# Do We Need Artificial Dining Companions?

## Exploring Human Attitudes Toward Robots in Commensality Settings


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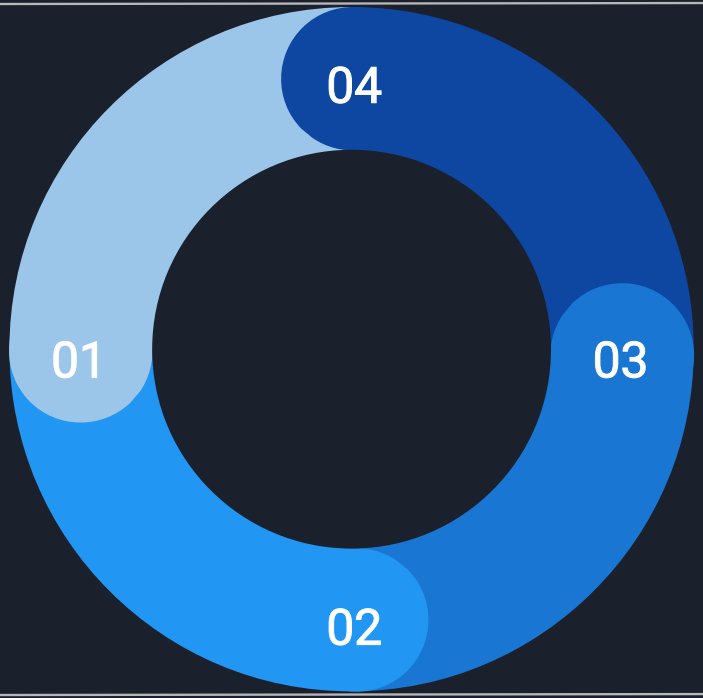
# Towards technology-enhanced Commensality

## Commensality

the act of sharing food and eating together

## Solo dining

main reason of unhappiness in developed societies.




## Artificial Commensal Companion

artificial agent able to maintain engaging interaction with human during food consumption.

## Computational Commensality

computational models of social aspects of eating.

# Context


2 years project: COmputational Models of COmmensality for artificial Agents (COCOA)

01 To design and build new multimodal datasets for commensality research

02 To investigate human-human interactions in a commensal setting using AI

03 To develop artificial commensal companions (e.g., social robots) capable of engaging with human commensals

https://cocoa-research.github.io

# Objectives of this work

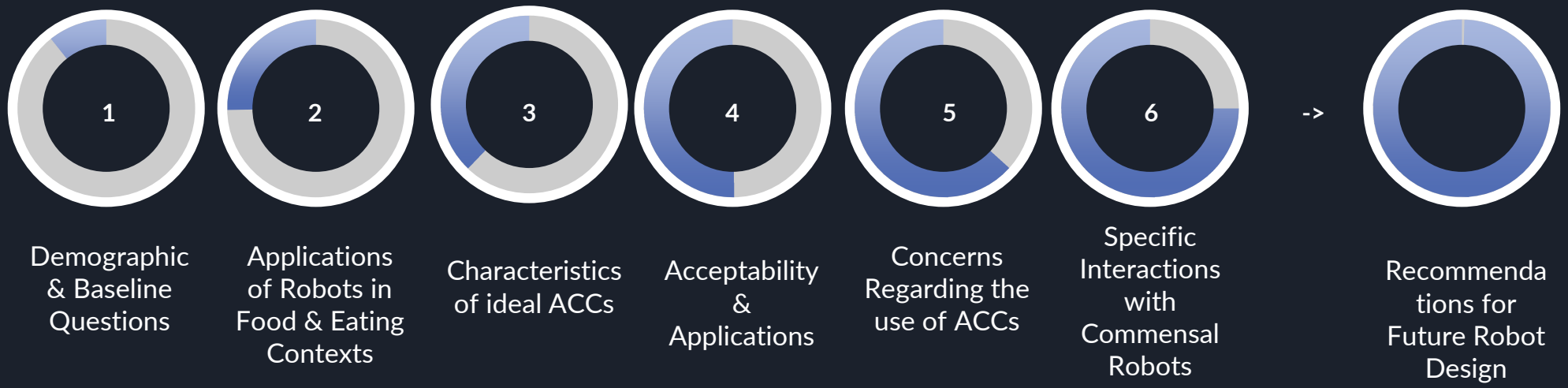
01 To learn whether robotic Artificial Commensal Companions (ACCs) are of interest, and if so, to which specific groups or populations.

