

SO YOU THINK YOU CAN

# USE VR

Comparing Visual Search between Physical Environments and VR

Media Futures ●



## Method

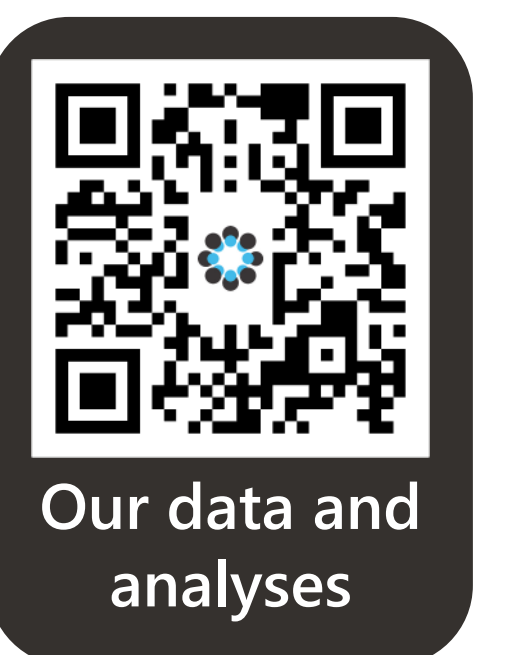
### Experiment:

We conducted **two studies** in which participants searched targets among distractors on a table. They did this both in reality and VR.

- In study 1, participants could search while **standing still**.
- In study 2, participants had to **walk** to find targets.

### Analysis:

- Hypotheses: **Bayesian T-tests**
- Exploratory analyses: **Bayesian factorial ANOVAS**



## Results

Our results provide **weak to moderate evidence** that search **speed, workload, accuracy, and cognitive absorption** are **similar in VR as in reality**, even when controlling for VR experience and personal innovativeness.

So, we provide **some support for the assumption that VR can be used to replace and simulate visual search tasks.**

## Background

- VR is used under the assumption that humans behave similarly in VR as in reality.
- This assumption lacks extensive testing, thus risking unexpected human behavior when working with VR.
- In many VR implementations, **visual search** plays an important role.

**RQ:** Do people **visually search** the same way in **reality** and in **VR**?

- When they can **stand still** while searching.
- When they have to **walk** to search.

## Hypotheses

- **H1, speed:** People are similarly fast in reality and VR, even when walking.
- **H2, accuracy:** People are similarly accurate in reality and VR, even when walking.
- **H3, workload:** People experience more workload in VR than in reality.
- **H4, cognitive absorption:** People experience more cognitive absorption in reality than in VR.
- **Exploratory analyses:** differences in speed and accuracy may be moderated by VR experience and innovativeness.

## Conclusion

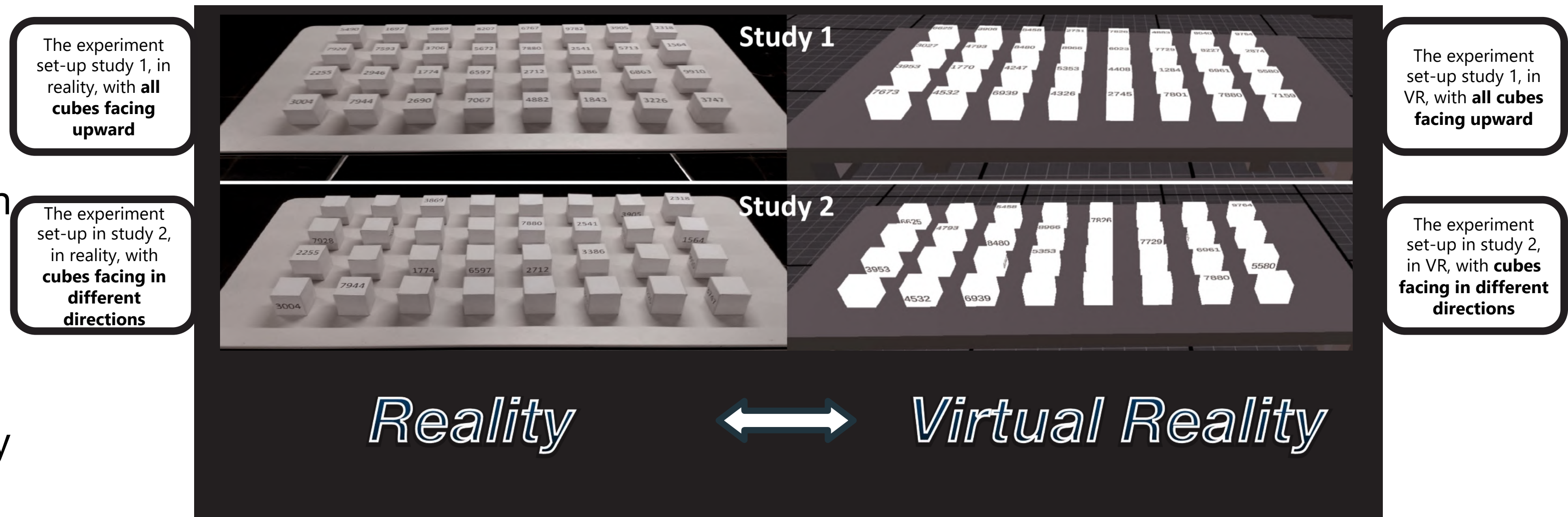
Use our findings to...

...justify using VR for

- studying the **human visual system** in visual search tasks.
- **training surgeons.**
- **remotely operating ships.**
- **remotely operating cranes.**

...compare VR to reality by

- studying **more naturalistic** scenes.
- including **interaction with objects.**
- isolating **VR characteristics that are suspected to cause differences in behavior**, such as being able to move through virtual objects.
- using our data to **inform priors** and in **meta-analyses.**



## RESEARCHERS

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