

Exploration of a Tangible XR Prototype for Agile Product Development

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Background

Agile prototyping allows a flexible reaction to changing customer requirements in dynamic market environments. However, due to complex development processes, prototyping is often time-consuming and expensive. This poster presents a Tangible XR system that allows different stakeholders, such as users and experts, to explore product functionalities early in the development process.

Methodology

We conducted an exploration workshop with a school class of product designers with different levels of expertise in VR. The workshop focused on designing an assistance system that warns drivers of obstacles, e.g. cyclists in the blind spot, via visual, acoustic and haptic signals. Within the study, the participants co-created and explored interaction concepts for the assistance system.

The results of the workshop allow a first estimation on following hypotheses:

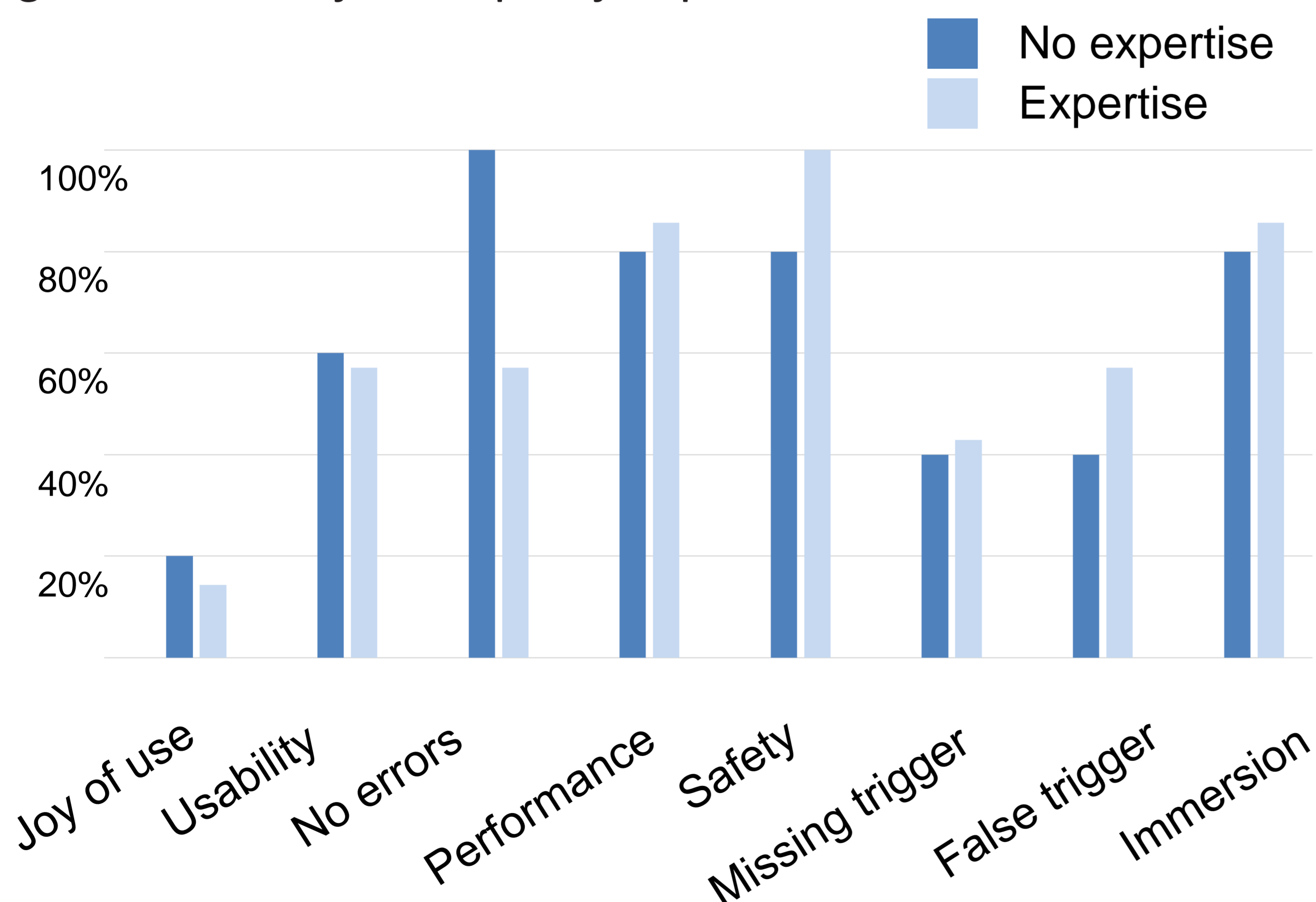
- H1: Prior VR experience has an influence on the assessment of the importance of system qualities
- H2: Prior VR experience has an influence on the rating of system qualities
- H3: Acceptance for explorative design methods with Tangible XR increases through usage

Study sample: Product designer

- School class of product designers ($N = 13$)
- Gender: $n = 3$ female, $n = 10$ male
- Age: Average = 27.67 years ($SD = 8.4$ years)
- Prior experience with VR: $n = 5$ no, $n = 7$ yes
- One participant was excluded from the analysis because of incomplete data

Results

Figure 1: Is the system quality important?



