'ALEXA DOESN'T HAVE THAT MANY FEELINGS'

CHILDREN'S UNDERSTANDING OF AI THROUGH INTERACTIONS WITH SMART SPEAKERS IN THEIR HOMES

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AI JUST EXPLODED

- ChatGPT, GPT4 and competitor products got *really* smart – huge advances are reported daily (not yearly)

- They can generate high quality new text – stories, poems, instructions, software

- They're examples of Large Language Models, a type of statistical approach to AI. It is difficult even for their developers to explain how they generate a specific bit of text

- GPT4 can "reasonably be viewed as an early (yet still incomplete) version of an artificial general intelligence (AGI) system" (Bubeck et al, 2023)

- Because of an "**out-of-control race to develop and deploy ever more powerful digital minds that no one – not even their creators – can understand, predict, or reliably control**…thousands of scientists call for "**all AI labs to immediately pause for at least 6 months the training of AI systems more powerful than GPT-4**" https://futureoflife.org/open-letter/pause-giant-ai-experiments/

HUMANS CREDIT TOO MUCH INTELLIGENCE TO AI

- People are misled by the human-like qualities of systems, and overestimate their capabilities (Van Brummelen et al., 2021)

- 'fundamental over attribution error' (Marcus and Davis, 2019)

- This is problematic because of the tendency of Large Language Models to "hallucinate" (i.e. make stuff up) – system developers cannot guarantee/verify that they give correct information

- Gullible humans + hallucinating AI is a current problem

- Superintelligent AI might be a future problem

- Capability overhang –To Add

THE ROLE OF CHILDREN IN AI DISCUSSIONS

- Children have a right to be involved in the debate about the role of AI in society

- *"Ensuring participation means that children are given agency and opportunity to shape AI systems, and make educated decisions on their use of AI and the impact that AI can have on their lives. All children should be empowered by AI and play a leading role in designing a responsible digital future for all"* UNICEF Children and AI Guidelines

- They might be unaware of media stories about AI superintelligences but they routinely interact with AI in their homes every day – Alexa, Siri, Google Home

- What do they already know and understand about AI from these interactions?

