

Visual Attention to Fruit Juices and Smoothies in Controlled and Immersive Contexts: A Dynamic Eye-tracking Approach

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INTRODUCTION

- Sensory booths are designed to minimise external distractions, directing participants' attention towards the intrinsic characteristics of the product [1–3];
- Introducing contextual cues and packaging information may redistribute visual attention between the product and its surrounding environment [4,5];
- Wearable eye-tracking makes these shifts in visual attention directly observable, allowing attentional behaviour to be compared across testing environments and information conditions [5,6].

In this study, we assess how **evaluation context** (sensory booth vs. immersive LED wall) and **product information** (blind vs. informed) influence consumers' visual attention while evaluating innovative fruit beverages.

STUDY DESIGN



67 consumers

Within-subject repeated-measures design

2 study environments

BLIND followed by **INFORMED**

FRUIT BEVERAGES



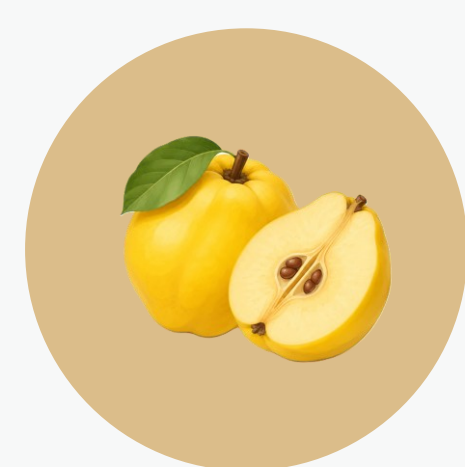
Energy Smoothie



Health Smoothie



Immunity Smoothie



Quince Nectar

BLIND

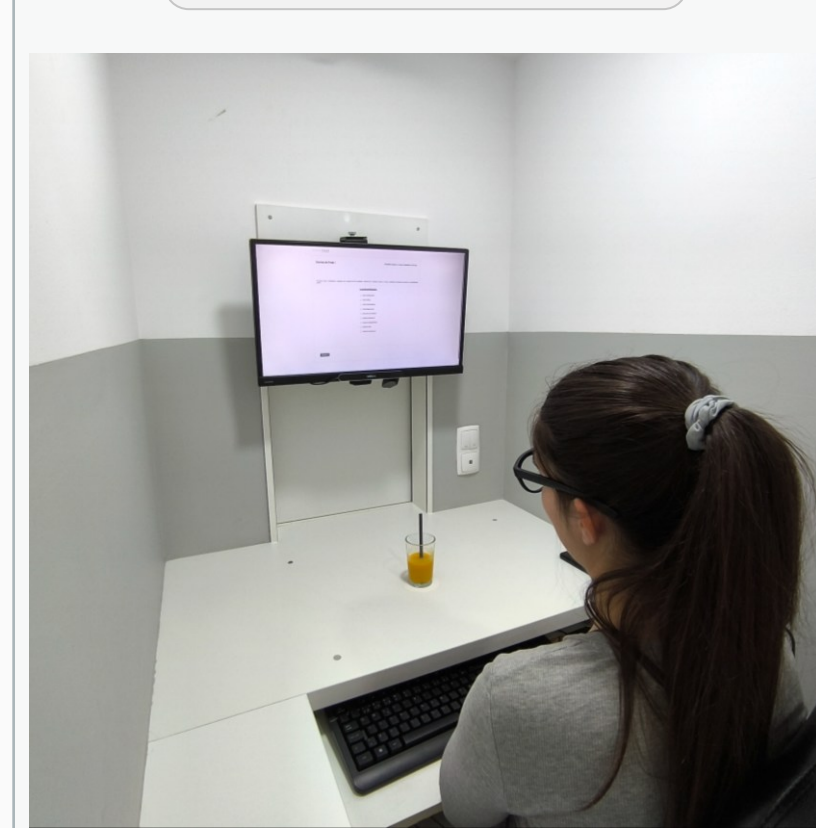


INFORMED

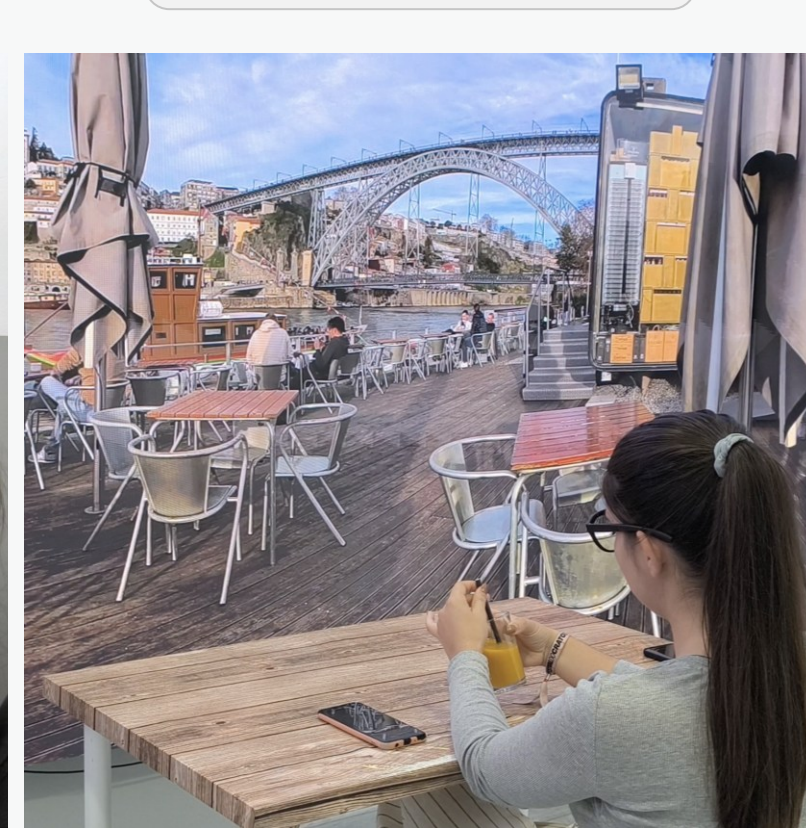


STUDY ENVIRONMENTS

SENSORY BOOTH



LED WALL SYSTEM



IMMERSIVE SCENARIO

CAFÉ TERRACE



CONCLUSION

- Evaluation context and product information jointly shaped consumers' visual attention, showing that attentional behaviour during sensory evaluation is context-dependent.
- Product information promoted a stronger redistribution of visual attention towards the fruit beverages in the LED wall system, suggesting that contextualised evaluation can modify how product-related cues are visually processed.
- The substantial attention directed towards the response interface further highlights that both environmental and procedural elements of the testing setting should be considered when interpreting consumer visual behaviour.