02 To understand expectations, attitudes, doubts, and concerns that people have regarding ACCs.

03 To collect a set of specific guidelines that can be used by the developer to implement a concrete instance of the ACCs.

# Methodology

- Online questionnaire combining quantitative and qualitative methods
- 31 fluent English-speaking participants (44.1% female, 16-54 yrs. old) took a 20-minute questionnaire consisting of:




- Questions starts from very generic on robots' applications to very specific about concrete behaviours during meals
  - concept of ACC introduced only in the third stage


# Baseline Questions About Robots

## Attitude towards new technologies

- Nearly 75% of participants considered themselves *slightly* to *very* trusting of new technologies (as opposed to being sceptical of).

## Prior experiences with robots

- 70.6% had prior experiences with robots, and 62.5% of those people have interacted with *social* robots.

*If you think about robots in the context of eating, do you see the robot more as a machine or device, or more as a companion or buddy?*

- 72.7% considered robots to be machines rather than buddies.

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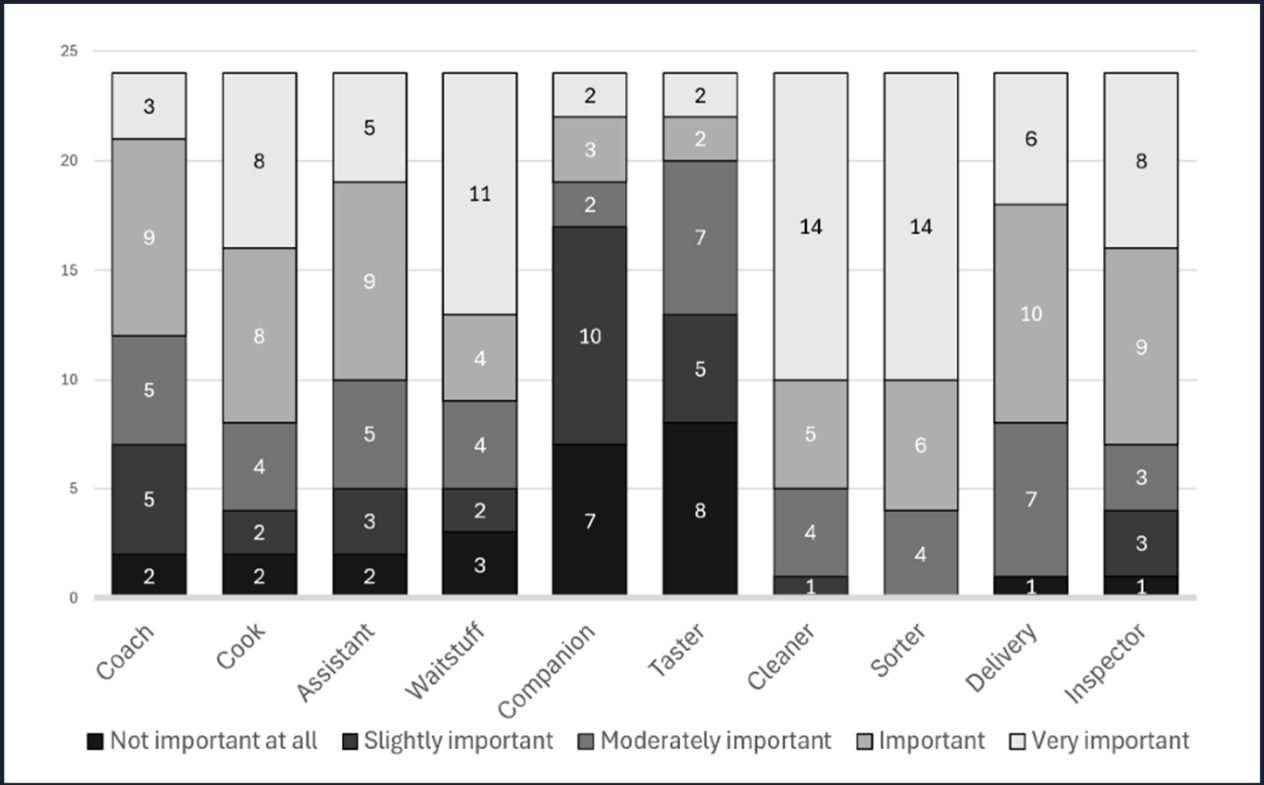
# Roles

If someone asks you, what are the possible applications of robots in the context of eating, which roles do you think about? Please choose which possible roles (listed below) you consider to be important applications according to you.