HOW ALEXA WORKS
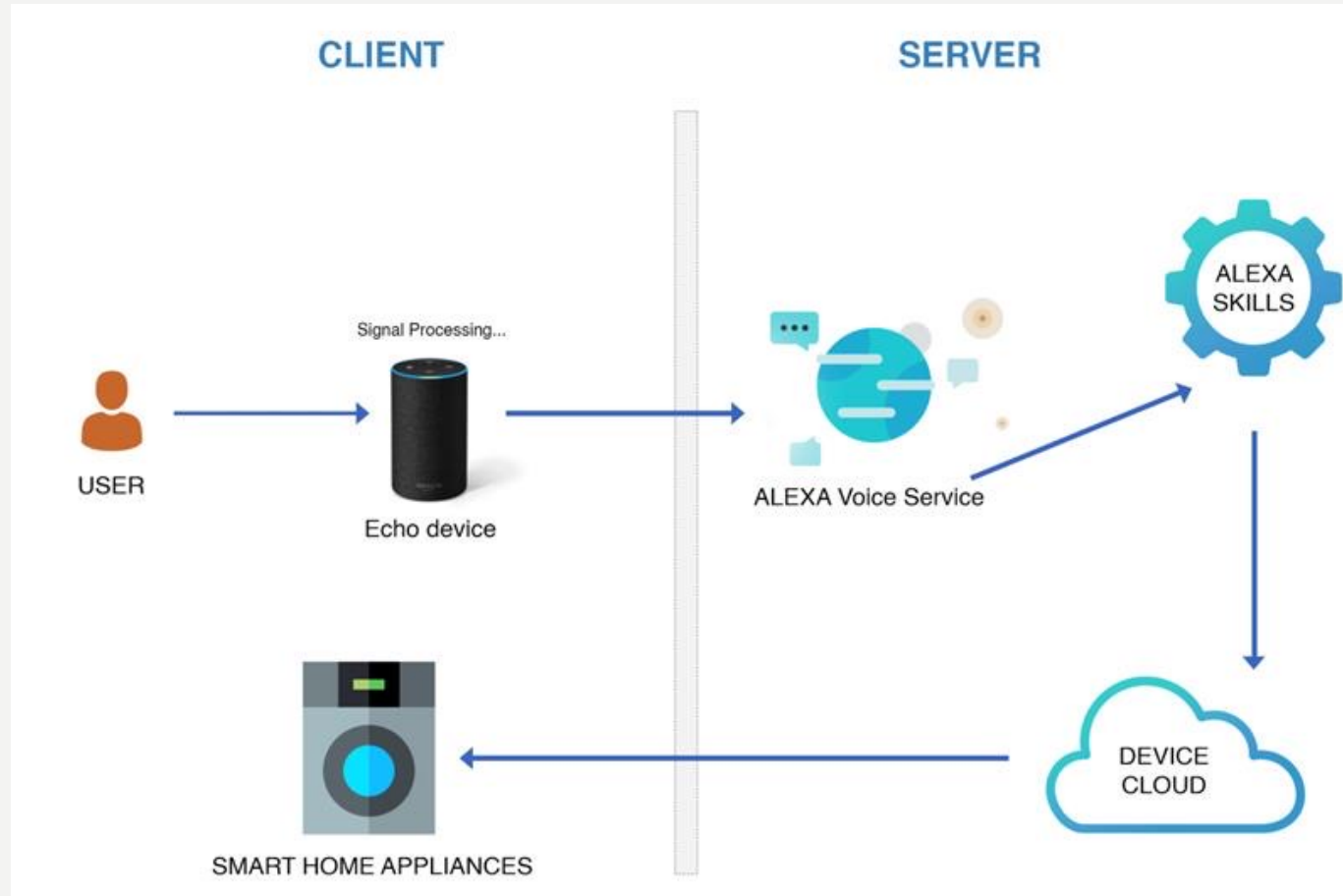
ALEXA PRIVACY SETTINGS

Your Alexa device listens for the wake word. If it recognizes "Alexa" or "Echo" then it sends the audio stream across the internet to Amazon servers for further processing

Alexa stores transcripts of interactions in the device owner's Amazon account for months or years – you can choose how long they should be stored and delete them

