

# When Robots Spill the Beans: Exploring Transparency Declarations in Human- Robot Interaction

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Paper



References



## Theory

**Data transparency is vital:** Social robots harvest personal data, raising privacy & security concerns (Lutz et al., 2019); disclosure allows informed choices (Wang et al., 2021; Selkowitz et al., 2016)

**HRI is cognitively demanding:** Robot interactions trigger social schemas (Rosenthal-von der Pütten et al., 2013), higher load than browsing a website (Guznov et al., 2020).

### How do robots deliver transparency?

Research tackles *what* to explain but pays far less attention to *how* (Schött et al., 2023) - that is, the communication channel (voice, screen, gesture, poster, etc.) a robot should use to convey transparency in the first place.

## Research Goal

Compare different transparency declaration types:

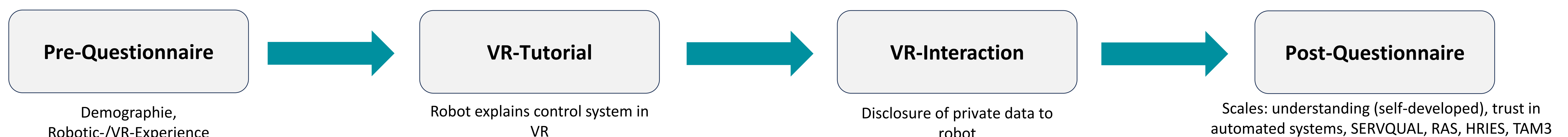
- **Unimodal** (voice / screen / poster)
- **Multimodal** (voice + screen, voice + poster)
- **No transparency declaration**

regarding users' perception, understanding, trust, and performance.

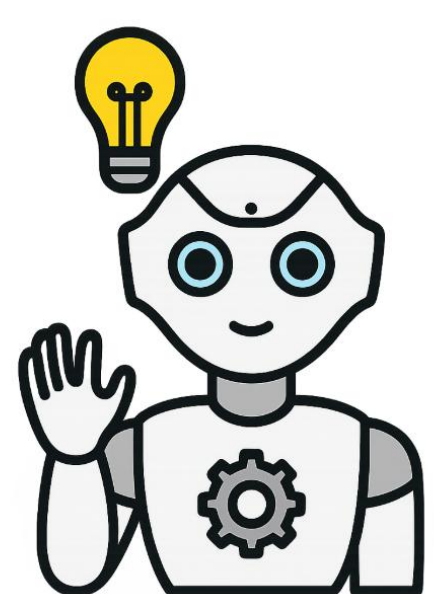
## Method

👤 **(Convenience) Sample:**  $N = 95$ ;  $M = 24.64$ ,  $SD = 9.40$   
🕶️ **VR** as research instrument  
📄 **Task:** Register for a library card → enter personal data and take a photo  
⚙️ **6 Conditions:** 1x control, 3 × unimodal, 2 × multimodal

## Procedure

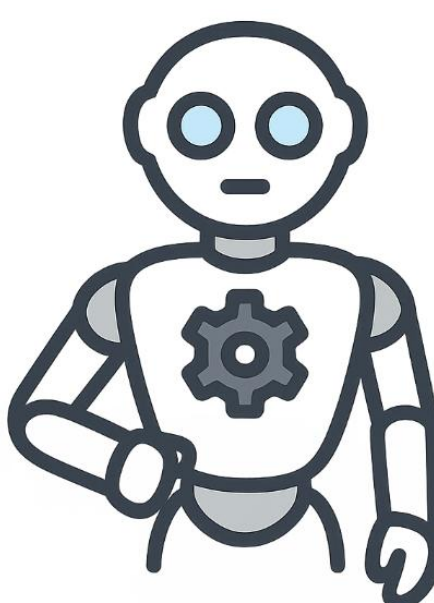


## Results & Interpretation



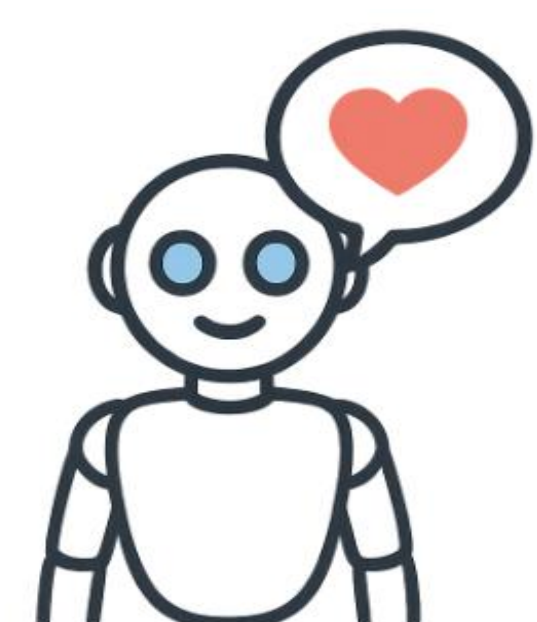
### Understanding

Participants who received a *unimodal* transparency channel—voice, tablet, or poster—understood the data-handling process significantly better than those in the control and multimodal group



### Automation

Unimodal delivery also made the robot feel more autonomous; adding a second channel or giving no explanation at all both scored lower.



### Sociability

The same “less-is-more” pattern emerged: unimodal delivery left the strongest social impression, whereas multimodal explanations dampened it.

**Multimodal** transparency may cause information **overload** → potential backfiring effect.

**Unimodal** transparency conveys **clearer messages** → better understanding & stronger automation perception.

**More is not always better:** Multimodality doesn't automatically enhance clarity or acceptance.

## Take-Home Message

Although *unimodal* transparency was **perceived as more effective**, *multimodal* strategies should **not be dismissed**.  
They offer valuable potential in contexts **requiring accessibility or tailored communication for diverse user needs**.