

# WHO ARE YOU, AGAIN? : EFFECT OF CHANGING PARTNERS' AVATARS AND VIRTUAL ENVIRONMENTS ON PROFILE MEMORY

Shun Takenaka, Takato Mizuho, Takuji Narumi, Hideaki Kuzuoka  
The University of Tokyo

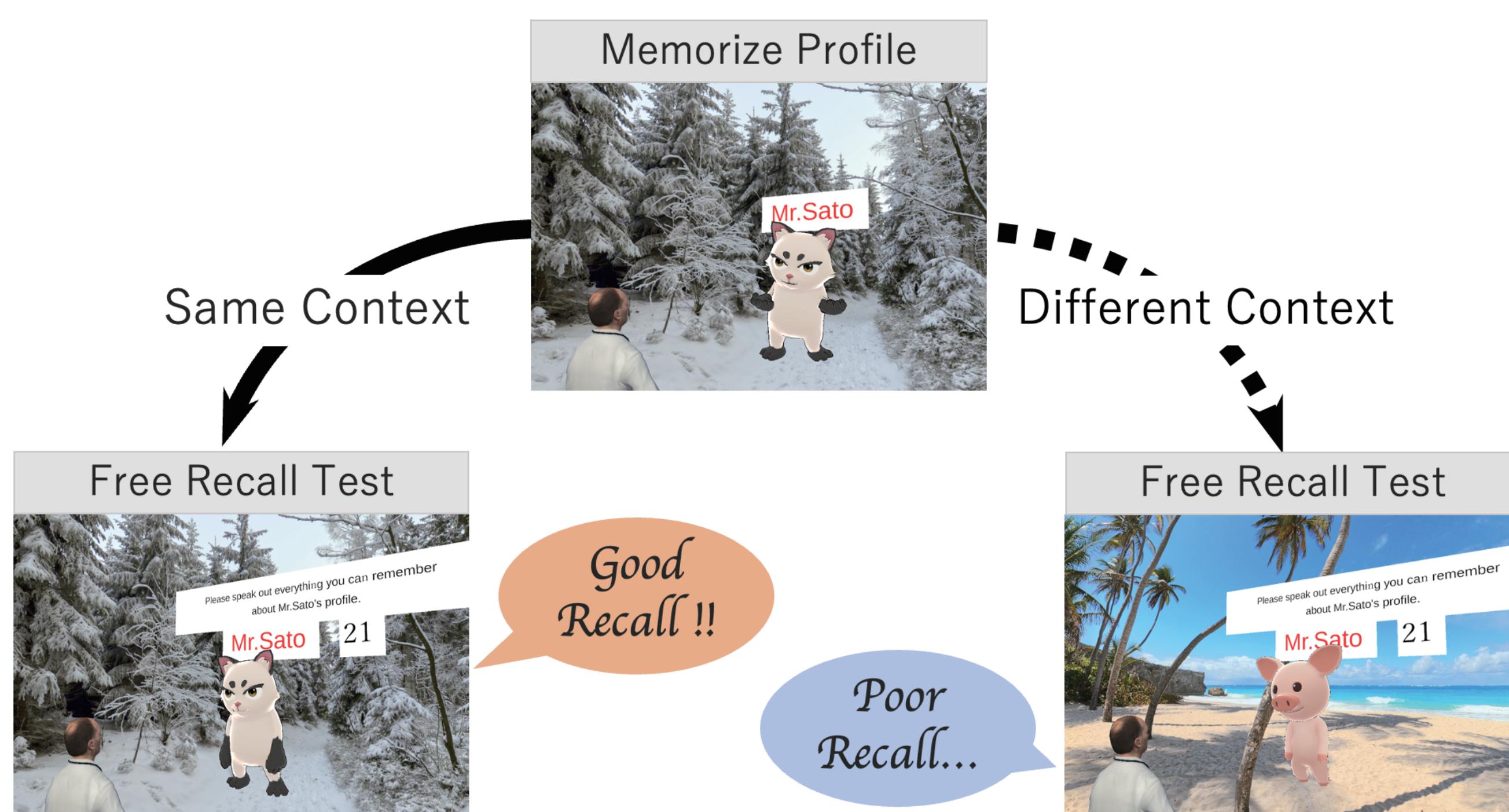


Figure 1. Overview of my study

## INTRODUCTION

### Environmental Context

Human memories are influenced by the surrounding information or the "Environmental Context." [1, ]

### Reinforcement effect

Most well-known property of environmental context dependent memory.

Retrieval is **enhanced** in the **same** environmental context in which the information was initially learned but is **inhibited** in a **different** environmental context [2].

However, previous studies investigating the reinstatement effect in VR have reported **mixed results**. [3, 4]

## EXPERIMENT

### Purpose

Investigation of the reinstatement effect on profile memory in VR

### Method

Participants were asked to listen to and memorize profiles spoken by the partner avatar (Fig 2).