Participants imagined robots in dining environments as belonging more in *subservient* roles such as waitstaff and cleaner, and less so social roles, or as a *companion*.

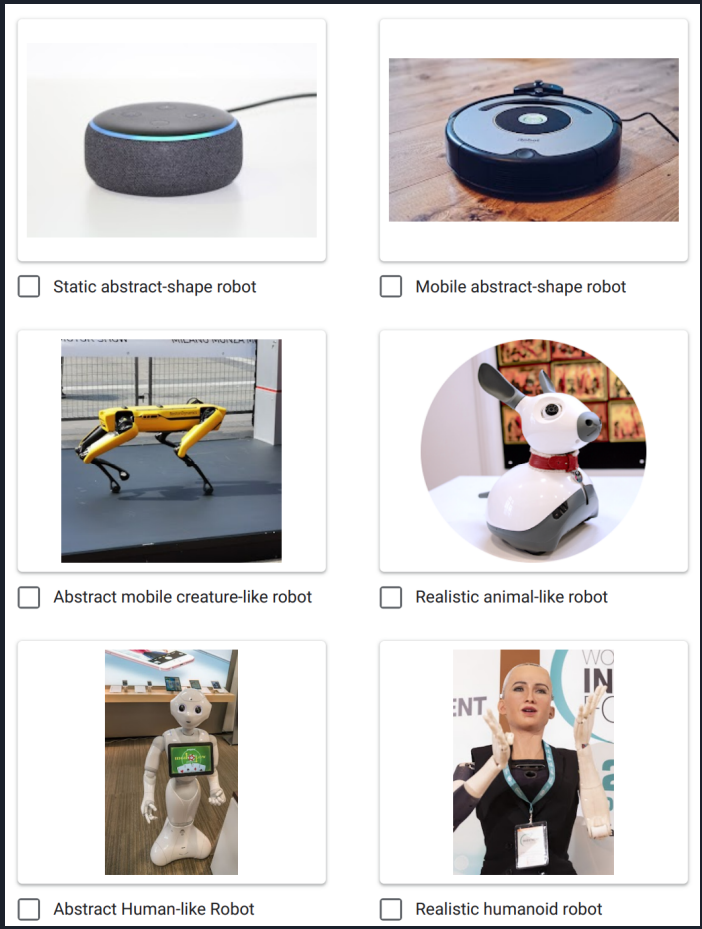

# Characteristics of ideal ACCs

01 The participants were asked about the physical appearance and embodiment that they would want to see in three different eating environment.