The account holder (parent/carer) can view what their children say to Alexa

Amazon staff sometimes uses some recordings to improve Alexa's performance

If you use a 3rd party Amazon skill, some information (but not recordings) will be shared with the 3rd party company. (You can configure this)
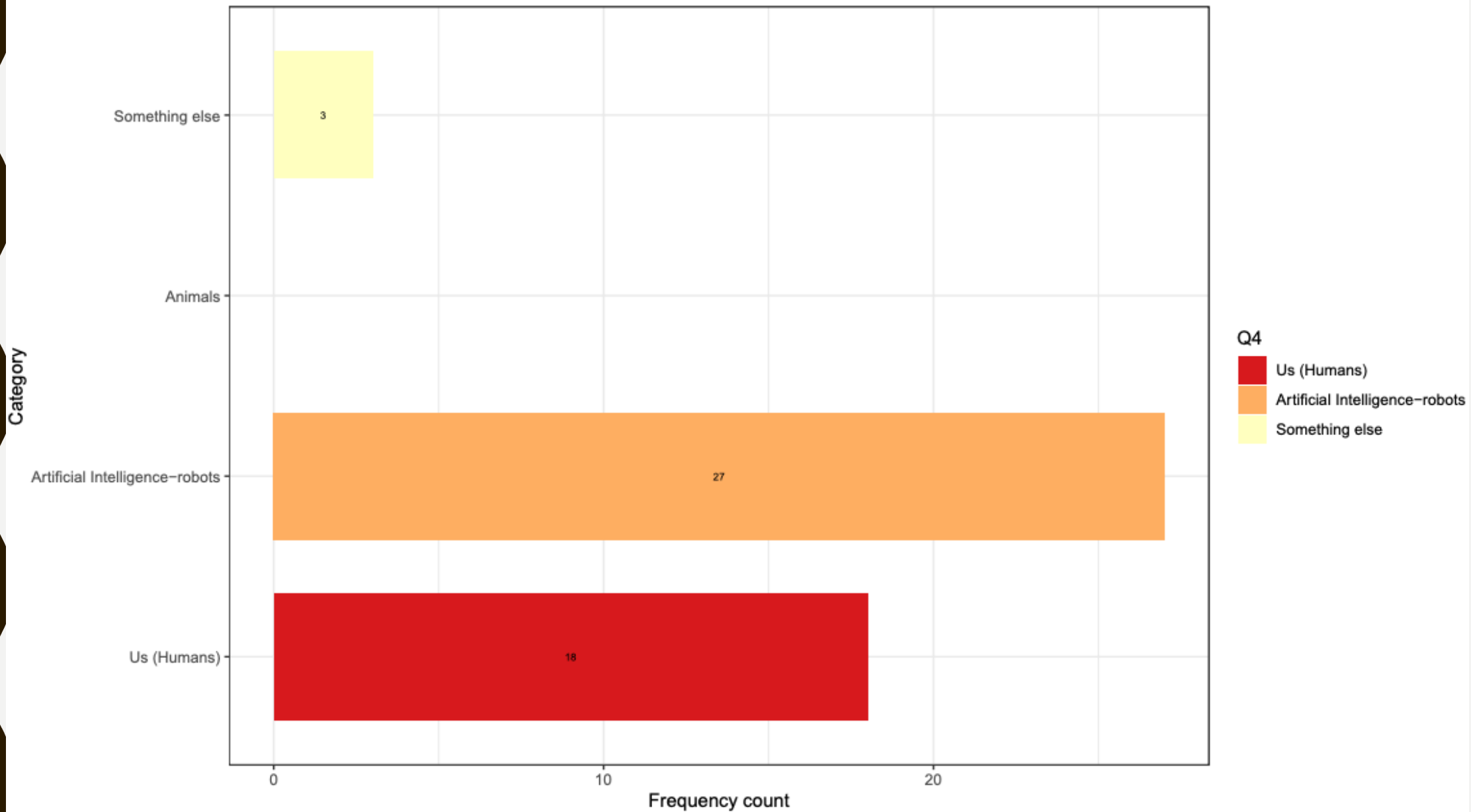
METHODS

- Online survey of children at 2 state-funded primary school in SE Scotland

  - 166 respondents

- In-person semi-structured interviews conducted in groups at one school

  - 28 interviewees (14 Male, 12 Female, 2 prefer not to say)