*Hello, my name is (Name).  
I work as (1. Occupation).  
I am from (2. Hometown).  
When I was a student, I belonged to (3. Club activity).  
My hobby is (4. Hobby).  
My favorite food is (5. Favorite food).  
I recently traveled to (6. Recent travel destination).*

Figure 2. Example of partner's profile

### Experimental Design

10 individuals (aged  $22.5 \pm 0.85$ ) participated in the experiment  
4 trials of a 1-factor, 2-level within-participant design

#### • Same Context(SC) Condition

Participants performed the test with the **same** partners' avatars and virtual environments as the learning.

#### • Different Context(DC) Condition

Participants performed the test with the **different** partners' avatars and virtual environments as the learning.

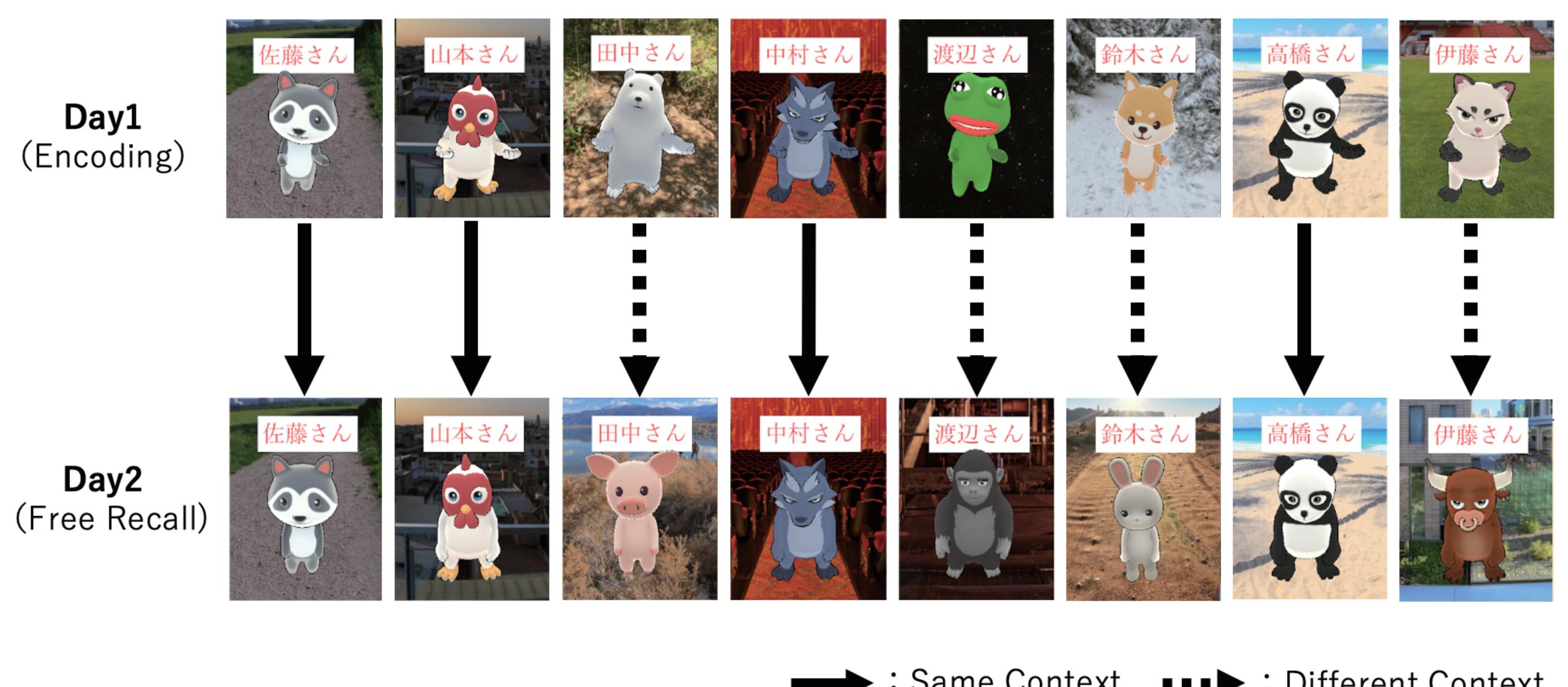


Figure 3. Experimental Design.