02 They were also asked about the skills and functionalities of ideal ACC.

# Physical Expectations

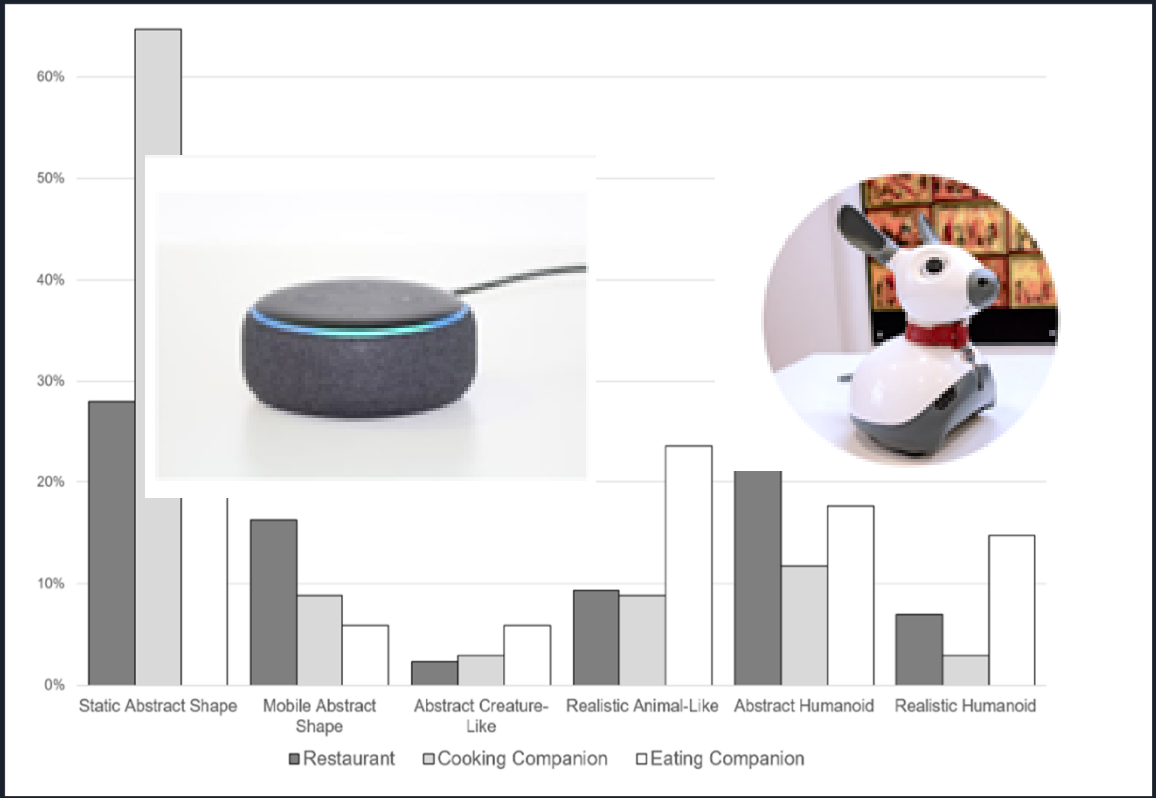
## Realistic Humanoid to Static Abstract Shape




- The participants choose between six different robot types/embodiment
  - each illustrated with an example
- Three different contexts:
  - restaurant
  - cooking companion
  - eating companion (=ACC)

