



# Augmented Virtuality for Contextual Sensory Evaluation: Comparison with an LED Wall System

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## INTRODUCTION

- Conventional sensory booths provide strong experimental control and repeatability but may offer limited ecological validity [1];
- Immersive technologies can introduce contextual cues into controlled testing conditions [2,3];
- Direct comparisons between different immersive technologies reproducing the same consumption scenario remain scarce, making it difficult to distinguish the effect of the simulated context from that of the technological system used to deliver it.

In this study, we aimed to determine whether two immersive technologies presenting the same food consumption scenario differed in consumer sensory evaluations and in consumers' experience of the testing environment.

## STUDY DESIGN



105 consumers

- Within-subject repeated-measures design
- 3 study environments
- 6 total sessions: **BLIND** followed by **INFORMED**

### FRUIT BEVERAGES



Energy Smoothie



Health Smoothie



Immunity Smoothie



Quince Nectar

Presentation conditions: **BLIND** (left side) and **INFORMED** (right side)

### STUDY ENVIRONMENTS

#### SENSORY BOOTH



#### SENSE-AV SYSTEM [4]



#### LED WALL SYSTEM



### IMMERSIVE SCENARIO

#### CAFÉ TERRACE [4]



### MEASUREMENTS

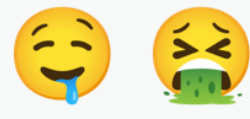
#### DURING EACH EVALUATION



Overall liking<sup>[5]</sup>  
(classic 9-point hedonic scale)



Open comments  
(during blind evaluations)  
(booth = written; immersive systems = oral)



Emotional response<sup>[6]</sup>  
(emoji polarity scale)



Product perception<sup>[7]</sup>  
(semantic differential scale)

#### POST-SESSION QUESTIONNAIRE



Engagement<sup>[8]</sup>



Sensory awareness<sup>[2]</sup>



Environmental aesthetics<sup>[2]</sup>



Realism<sup>[2]</sup>



Immersion<sup>[2]</sup>



Product-context congruency<sup>[9]</sup>

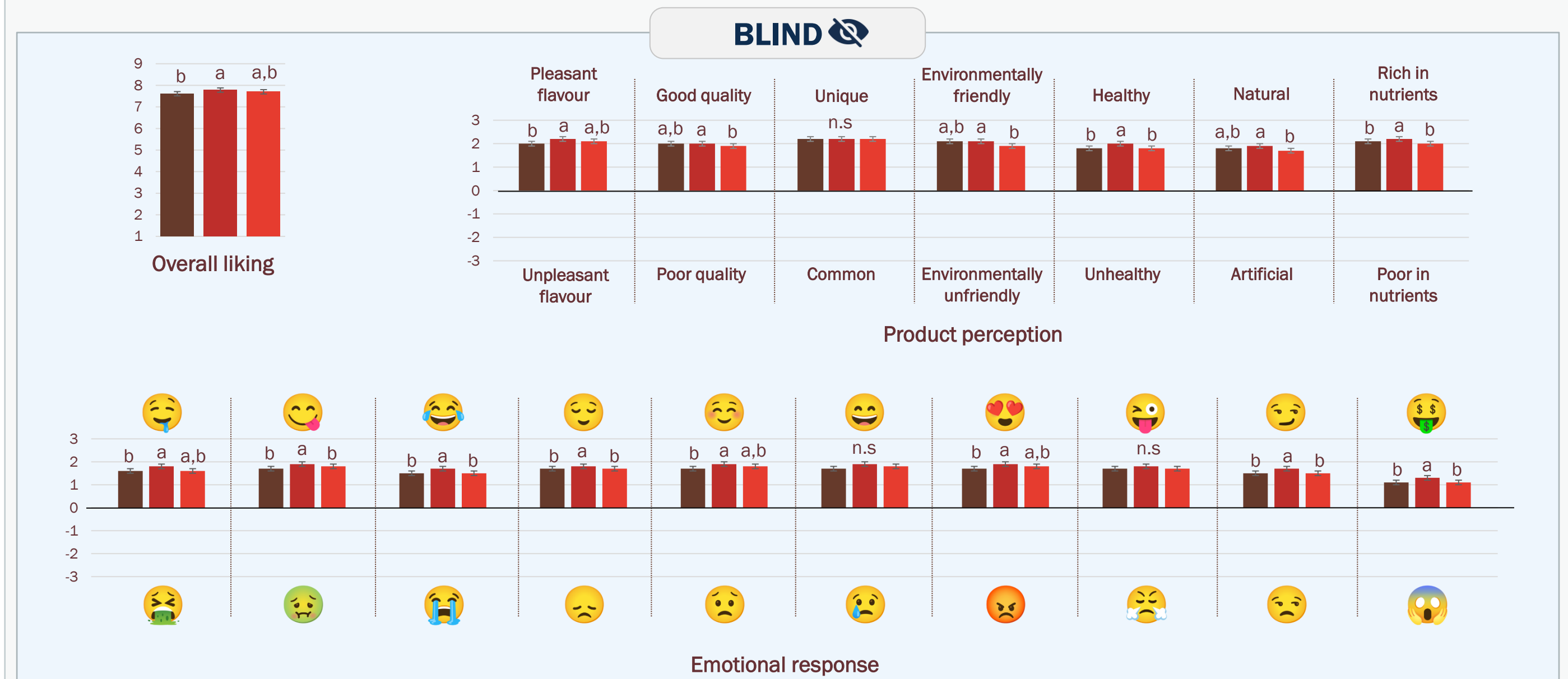
Different scales depending on the measurement

