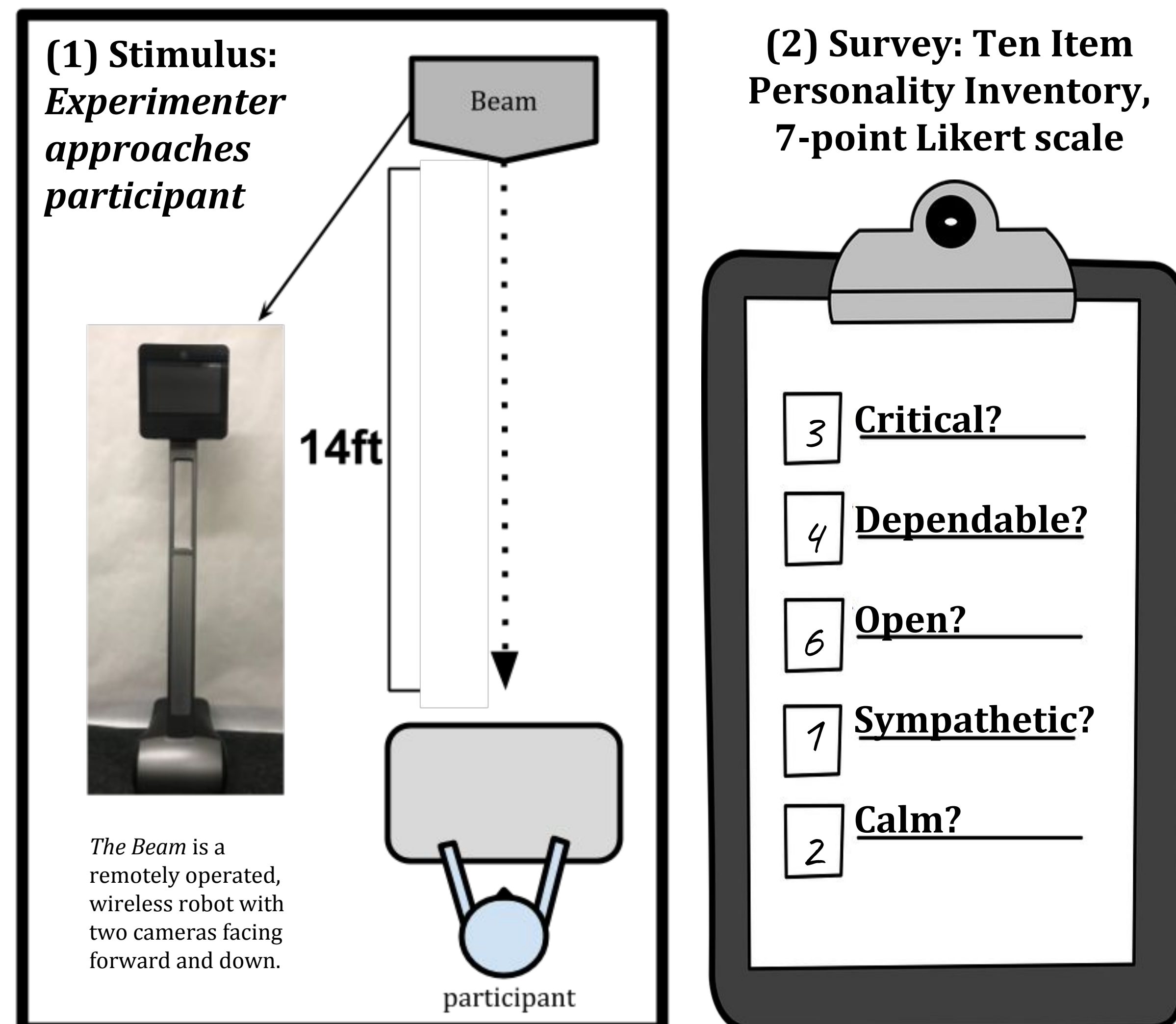
We explored these common facets of robot-mediated conversation openings. *When opening a conversation via a robot...*

- Where should you approach from?
- When should you start talking?