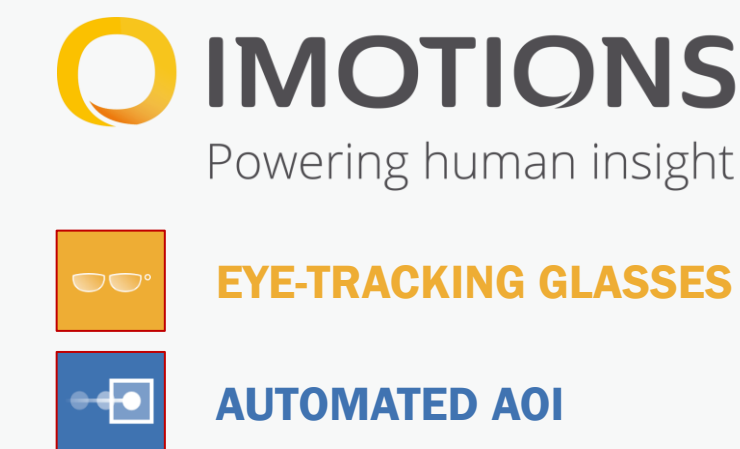
HARDWARE

JUST ACT NATURAL – NEON GLASSES



SOFTWARE

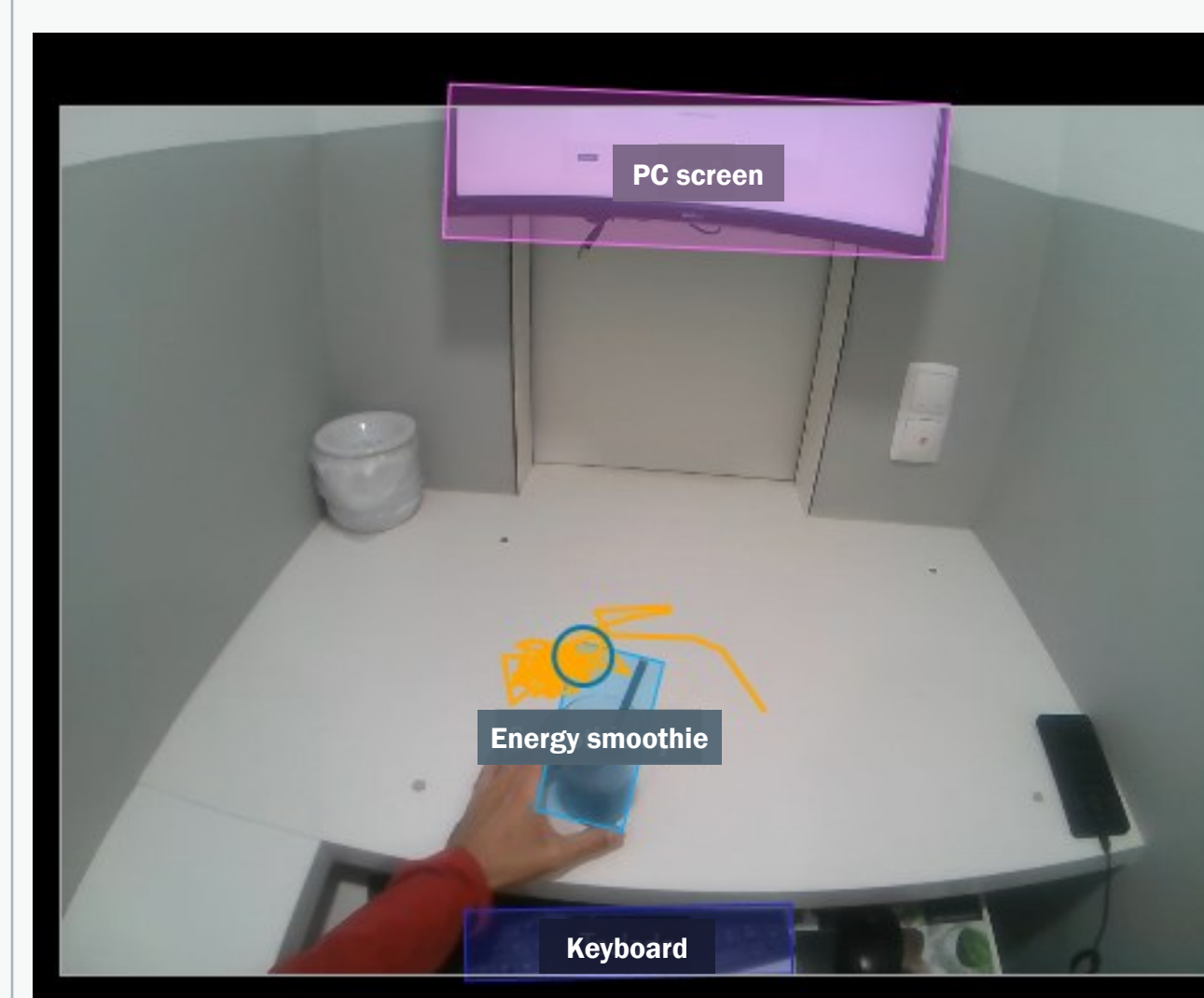
IMOTIONS LAB



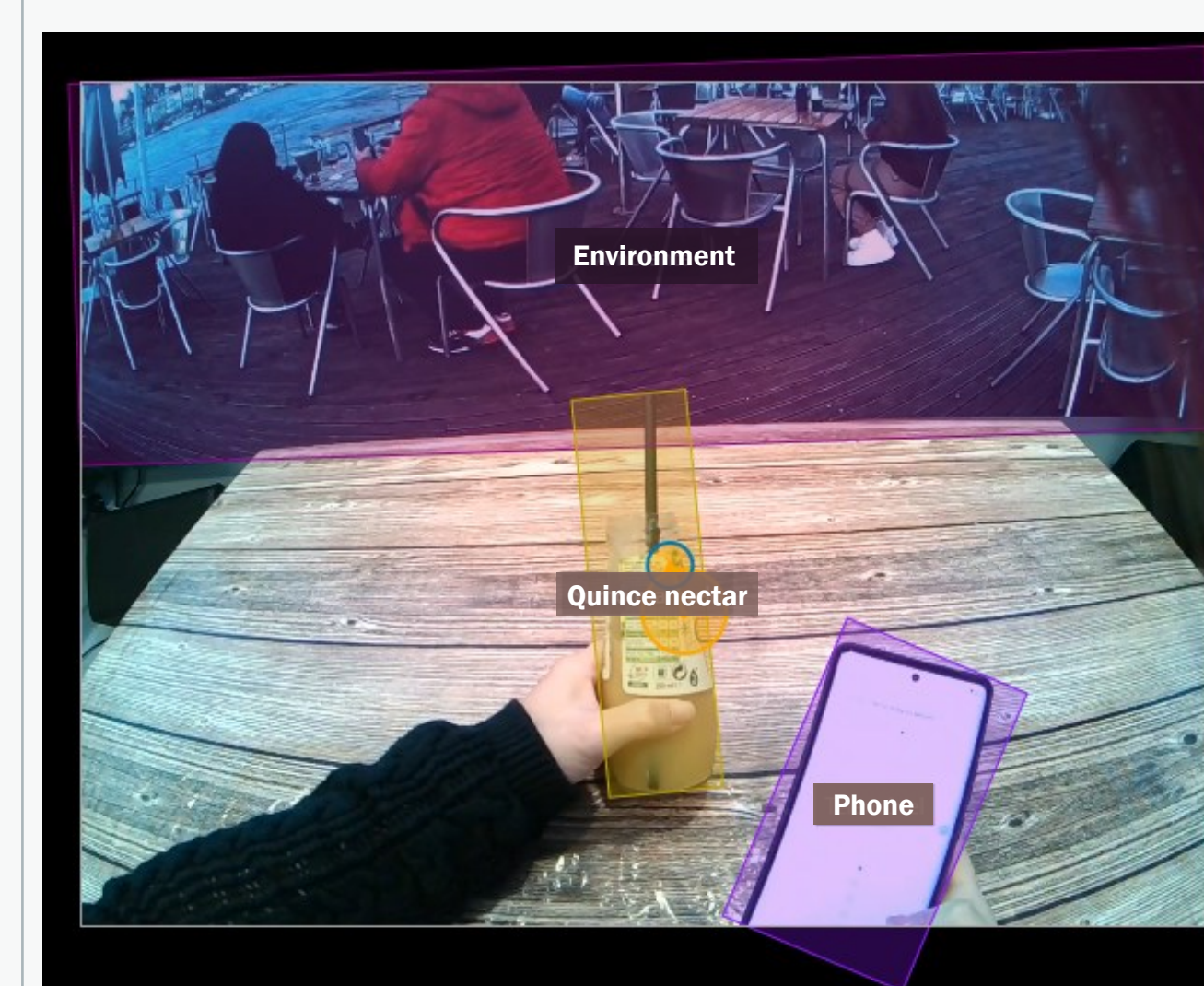
ANALYSIS

AREAS OF INTEREST (AOIs)