## RESULTS AND DISCUSSION

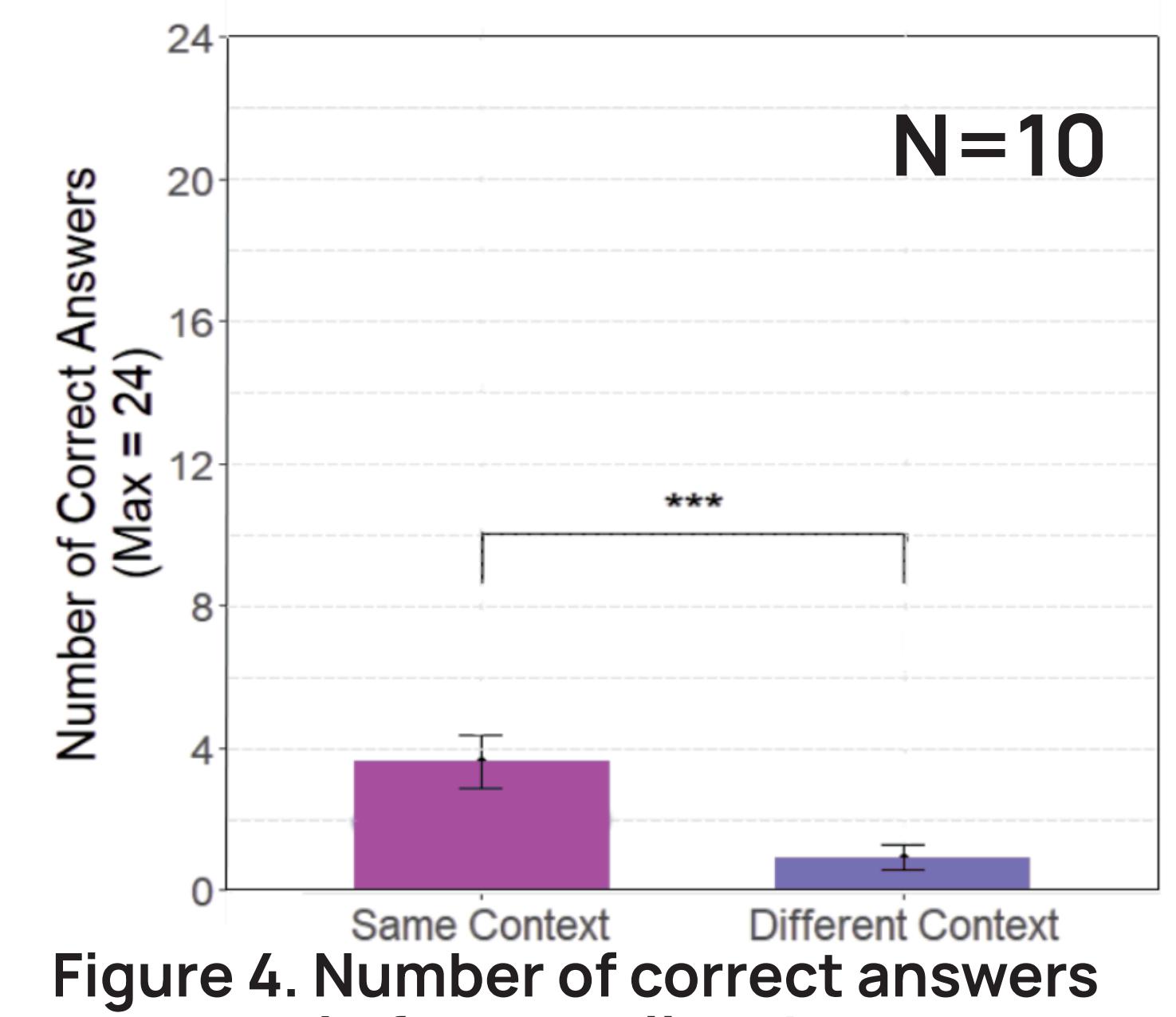


Figure 4. Number of correct answers in free recall task

### Contribution

- New method of manipulating environmental contexts: partners' avatars and virtual environments
- Experiment with conversational partners' profiles memory (rather than word lists as previous studies)
- Revealing a significant reinstatement effect on profile memory in VR

## FUTURE WORKS

- Application to other effects of environmental context-dependent memory (e.g. multiple context effect)
- Investigation of effective avatars for profile memory
- Ideas for memory support unique to VR

## REFERENCES

- [1] Smith and Vela. (2001). Environmental Context-Dependent Memory: A Review and Meta-Analysis.
- [2] Tulving and Thomson. (1973). Encoding Specificity and Retrieval Processes in Episodic Memory.
- [3] Shin et al. (2021). Context-dependent memory effects in two immersive virtual reality environments: On Mars and underwater.
- [4] Wälti, Woolley, and Wenderoth. (2019.) Reinstating verbal memories with virtual contexts: Myth or reality?

## ACKNOWLEDGEMENTS

This work was partially supported by JST Moonshot Research & Development (JPMJMS2013); Grant-in-Aid for Challenging Research (Exploratory) (21K19784); "Multimodal XR-AI platform development for tele-habilitation and reciprocal care coupling with health guidance" project (JPNP21501015-0) subsidized by NEDO.