# Physical Expectations

## Realistic Humanoid to Static Abstract Shape



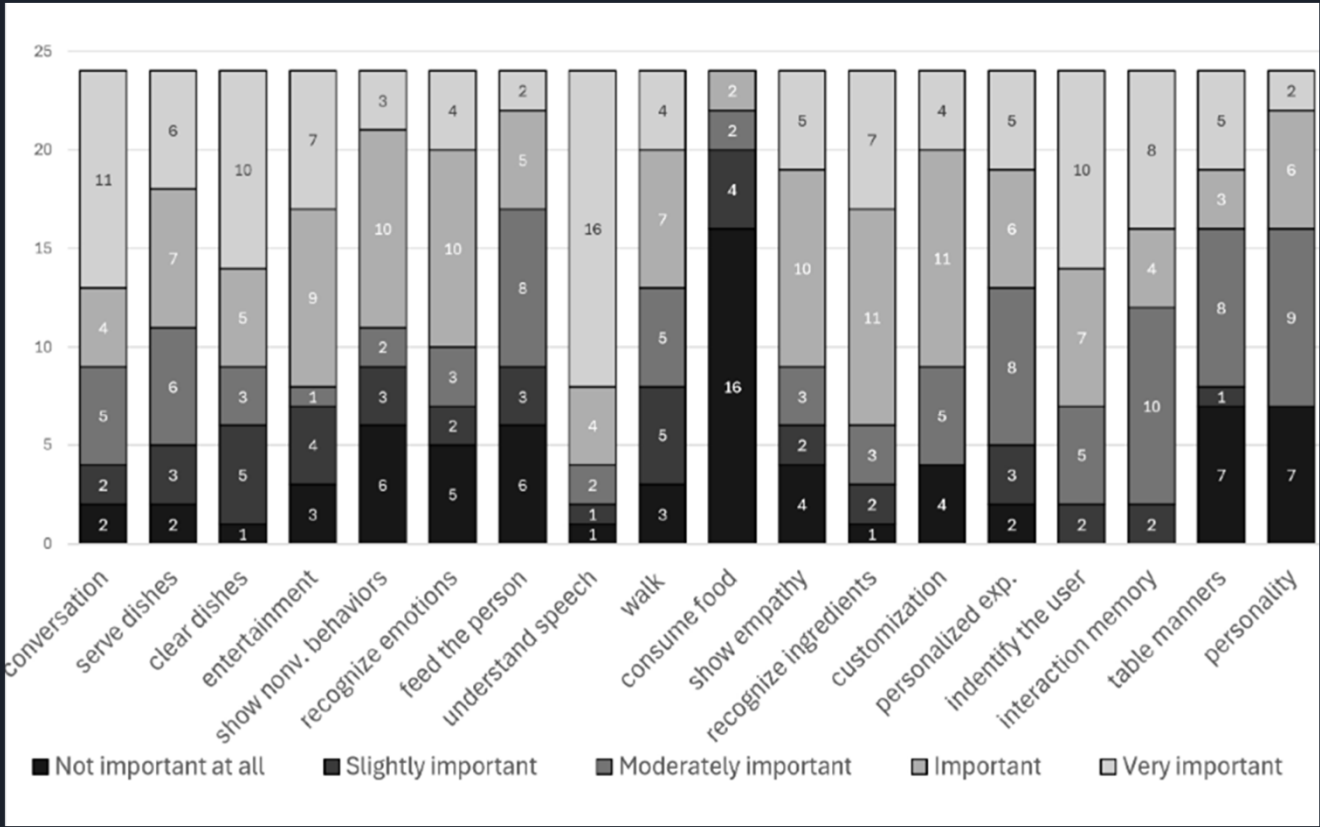

How do you expect the robot to look?

- **static, abstract shape** was chosen for a cooking companion… and eating companions, too!
- Abstract humanoids and static abstract shapes were expected most in restaurants
- Eating companions can be preferably:
- static abstract shape
- realistic animal-like

# Functionalities

How important is it for you that a robot, being a dining companion, has the following skills/characteristics?