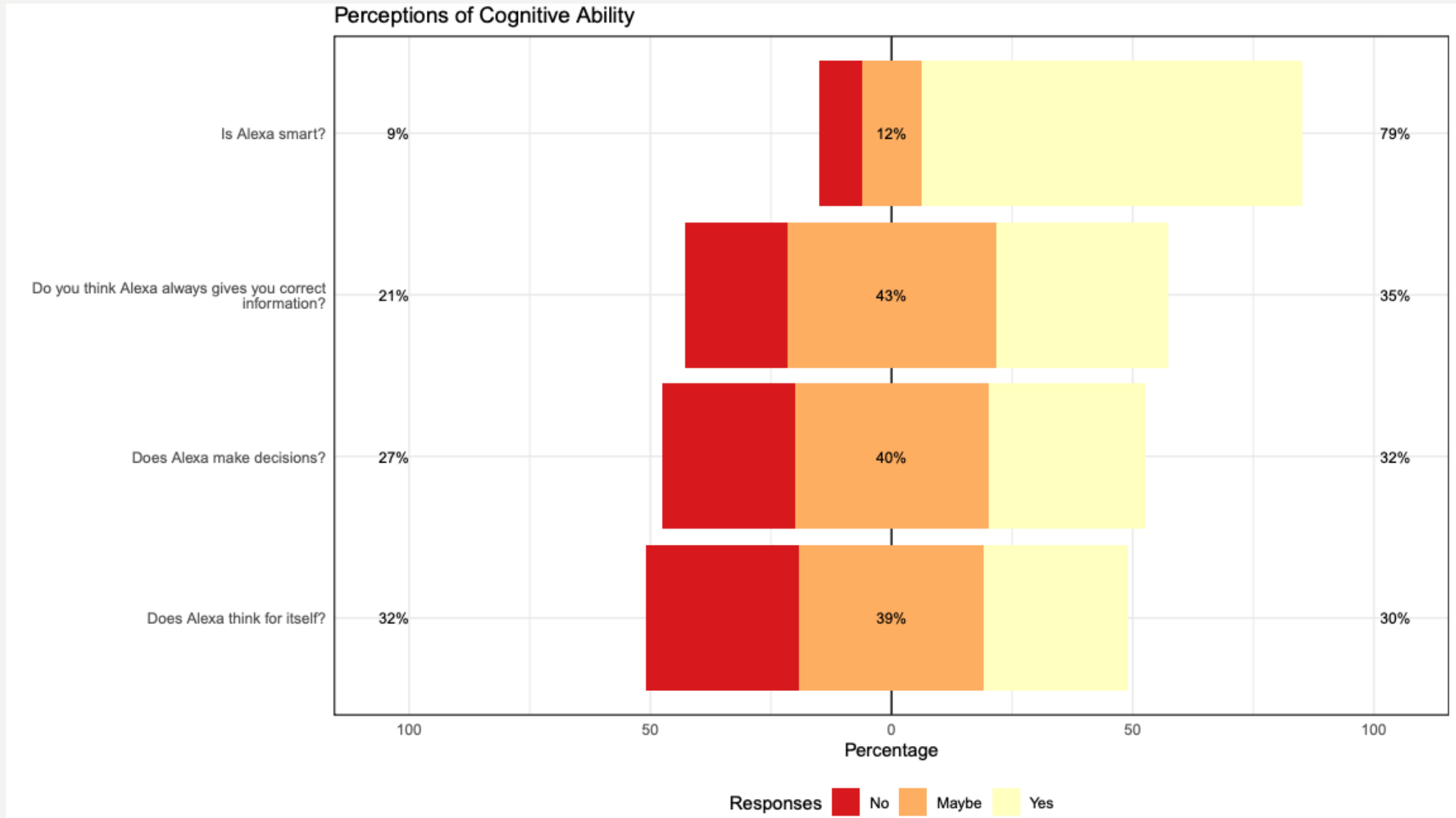| Gender/Age	8 years	9 years	10 years	11 years	Total
Male	17	25	19	15	76
Female	30	16	14	17	77
Prefer not to say	8	4	0	1	13

SMART SPEAKER OWNERSHIP

- 92% of survey respondents have a smart speaker at home

- Alexa (79%), Google Home (11%), Siri (7%), and other systems (3%).

- 44% of the children use their smart speakers very often, 45% sometimes use it, and 11% did not use it often

- Children use their smart speakers to play music, ask questions, search for information, tell jokes and listen to stories

Does Alexa think like

FINDINGS - COGNITION

Perceptions of Cognitive Ability

Question	No	Maybe	Yes
Is Alexa smart?	9%	12%	79%
Do you think Alexa always gives you correct information?	21%	43%	35%
Does Alexa make decisions?	27%	40%	32%
Does Alexa think for itself?	32%	39%	30%

Responses: No, Maybe, Yes

FINDINGS – ANTHROPOMORPHISM

Anthropomorphism

Question	No	Maybe	Yes
Does Alexa have feelings?	35%	37%	28%
Can Alexa feel offended?	27%	50%	23%
Does Alexa have friends?	36%	43%	21%
If Alexa breaks down, would it be ok to throw it away?	56%	32%	13%
Does Alexa choose to do things?	55%	32%	13%
If Alexa is in the room and you're not including it in the conversation, would it feel left out?	59%	29%	11%