SENSORY BOOTH



LED WALL SYSTEM



METRICS

ATTENTION ALLOCATION

AOIs attention (% of evaluation time)

FIXATION BEHAVIOUR

Fixation count (n)
Fixation duration (ms)

VISUAL ORIENTATION

Time to first fixation (TTF; s)

VISUAL EXPLORATION

Saccade count (n)

RESULTS

GLOBAL

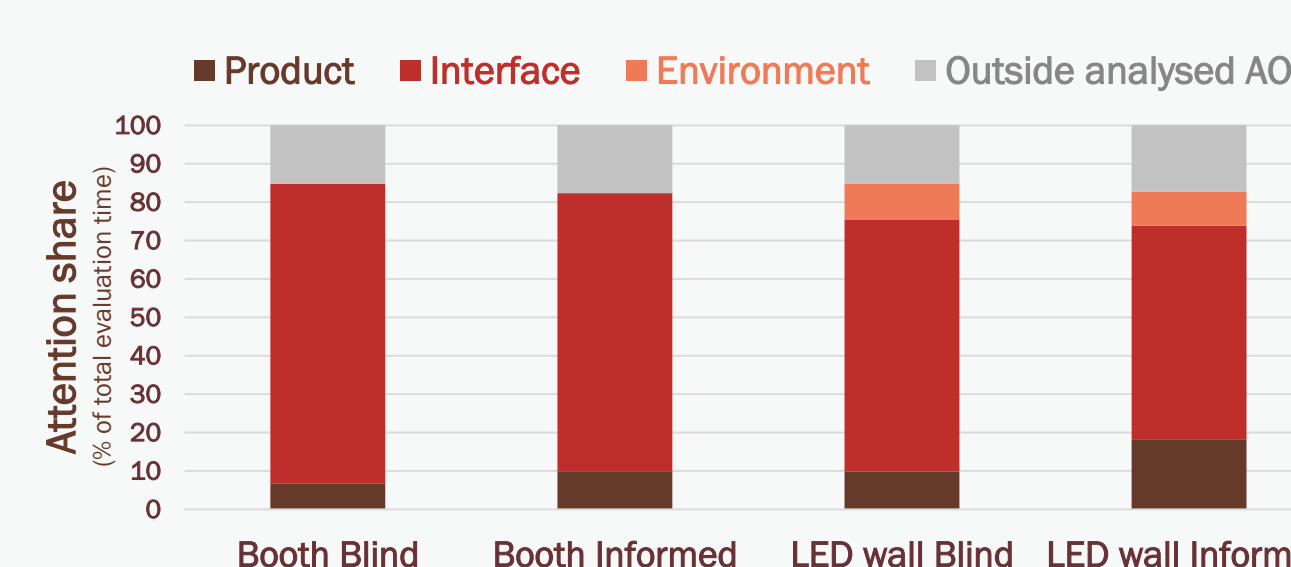


Figure 1. Attention share (%) during the evaluation time.