**If they're going to be social, they'd better be good.**

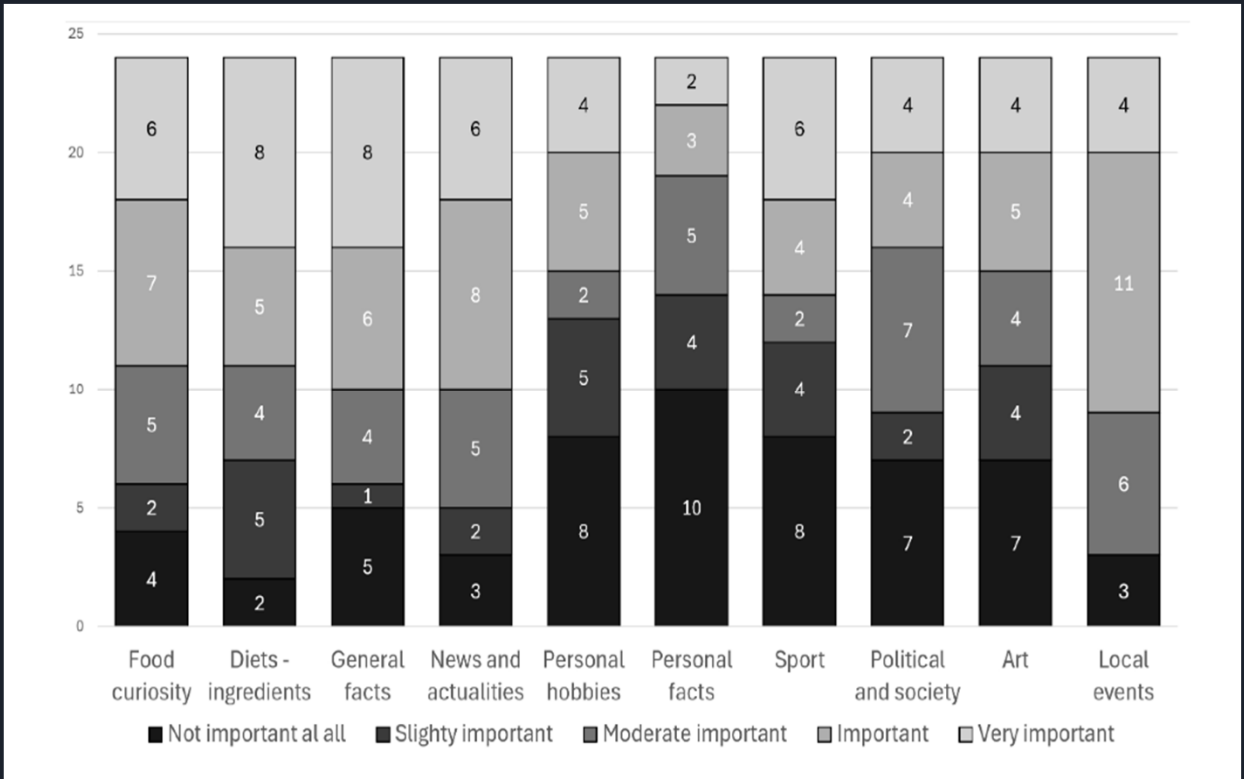



- Clear desire for social features from a considerable proportion of respondents.
- People that valued capabilities such as conversation, speech recognition, empathy, and other traits that facilitate good social interactions.
- An ACC consuming food, or attempting to do so was something people were highly disinterested in.

# Conversational Topics

If a robot dining companion is able to talk, what would you like to talk with it about?