Percentage

Responses: No, Maybe, Yes
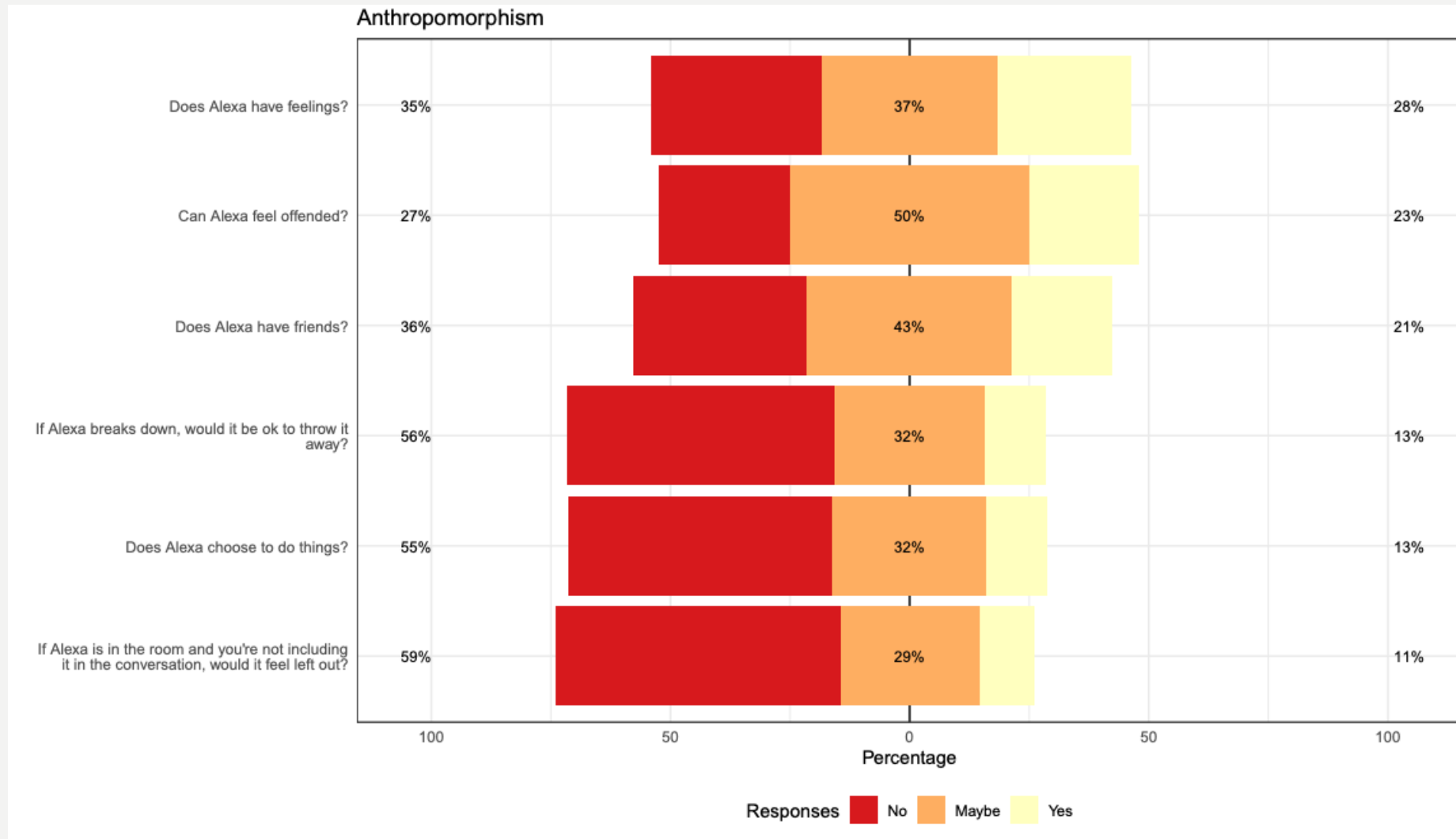
ALEXA'S FEELINGS

I think they do have feelings deep down. Maybe they've been programmed to have feelings (M2)

[Alexa does have feelings...] because I've watched something on YouTube..because people think...say, pets, they think they don't have feelings, because they're just animals but animals have feelings. So then that's how I think Alexa has feelings (F1)

Because it's not their own person. They don't have a brain for themselves or a heart or any feelings. It's just an AI made by someone else" (G7, M2).

