Using Virtual Coaching to influence motivation in home fitnessing

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Introduction

Many people try to improve their health by exercising at home with fitness devices, yet often find it difficult to remain motivated. We have been exploring whether the application of a virtual coach, in addition to a virtual environment, could help turn home fitnessing into a more motivating experience[1]. In this study, we focused on effects of the coach's appearance and communication style on the motivation and social presence experienced by the users, which may lead to increased engagement with and enjoyment of the exercise.

Methods

The experiment followed a 2x2 within-subjects design. We asked 24 participants (16 males, 8 females, mean age 38.4 years) that were not engaged in frequent physical exercise to cycle through a highly detailed interactive virtual landscape (Fig. 1), projected in front of them (screen size: 159 cm wide, 111 cm high), using a stationary exercise bike with tracked handlebars. Participants were directed towards a moderate exercise intensity (60-70% of maximum heart rate): in a corner for the screen, they received feedback on measured heart rate, either through a text message (Fig. 3) or a graphic animation of a female virtual coach, with a voice-over of the message (Fig. 2). Also, the communication style of the feedback 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 4 conditions, participants completed the Intrinsic Motivation Inventory[2], measuring factors as 'interest/enjoyment' (a direct measure of intrinsic motivation) and 'perceived control'. After the 2 conditions with the virtual coach, participants also completed a custom-made questionnaire on social presence.

Fig. 1:Interactive Virtual Landscape

Fig. 2: Virtual Coach animation

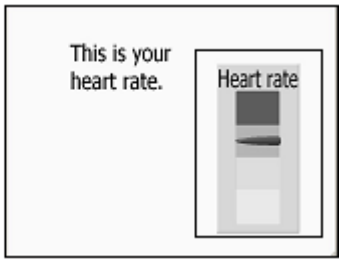

Fig. 3: Text message (non-directive)

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; Table 1). Further, we found significant effects on perceived control (Table 1, Fig. 4): a main effect of appearance, favoring the virtual coach over the text message (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).

	Appearance	Communication style	Appearance x Comm. style
Interest/enjoyment	NS	NS	F=3.39, p=0.08
Perceived competence	NS	NS	NS
Effort	NS	NS	NS
Pressure/tension	NS	NS	NS
Perceived control	**F=6.37, p=0.02**	NS	F=3.25, p=0.09
Value/usefulness	NS	NS	NS

Table 1: REMANOVA results for the 6 IMI-subscales

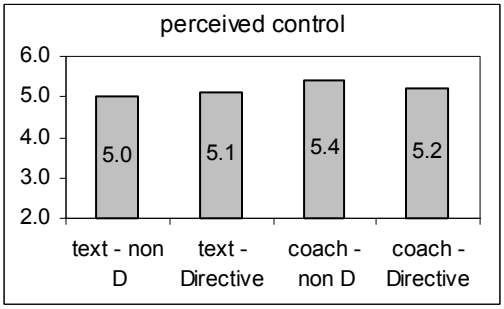

Fig. 4: Results for the IMI-scale Perceived control

Conclusion

We found indications that a virtual coach helps to enhance motivation and perceived control in home fitnessing, particularly with non-directive feedback. Directive feedback, however, led to a higher social presence of the virtual coach. In future studies, we aim to further explore the influence of virtual coach characteristics on motivation in sports.

References

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