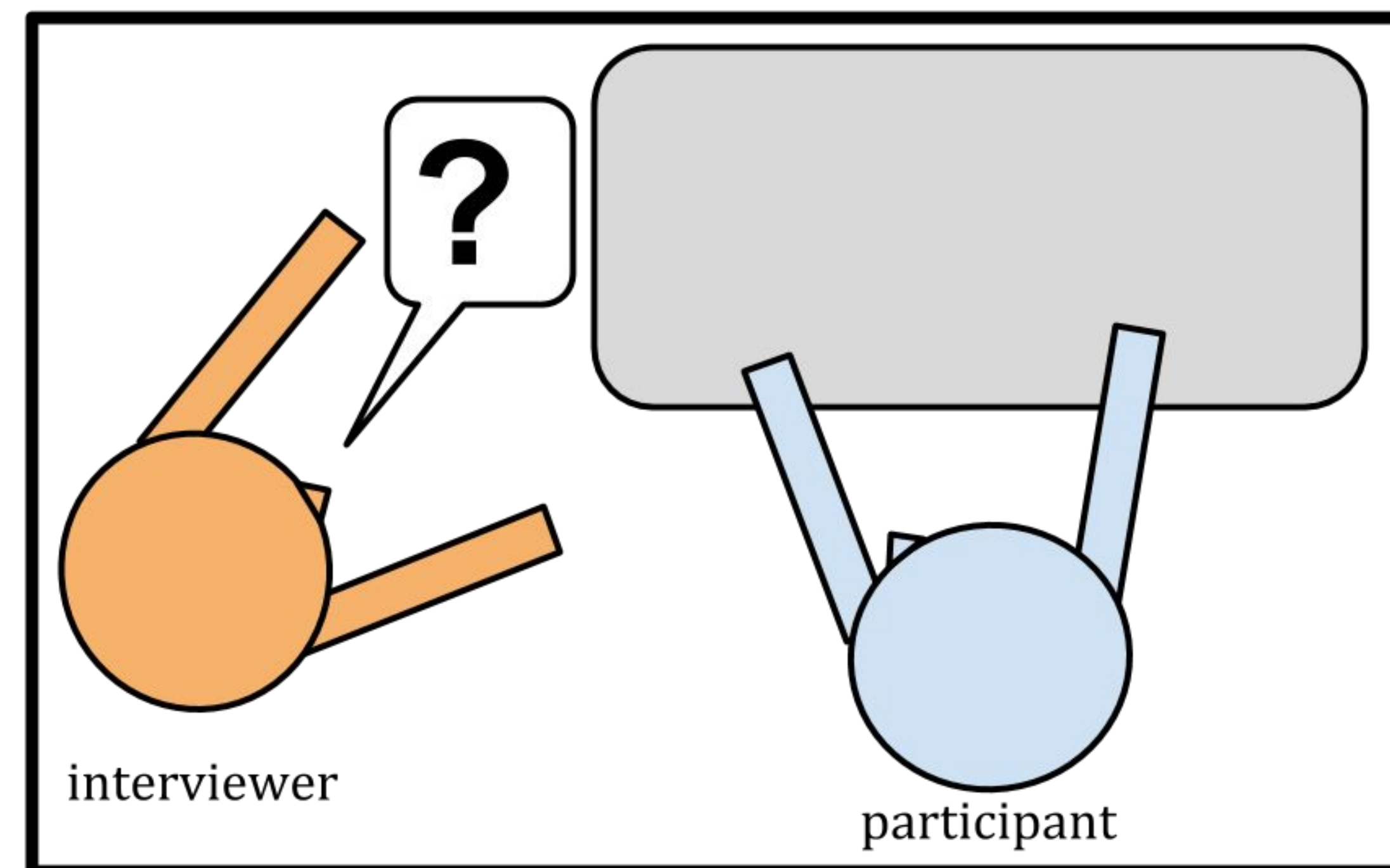
Present data are preliminary.