But as soon as there is ... proper artificial intelligence that actually does have feelings - then I would say no, it shouldn't [continue to help when a user is rude to it]. It shouldn't because it has feelings to be hurt. But Alexa doesn't (G10, M1).

WHAT DO YOU THINK HAPPENS WHEN ALEXA IS SWITCHED OFF?

"She recharges"

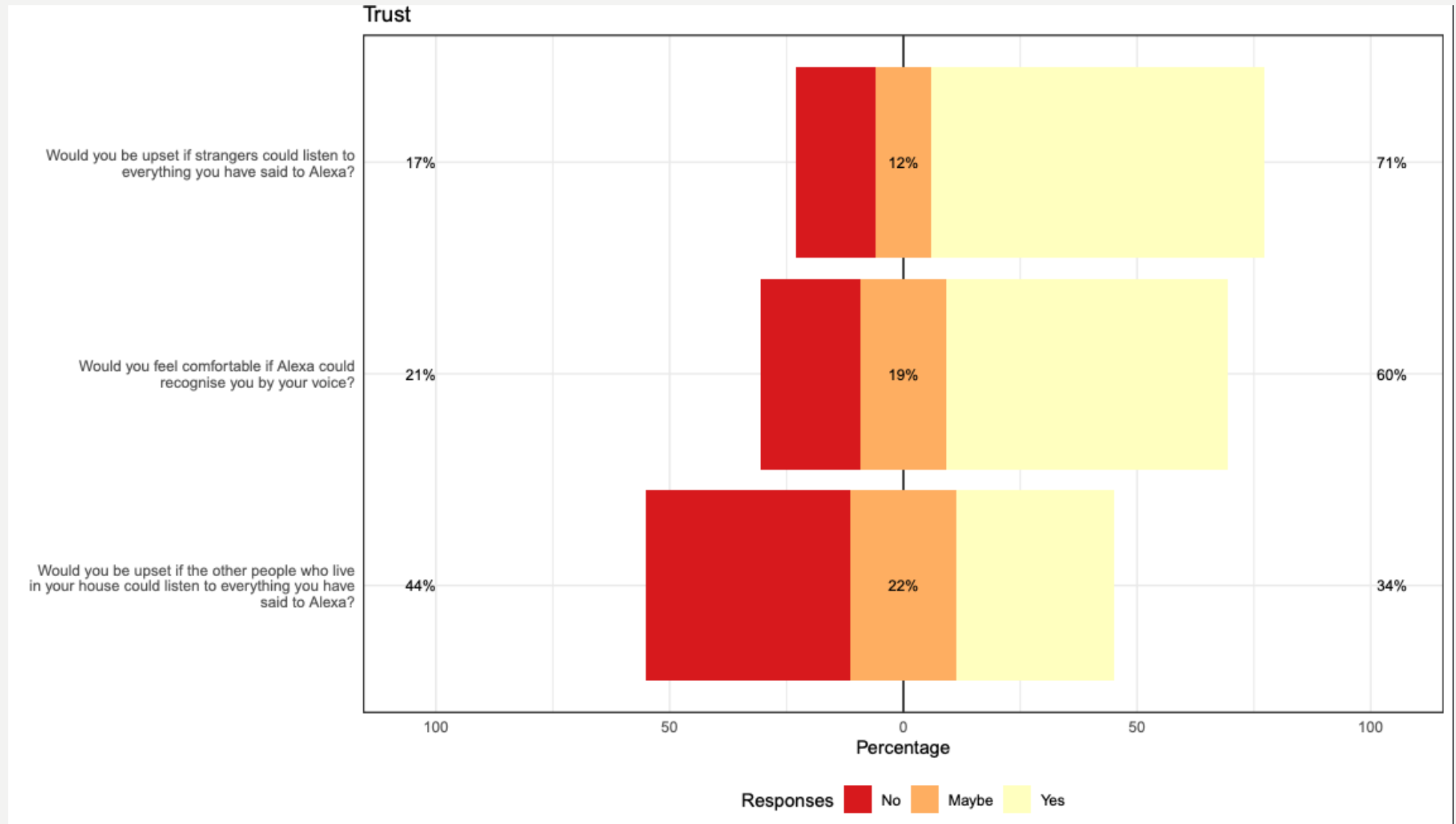"It probably goes to sleep because it can't be bothered with us humans"

