The influence of virtual coaching on social presence and motivation in home fitnessing

Joyce Westerink, Marko de Jager, Jan van Herk, Personal Care Institute, Philips Research, Eindhoven, The Netherlands

Yvonne de Kort, Wijnand IJsselsteijn, Marco van Boven, Roy Jacobs, Yvonne van Laarhoven, Erna van der Wal, Department of Technology Management, Eindhoven University of Technology, Eindhoven, The Netherlands

Objective
Many people try to improve their health by exercising at home with fitness devices, yet often find it difficult to remain motivated. We explored whether the application of a virtual coach would aid motivation. We focused on effects of the coach's appearance and communication style on the motivation and social presence experienced by the users.

Method
The experiment followed a 2x2 within-subjects design. Twenty-four participants cycled through an interactive virtual landscape, projected in front of them, using a stationary exercise bike with tracked handlebars. Participants received feedback on measured heart rate through a text message or a graphic animation of a female virtual coach in a corner of the screen, with a voice-over of the message. Also, the communication style of the message varied between 'directive' (e.g. 'your heart rate is too low, cycle faster'), and 'non-directive' (e.g. 'this is your heart rate' with a graphic heart-rate indication).

After each of these four conditions participants completed the Intrinsic Motivation Inventory, measuring factors as 'interest/enjoyment' and 'perceived control'. After conditions with a virtual coach, participants also completed a custom-made questionnaire on social presence.

Results
We found a marginally significant interaction effect of appearance x communication style on interest/enjoyment, favoring the non-directive virtual coach (REMANOVA, F(1,23)=3.39, p=0.08). Further, we found significant effects on perceived control: a main effect of appearance (p=0.02) and a marginally significant interaction effect with communication style, favoring the non-directive virtual coach (p=0.09). In addition, we found that the coach's social presence increases with a directive communication style (Paired T-test, p<0.009).

Conclusion
We found indications that a virtual coach helps to enhance motivation in home fitnessing, but its perceived control and social presence depends on its appearance and communication style.