## RESULTS

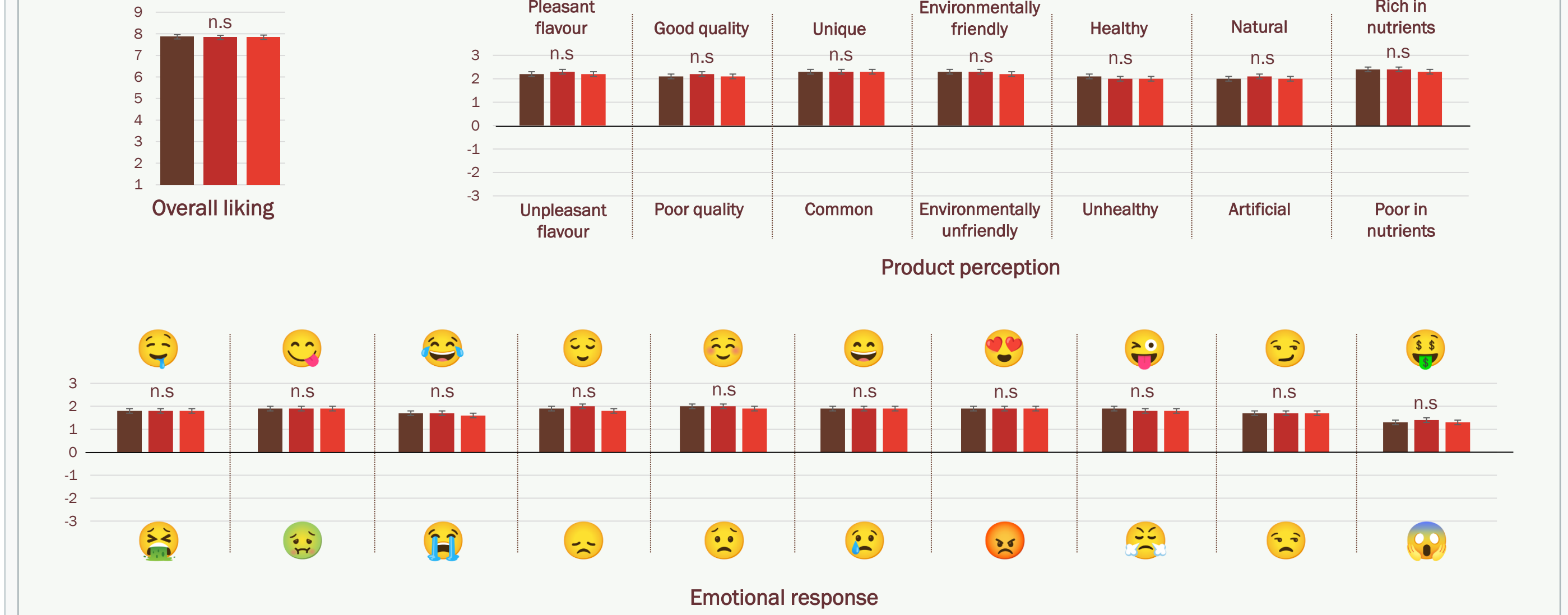
### LEGEND

- Sensory booth
  - LED wall system
  - Sense-AV system
- Different letters indicate significant differences among study environments within each dimension ( $p < 0.05$ )