"It listens to what you're saying and tells the company that it works for"

"she lisens to my seacreat conversations"

"nothing, I think it does not have feelings or a brain so absolutely nothing"

"she is dead"

FINDINGS - TRUST

CHILDREN DON'T WANT OTHERS TO KNOW WHAT THEY SAY TO ALEXA

"M & F2: You never know, your parents could be listening in

F1: Or they could connect and see you've been asking

M: And imagine – if we don't know if there's like this thing and all your recent things said on Alexa could be…

F1: I just don't like… the idea of having a robot knowing my personal secrets" (G5)

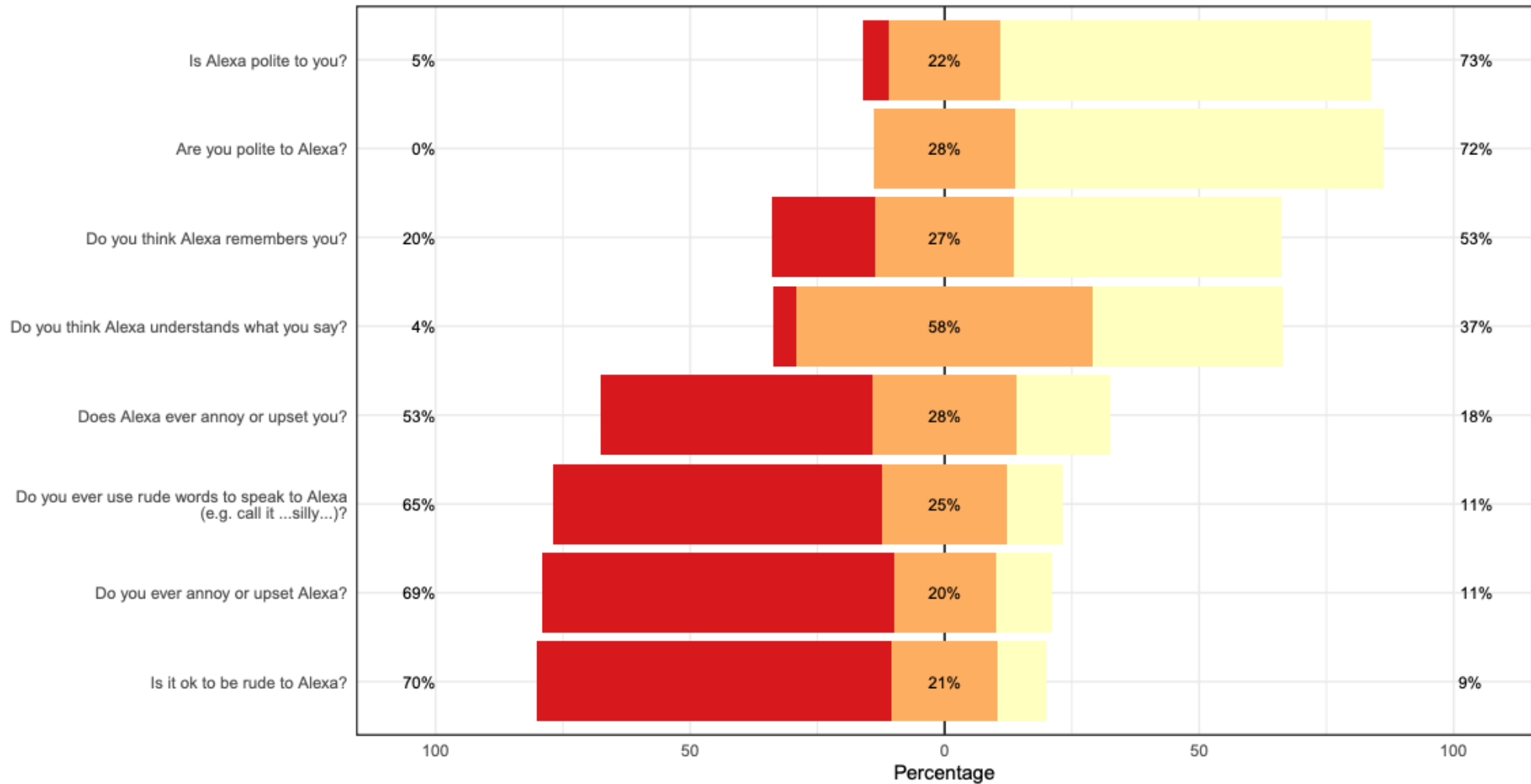"*So would you be upset if strangers could listen to everything?*