**Better don't talk on personal topics.**

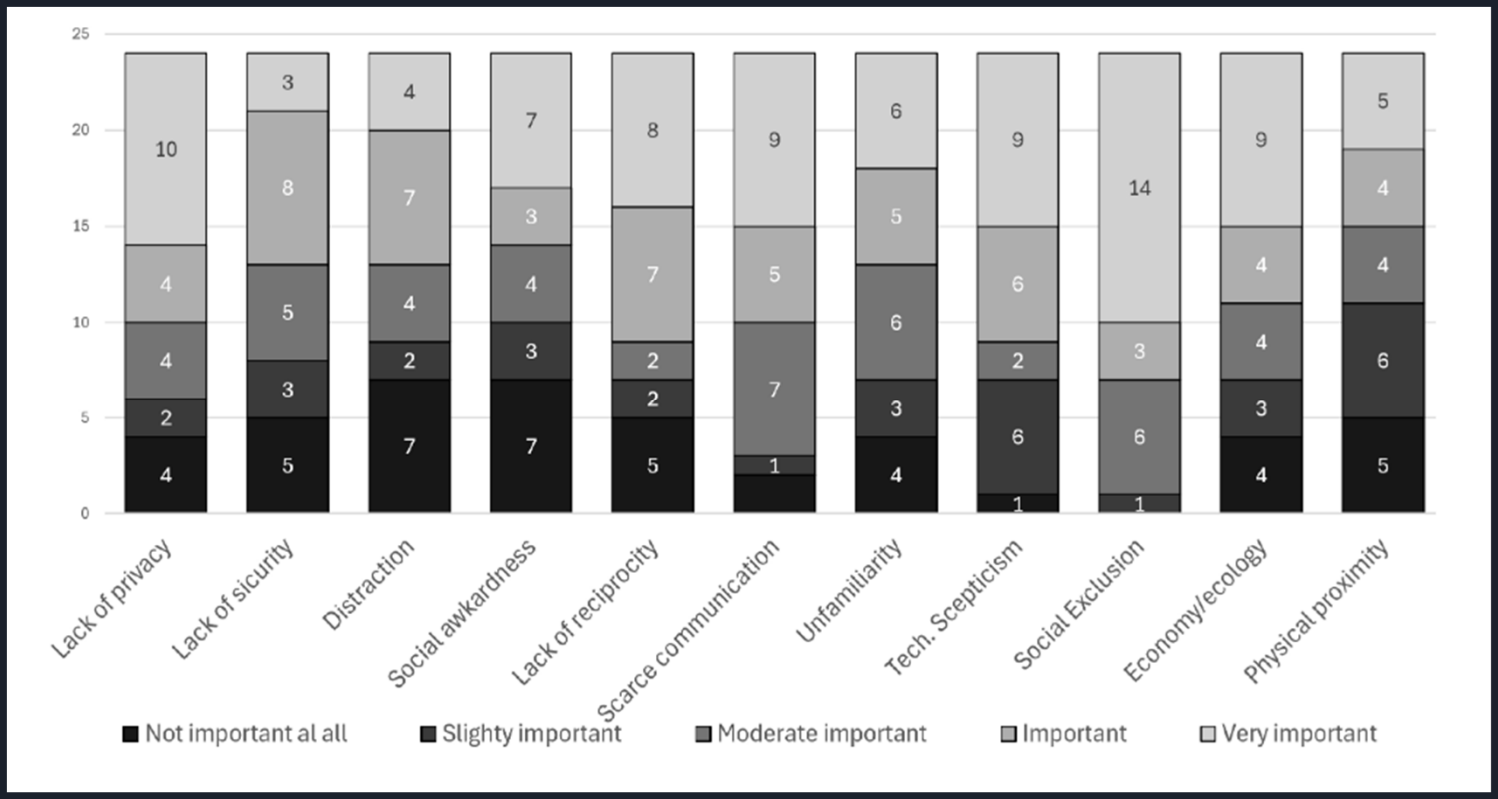



- Respondents were interested in discussing things directly related to the meal (such as health and food ingredients), and mild conversational topics (such as sports and the local events).
- Other than being informational, participants were less interested in ACCs communicating on a personal level.

# Concerns

Which of the reasons listed below would make you feel uncomfortable when interacting with a robotic dining companion?

**Privacy & Security are serious concerns today.**




- Concerns regarding privacy and security were made clear, as were those concerning *social exclusion*.
- People feared the judgment of others if they were seen eating with an Artificial Commensal Companion.

# Key Takeaways

The main concerns focus on:

- social stigmatization,
- renunciation of human-human contacts
- scarce communication abilities of the ACC.

“. . . it makes you lose touch with reality and feelings. As of now I don’t believe that a robot can feel stuff and be empathic like a human being.”

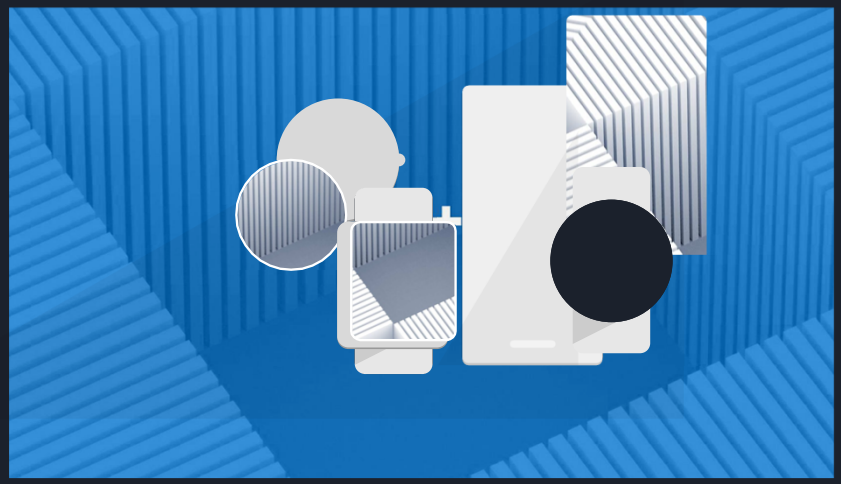
”It might make me feel isolated and lonely.”

“It could be uncomfortable, if done in an open space with other people able to see that you are dining with a robot.”

# Key Takeaways

- 61.8% preferred virtual experience to a physical robot

- Applications: elderly and childcare, hospitals, foreign countries visitors, entertainment, mental health and loneliness



**If ACCs did exist, what should they look like?**

"Not like a human, that would be creepy "

"I don't have something in mind on how they should look like.
I can only say that if they look like humans,
I would be a bit apprehensive or not comfortable with it."

# Conclusions

Preference for non-humanoid, possibly virtual, primarily servile companions, which don't address personal topics.
The ACC seems new and large unknown concept.
Exposure would be a crucial game-changer

Let's discuss:

- Humanoid or Not? Physical or Virtual?
- Beyond the robot servant – what is the first step?

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