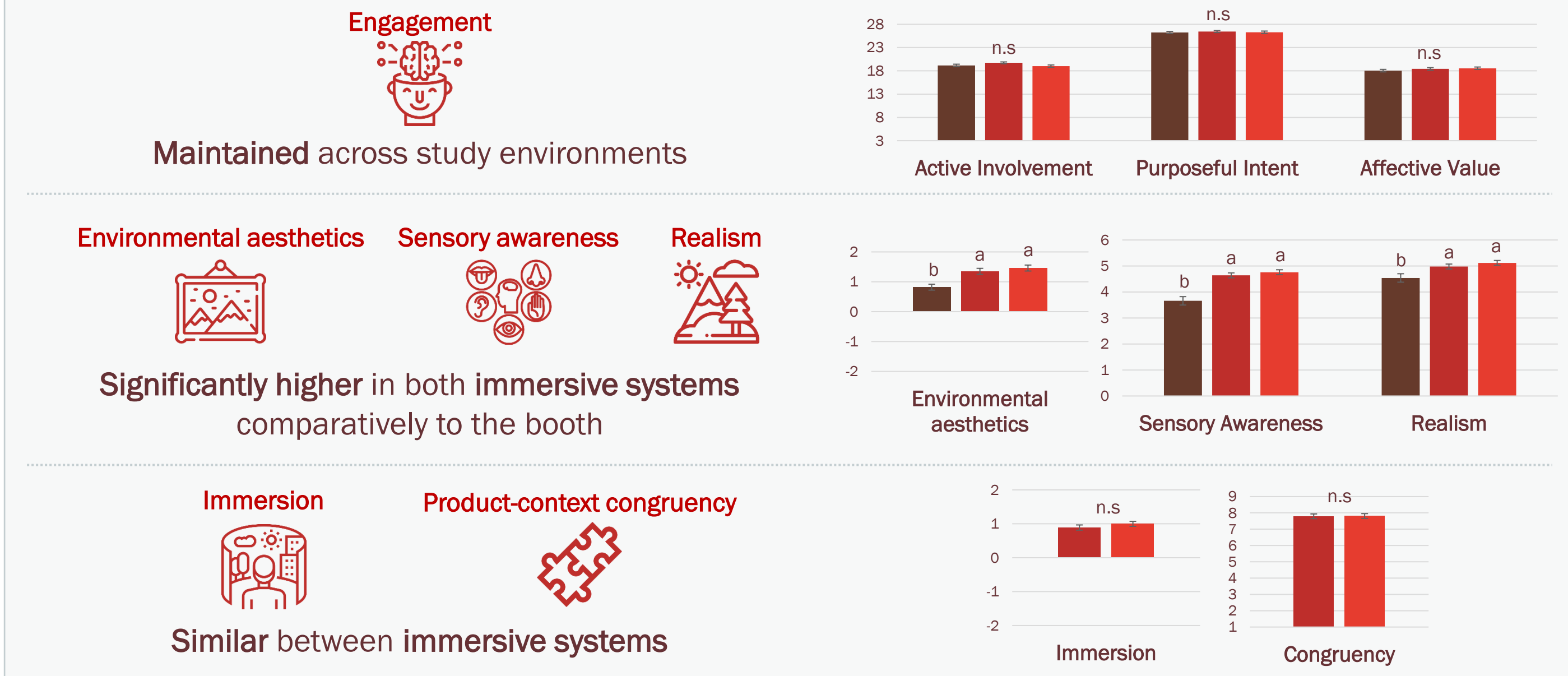
### SENSORY EVALUATIONS



### INFORMED



### POST-SESSION QUESTIONNAIRE



## CONCLUSION

Both immersive systems enhanced sensory awareness, environmental aesthetics and realism compared to the booth, without reducing engagement. However, effects on product-related evaluations emerged only under blind conditions, with the LED wall generally eliciting more favourable responses than the booth and, for some measures, than Sense-AV. These findings show that product information can attenuate contextual effects and that immersive technologies should not be treated as interchangeable methodological tools, even when presenting the same scenario.

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