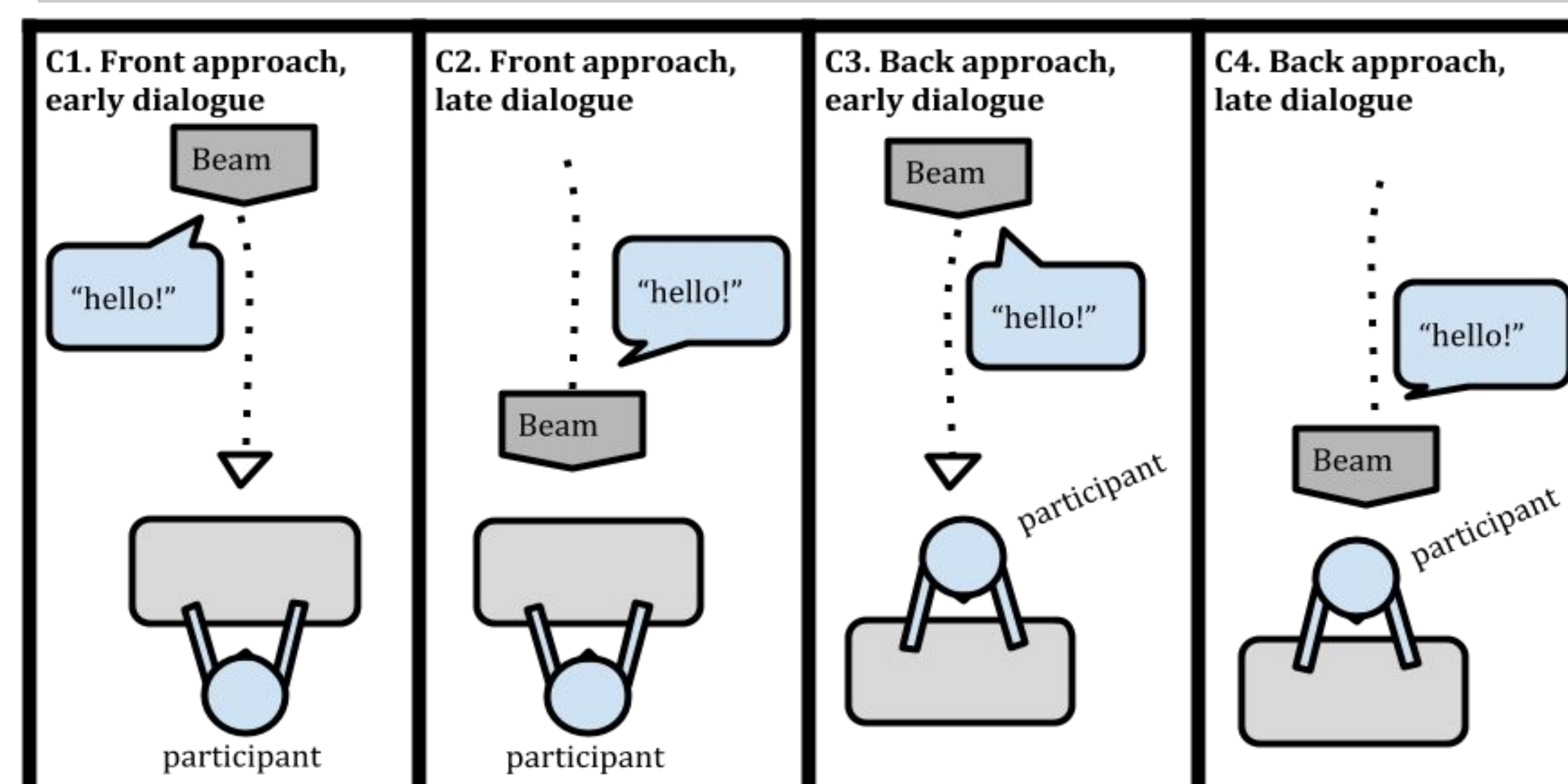
Procedure



(3) Interview: Semi-structured



(1) Conditions



(2) Survey Responses

Average ratings of robot operator

Condition	Critical	Dependable	Open	Sympathetic	Calm
C1. Front, Early n=4	4.25	5.25	3.5	5.5	5.75
C2. Front, Late n=4	2.5	5	3	2.75	5.75
C1-C2	1.75	0.25	0.5	2.75	0

Comparative* ratings of robot operator

Condition	Critical	Dependable	Open	Sympathetic	Calm
C1. Front, Early n=4	-1.25	-1	1.5	-2.25	-1.5
C2. Front, Late n=4	-0.75	-1.25	-0.25	-1	-3.25
C1-C2	-0.5	0.25	1.75	-1.25	1.75

*Comparative ratings were calculated by subtracting the participants' ratings of the robot operator from ratings of themselves.

(3) Interview Responses

Early dialogue

Interview questions	Example answers
Did you think it was socially acceptable?	"Like, weirdly yes"
Was it awkward?	"A little bit, just because he started talking way over there"
Would you have approached from a different direction?	"I like straight forward personally"
Would you have started dialogue later?	"I like that better than him coming up and then talking"

Late dialogue

Interview questions	Example answers
What did you think?	"It was intimidating and strange"
If you were operating the robot, when would you have started the conversation?	"Probably would have started talking all the way over there"
How socially acceptable was the interaction?	"It was awkward... But the boundaries of social acceptability are different when you're not in person"

