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The Representation of Food-Related Environments in Virtual Reality

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Abstract

Objectives: Virtual reality (VR) potentially provides an innovative tool for nutrition education/counselling. The objective of this study was to determine the a) sense of 'presence' (the feeling of being in a scene) experienced in two food related VR scenes b) capture information regarding the participants experiences in VR.

Comments

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Objectives: Virtual reality (VR) potentially provides an innovative tool for nutrition education/counselling. The objective of this study was to determine the a) sense of 'presence' (the feeling of being in a scene) experienced in two food related VR scenes b) capture information regarding the participants experiences in VR.

Methods: Two 3D, food-related scenes were created for this study: supermarket or fast food restaurant. The scenes were displayed using a VR head mounted display or on a standard PC monitor. The participants were able to move around each scene and could interact with various elements to obtain nutrition information about a food. Thirty-one adults were recruited for this study and reported to the laboratory on 4 occasions separated by at least 48 hours. Participants were randomized to a treatment order. On reporting to the laboratory, the participants had surface electrodes attached to determine heart rate and electrodermal activity. The participant was then required to sit quietly for 10 minutes for baseline measures to be collected. Then, in the VR treatments, a VR headset was placed on the participants head and the relevant scene displayed. For the PC treatments, the same scenes were displayed on a PC monitor. The participants were required to remain in the different scenes for at least 5 minutes. Then, the headset was removed and the participant completed questionnaires regarding their experiences in the VR and PC scenes.

Results: Participants ranged in age from <25 years to over 65 years. All participants used computers in their daily life but generally had no or little experience in VR. Participants reported a higher sense of presence in the VR treatments compared to the PC treatments ($P < 0.05$). The VR scenes also created a greater sense of the scene being the 'dominant reality' and elicited a greater sense that the participant were actually in the scene ($P < 0.05$). There was no difference in the participant's ability to complete tasks in the VR and PC scenes. Moreover, feelings of nausea were not different between the VR and PC scenes. The participant's heart rate was significantly higher in the VR treatments ($P < 0.05$).

Conclusions: This study provides data that supports the development of VR as a nutrition education/counselling tool. Further research is required to develop VR as an effective education tool.

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