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Virtual reality (VR) as a new tool for nutrition and behaviour research. A review of four studies.

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Abstract

Introduction

For nutrition and behaviour experiments, researchers often desire to change visual properties of food items. However, such changes can lead to unwanted side-effects in textural or sensory properties. With VR technology, research in food science and nutrition can draw from a novel range of possibilities that allow specific changes in visual features without altering other properties.

Method

Study 1 (99 participants): While wearing VR glasses, participants received two banana juices. In the virtual environment, one was coloured yellow (its real appearance) and one was brownish (indicating aging). All participants viewed both juices, either one or the other first, and the juice they tasted was the same in both cases.

Study 2 (100 participants): Participants were divided into a disgust and control condition. Wearing VR glasses, those in the control condition saw chocolate appear on the table and were asked to try it. Those in the disgust condition saw a dog excrete the chocolate as feces before being asked to try it.

Study 3 (50 participants): In the virtual environment, participants saw a disgusting buffet containing carrots, pasta, and meat. They were then asked to serve themselves a plate for lunch.

Study 4 (100 participants): Building on previous sensory studies, participants saw in the virtual environment two juices and a cake, either in the correct or wrong colour. They were asked to try the product, identify the dominant flavour, and rate it for liking and sweetness.

Results and Discussion

Study 1: With increasing presence, participants tended to give higher disgust scores to the brown juice ($r = .24$, $p < 0.05$).

Study 2: Four percent of participants refused consumption in the neutral condition compared to 26% in the disgust condition. With $\chi^2(1) = 9.49$, $p > 0.01$, the chi-square test revealed a significant association between the experimental condition and participants' willingness to eat the chocolate.

Study 3: The total quantity of food that participants scooped onto their plates was significantly correlated with their presence ($r = -0.37$, $p < 0.01$) and their state disgust ($r = -0.35$, $p < 0.05$).

Study 4: We were able to replicate previous findings.

In summary, our studies assessed a new technology for usability in food research. Our results provided evidence that VR is a promising tool in the study of nutrition and behaviour.

Conflict of Interest

There is no conflict of interest.