The Importance of the Avatar Gender in Training Simulators Based on Virtual Reality

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ABSTRACT

The application of simulation techniques in the military and security forces are numerous and in most cases their purpose is the training of staff. Virtual reality techniques have been incorporated to these simulators to enrich the trained professionals' experience. And with this kind of virtual training arises the need of designing avatars representing professionals in the virtual exercises. This work examines the effect of avatar gender on learning outcomes achieved with training simulators based on virtual reality.

Most of the simulation tools show generic male gender avatars during training, but the presence of women in the military and security forces is continuously increasing. A preliminary study is presented and discussed in this work to demonstrate that the utilization of a male avatar to train a professional woman can have negative effects on her achievements and those of their peers.

Categories and Subject Descriptors

H.5.1. [**Information Interfaces and Presentation**]: Multimedia Information Systems

Keywords

Avatar Gender, Simulation Training, Virtual Reality

1. EXTENDED ABSTRACT

In recent years simulation has proved to be a powerful tool for training professional skills and capabilities. In the case of the military, security and civil defense forces, simulation systems based on virtual reality allow a cheap and safe instruction of professionals in a task, process or basic skill needed in their daily activities.

Most of simulators used in these environments are conceived as serious games in which professionals face different situations controlling an avatar that represents them in the virtual world in which they perform their work as if it were real life. Although the entire community of users and developers assume that realism is very important in achieving good learning results, this realism is often pursued in modelling the situations presented in the exercises and the scenarios in which these have place. But unfortunately it is not taken into account that for professional women who are trained with these tools, driving a generic male avatar decreases significantly this realism from the beginning, and it may adversely affect their learning results and those of her partners in the case of team exercises.

Gender is a multi-layered and complex issue to explore, but a thorough analysis of the training tools used in typical environments has confirmed that it is very rare to be able to choose the gender of the avatar before performing the training exercises (usually it is only possible in the case of simulations in the metaverse Second Life or in similar environments).

In this work we present the preliminary results obtained by developing a training simulator to learn first aid techniques. This simulator has allowed performing an empirical study focused on analyzing the behavior of individuals when they work together and face situations where they have to seek for help. The performed experiments allow to explore how the avatar gender and its correspondence to the actual gender affects the professional behavior in the virtual exercise and her learning process.

This work has shown, developing a very simple simulator based on virtual reality, that the results obtained with virtual training exercises can be similar to those obtained with real exercises, as long as the realism of the latter (including the gender of avatars representing trained professionals) is carefully considered. When female participants have been forced to control male avatars in the performed experiments the Proteus effect and similar phenomena have been observed. In many cases a female has behaved with the male avatar as she thinks a person of the male gender would have in this situation, significantly decreasing her direct help-seeking. And this has resulted negatively in their learning and that of their peers (male and female).

Some questions to be asked in future works are: Does the form of interaction between avatars in the virtual world affect to the results? Would we obtain similar results analyzing other aspects of teamwork or individual work?

To conclude, it has to be considered that everyone needs to be trained as a professional with an avatar of her same gender, it is the only way to guarantee the same behavior in the virtual world that in the real world. And only in this way a professional is able to learn through simulated exercises in the same way she would with real exercises. With all the conclusions drawn from such studies and analysis we could propose some best practices related to gender and training simulation for both communities of developers and users (in which there is still no equal participation of women), and we believe that it would positively affect to the learning outcomes achieved with these tools.

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