Hypotheses

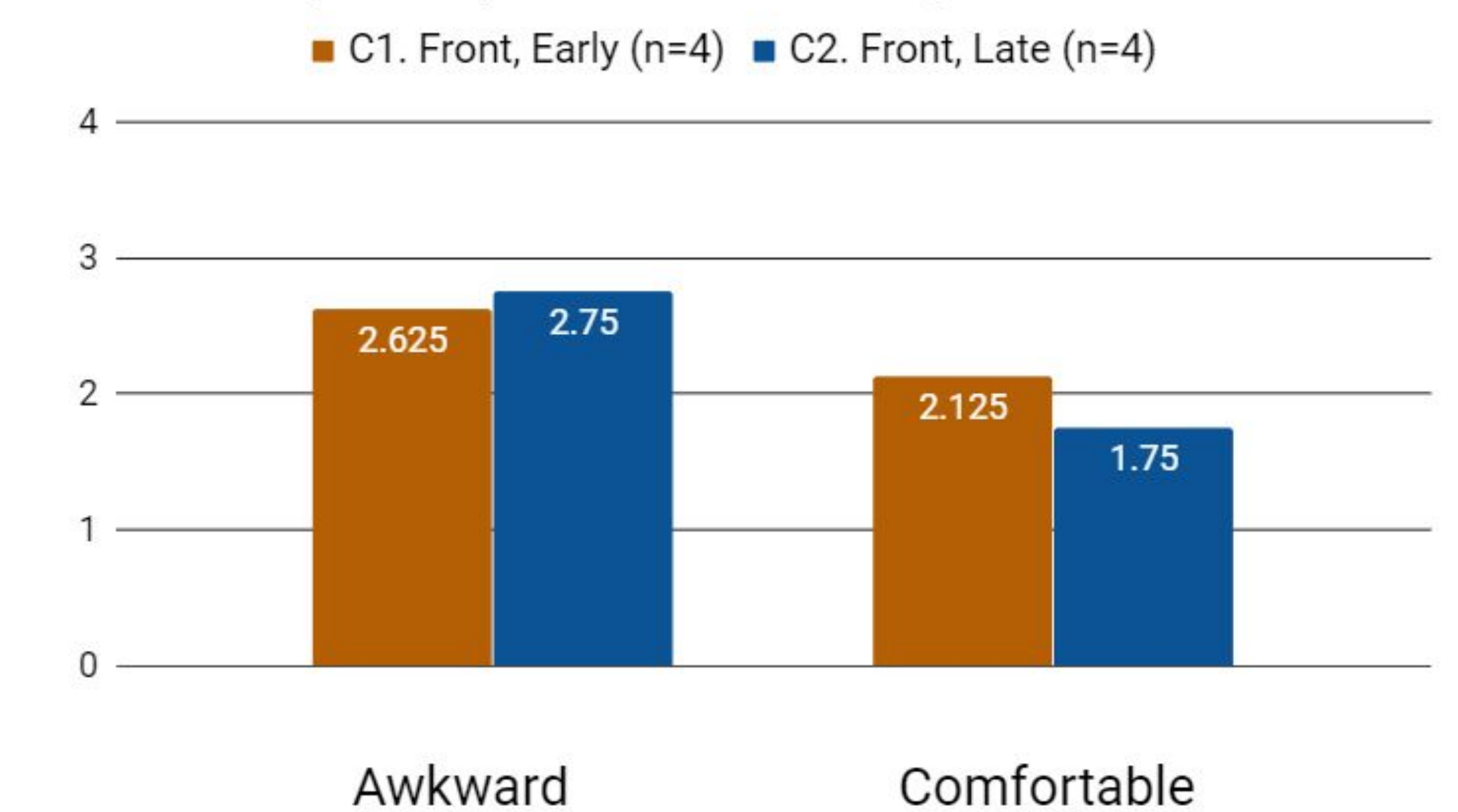
H1: Back approaches will be more comfortable than front.

H2: Back approaches with late dialogue timing will be more uncomfortable than all other approaches.

H3: Front approaches with late dialogue timing will be the most awkward.

(3) Interview Ratings

How did participants feel during the interaction?



Participants rated (0-4) how they felt during the stimulus phase, (1).

Discussion

These data suggest that a late conversation is less comfortable than an early one. Is there a hard and fast rule for how to approach someone as a robot, regardless of situated variables?

For a large group of fundamental social interactions, humans treat robots in a strikingly similar way (Reeves & Nass, 1996). But interacting with a robot can often be different than interacting with a human. Conversation openings are fundamental to social interaction. But, when operating a robot, do they align with sociological expectations? Or are these interactions unintuitive?

Acknowledgments

Gratitude goes to the Re-embodied Cognition lab, Kathy Flores, Yuval Shabtai, Christopher Larking, Syler McCarthy, Rowell Ramirez, and the participants in this study.