Tangible XR prototype and exploration panel

Figure 2: Evaluation system qualities

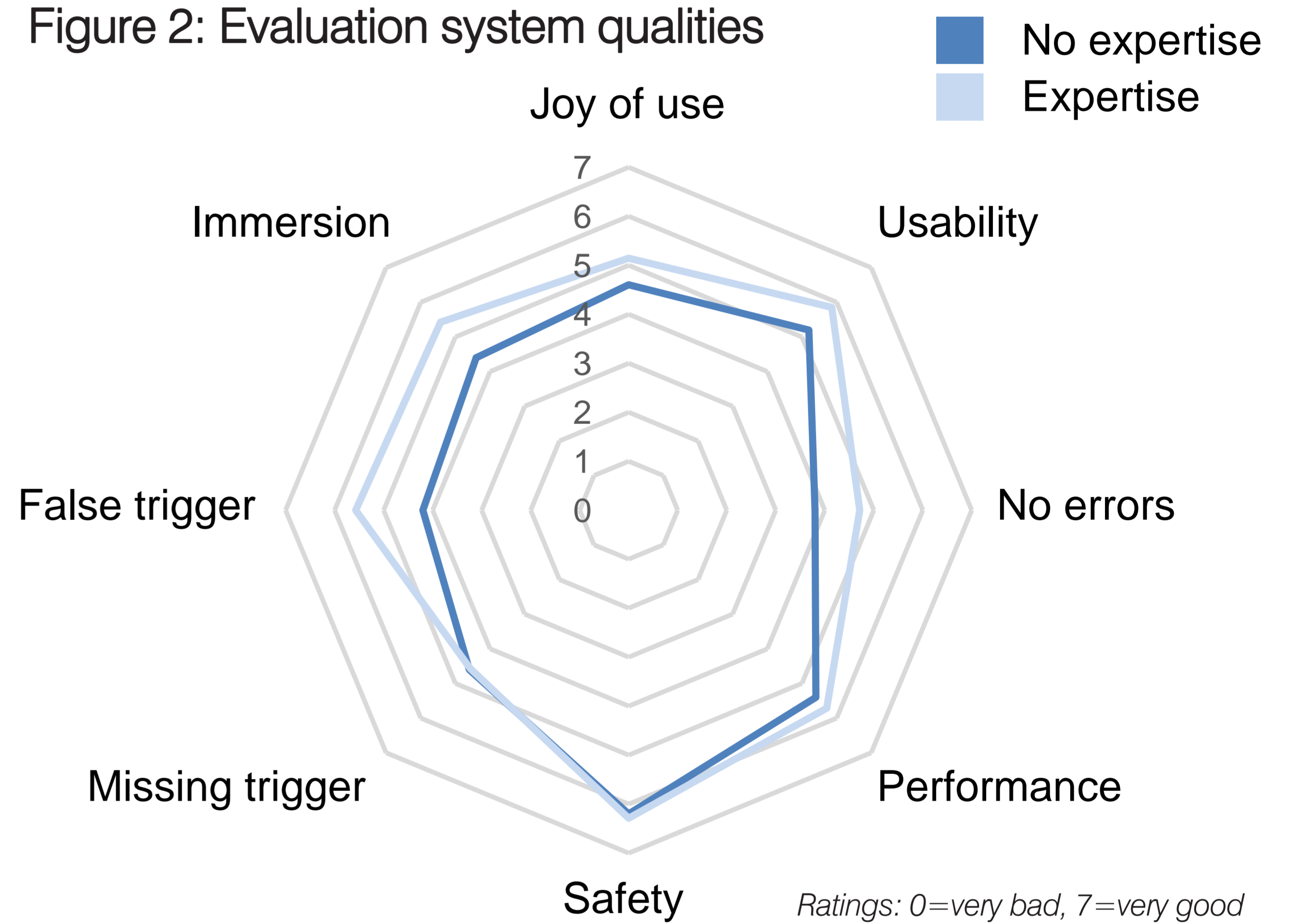
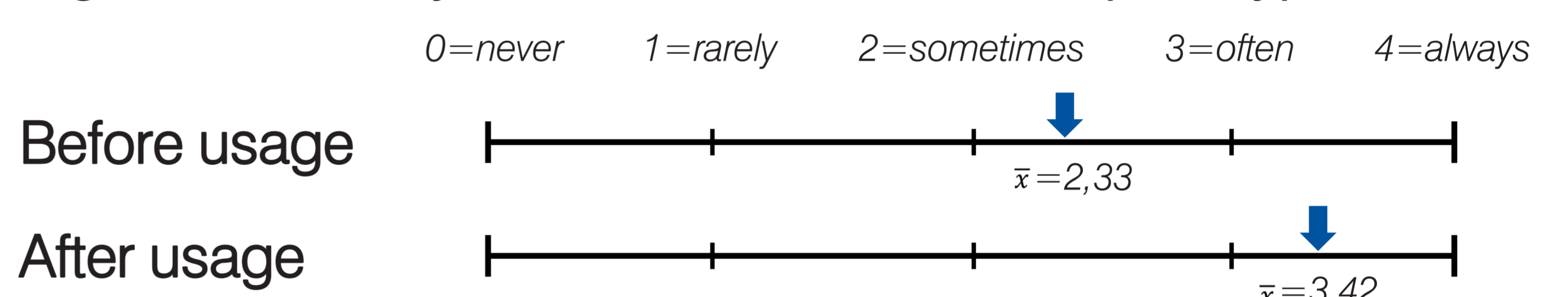


Figure 3: Would you like to work with virtual prototypes?



Conclusion

- 1 Figure 1 shows that the assessment of the importance of system qualities differs only marginally
- 2 Figure 2 shows that system qualities are rated better by participants with VR experience than without
- 3 Significant differences between the group with prior VR experience and the group without experience regarding the system ratings, $t(10) = -2.68, p < .05$
- 4 Due to the small sample ($N = 12$), the external validity is limited and should only be interpreted as a trend
- 5 Figure 3 shows that through the usage of immersive technologies, the acceptance and interest increases