

# Impact of contexts on the visual evaluation of design pastry

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## BACKGROUND

Visual traits of high-quality design pastry affect how consumers perceive and value pastry products. Immersive technologies are currently under constant development creating simulations of real-life environments. These technologies allow us to study the visual impact of pastry design quickly and efficiently. The main goal of this study was to evaluate if a virtual environment may be used to properly evaluate consumers' visual perception of design pastry.

## METHODS

- A crossover experiment, with a three weeks washout period, was performed for both real and virtual tasting both. The five cakes were presented at each, following a balanced sequential monadic presentation order. In the real environment, consumer were exposed to real cakes at a standard tasting both. Within the virtual environment, both the tasting booth and the cakes were virtualized through 3D modelling technology.
- The participants (n=87) evaluated through a 7-point anchored scale the overall appeal, desired serving size, visual acceptance and perceived deliciousness of the cakes, both under live and virtual environments.
- Differences in pastries visual evaluation were assessed using a 4-way mixed ANOVA (consumers as random factor- and cakes, environment and session order, as fixed factors).



Figure 2. Real design pastries (above) and their clones virtualized through 3D modelling (below).



Figure 3. Elaboration of a clone pastry, made from 3D modelling in RealityCapture software (Capturing Reality, Bratislava, SK).

## RESULTS

The results yielded significant differences ( $p < 0.050$ ) in the hedonic variables studied: overall appeal, serving size, visual acceptance and deliciousness between cakes. A significant increase ( $p = 0.010$ ) in the desired serving size due to the session order was observed, probably due to gained familiarity. No significant cake\*environment interaction was evidenced.

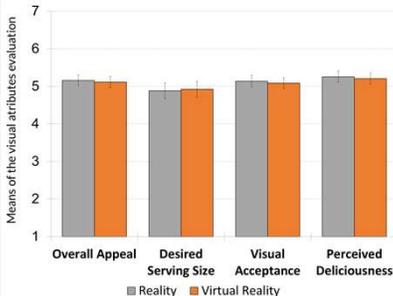


Figure 5. Graphic illustration of the analysis of the different visual attributes of the pastels regarding environment effect. Means with different superscripts are significantly different based on Fisher's exact tests ( $p < 0.050$ )

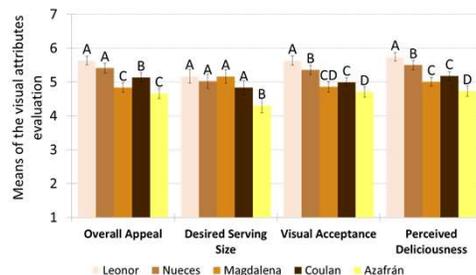


Figure 6. Graphical illustration of the analysis of the different visual attributes of the pastries regarding pastry type effect. Means with different superscripts are significantly different based on Fisher's exact tests ( $p < 0.050$ )

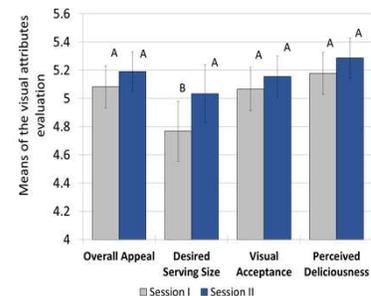


Figure 7. Graphical illustration of the analysis of the different visual attributes of the pastries regarding session order effect. Means with different superscripts are significantly different based on Fisher's exact tests ( $p < 0.050$ )

## CONCLUSION

No significant differences in visual hedonic data between the two environments were evidenced. These data support the applicability of immersive technologies as an expedite way to evaluate visual traits of design pastry.

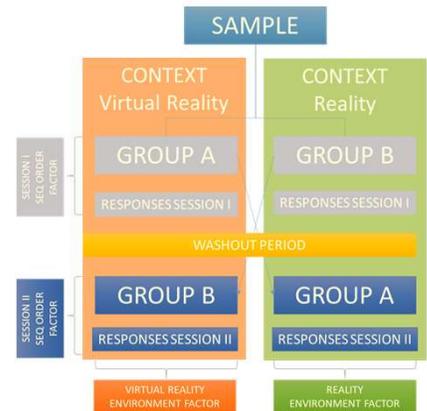


Figure 1. Schematic representation of the experimental design carried out in the evaluation of the effect of virtual reality on the visual evaluation of design pastries.



Figure 4. Virtual environment layout (top left), conducting a test in a virtual environment (bottom left) and conducting a test in a real environment (right)