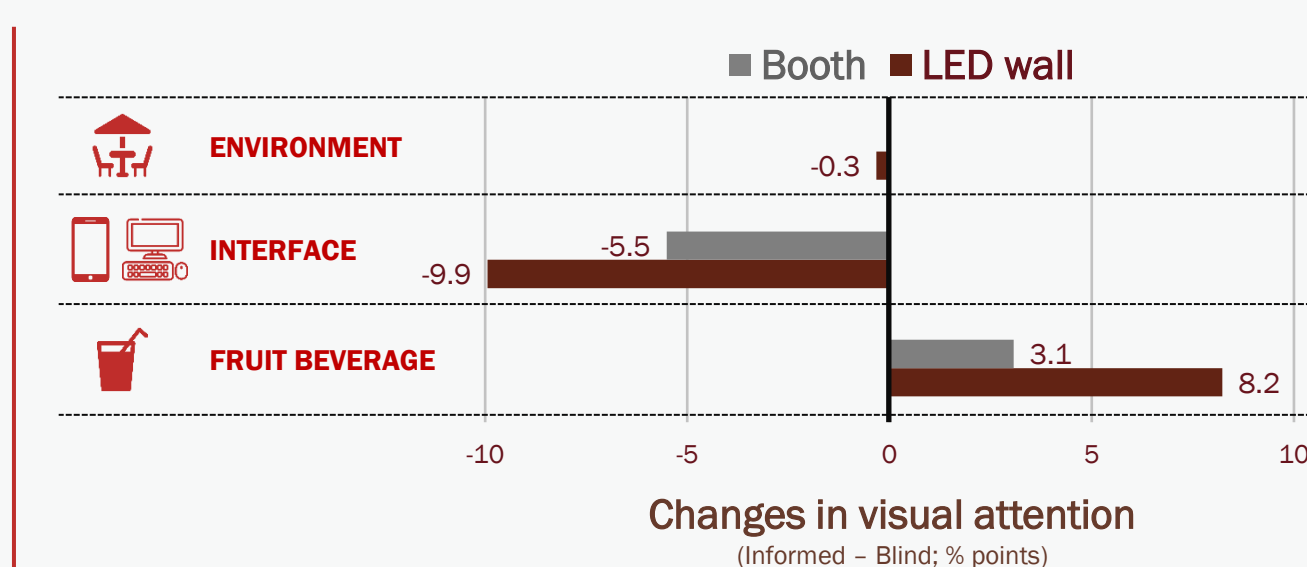


Figure 2. Changes in visual attention (% points) with product information in the AOIs environment, interface and fruit beverage.

Product information redirected visual attention towards the fruit beverages, with a stronger increase in the LED wall system (+8.2 vs +3.1 percentage points).

The response interface captured the largest share of visual attention (55–78% of total evaluation time) and attention to it decreased with product information in both contexts.

Attention to the LED wall environment remained stable at approximately 9–10% of total evaluation time ($p = 0.965$).

FRUIT BEVERAGES

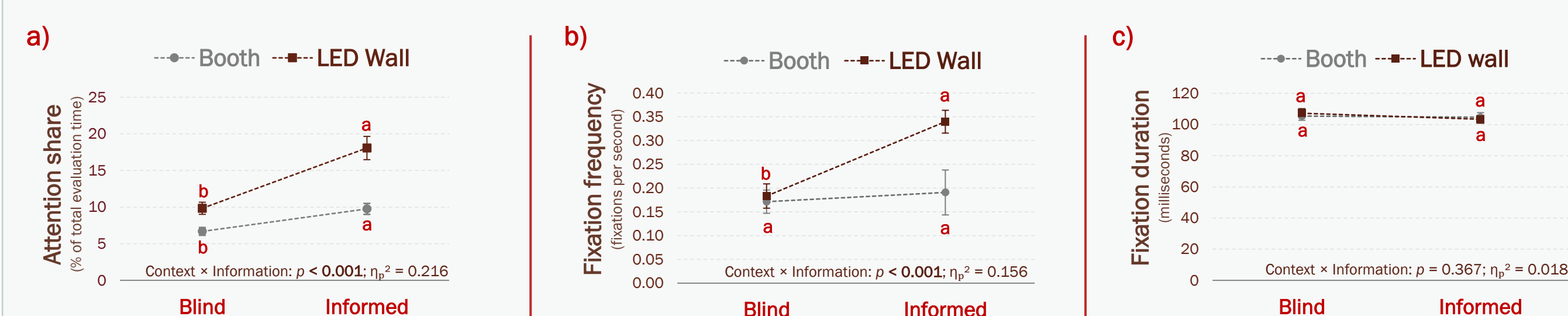


Figure 3. a) Product attention (means ± SE) by information condition and evaluation context; b) Product fixation frequency (means ± SE) by information condition and evaluation context; c) Product fixation duration (means ± SE) by information condition and evaluation context. Different lowercase letters indicate significant differences between blind and informed conditions within each evaluation context.

Within the fruit beverage AOI, the informed condition increased attention. This pattern was driven by more frequent fixations rather than longer fixation durations.

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