All: Yes!

F: Yeah, they could be like .. they could like break into your house or something…

M1: They could share your personal information or where you live

F: They could share your crushes and stuff!" (G2)

FINDINGS - INTERACTIONS

Interactions with Alexa

Question	No	Sometimes	Yes
Is Alexa polite to you?	5%	22%	73%
Are you polite to Alexa?	0%	28%	72%
Do you think Alexa remembers you?	20%	27%	53%
Do you think Alexa understands what you say?	4%	58%	37%
Does Alexa ever annoy or upset you?	53%	28%	18%
Do you ever use rude words to speak to Alexa (e.g. call it ...silly...)?	65%	25%	11%
Do you ever annoy or upset Alexa?	69%	20%	11%
Is it ok to be rude to Alexa?	70%	21%	9%

Percentage

Responses No Sometimes Yes

HOW DOES BEING RUDE TO ALEXA COMPARE TO BEING RUDE TO A FRIEND OR A PET?

"It's not as strong as being rude to your family and friends"

"Friends and pets are living beings, whereas Alexa is a robot"

"Not really the same friends or pets, are real and have feelings and care about me Alexa does not care AT ALL"

"Well, Alexa in my opinion is a robot so saying mean things to it are not the exact same as animals because animals have feelings and I don't know if Alexa does."

"You shouldn't be rude to anyone or anything it will make them very sad:("

INTERESTING MENTAL MODELS

- I: *How does it answer your questions?*

- M: Because of a really smart guy. He plugged himself into it and then it [Alexa] got really smart and then he plunged himself into multiple [Alexas] and now there's an army.

- F1: I think someone spoke into a speaker and said every possible thing in the world and then he put in the devices.

- F: There's someone on the other side listening to what you're saying and then they play the songs with their computer.

- If you tell Alexa secrets, I feel those messages travel to Alexas throughout the Alexa Amazon network and then if someone's telling their secrets to Alexa and someone else asks them to tell their secrets but then it tells YOUR secrets! Then I would not feel safe cause the whole world might know

SUMMARY OF FINDINGS

Cognitive abilities –

- Participants tended to overestimate the intelligence of their smart speakers, or at least were unsure about them

Anthropomorphism and agency

- What is Alexa? 82% of the participants said it was 'Artificial Intelligence', only 1% said human (15% said it was object)
- around one-third to one-half of the participants indicated that they were unsure about whether smart speakers have feelings or agency
- This suggests that while the majority of the children do not believe that smart speakers are literally human, they are confused about what to believe about the human-like behaviours which they exhibit
- A new ontological category?

Privacy/trust

- The majority of the children had an inaccurate understanding of privacy/security
- At the interview most were uncomfortable with the idea of parents or strangers knowing what they say to Alexa

ONGOING WORK

- Developing educational materials for AI Literacy:
  - Video about how Alexa works – a fictional scenario with child actors
  - Unplugged activity to explain how Alexa works (with Gareth Dawson)
  - With Teachers' Notes
- Videos for parents to explain how to change Alexa privacy settings
- Research challenge
  - Let's go beyond saying that tech companies really ought to take into account children's views
  - *How do we represent the spectrum of children's values about AI in an actionable format for technology designers?*

QUESTIONS?

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- Read the details of these findings at: https://arxiv.org/abs/2305.05597