Chapter 7
Challenging Gender Stereotypes Using Virtual Pedagogical Characters

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ABSTRACT

This chapter explores motivational and cognitive effects of more neutral or androgynous-looking versus more feminine-looking and masculine-looking virtual characters. A user study is presented, in which 158 students, aged 17-19, encountered four virtual characters that were visually manipulated to represent gender stereotypicality versus androgyny. On the one hand we explored students' attitudes towards the different characters as seen in how they ranked them as preferred presenters and articulated their arguments for doing so. On the other hand we looked for patterns as to which character(s) influenced female and male students most positively with respect to their attitude towards a university level computer engineering programme. Results from the study are presented and discussed. We conclude by pointing towards future research and potential within the area.

INTRODUCTION

A long-standing issue in higher education in engineering and other technical fields has been that of recruitment and retention of female students. The arguments for this are many, and here we will restrict our interest to recruitment with the support of virtual coaches. Baylor and collaborators demonstrated (Baylor & Plant, 2005; Baylor, Rosenberg-Kima, & Plant, 2006) that the use of

virtual coaches portrayed as young and attractive females can increase the willingness of female students to chose technically oriented courses and help increase their belief in their own ability in technical domains. Processes of role modelling and identification (cf. Bandura, 1977, 2000) seem to be involved. The female students could more easily match these coaches with their personal identity compared to a virtual coach portrayed as a "typical male engineer" (see Figure 1).

When the results of Baylor and collaborators are analysed in detail it appears, however, that the

Figure 1. Example of two alternative engineering coaches (young, attractive female versus "typical" male engineer) in Baylor et al. (2006). (© 2006, State University of Florida. Used with permission.)

increase in their belief in their own abilities partly stems from a conception of a "female, feminine, young and attractive" engineer as *less competent* than a "real, typical male engineer". The prejudice that females, and in particular females with a strongly feminine appearance, are less competent in technical domains seems to spill over to the virtual area, generating increased self-efficacy of the kind 'If she is able to do it, I can do it!'.

Now, this implies a potential conflict between a *short-term* pedagogical goal of recruitment and boosted self-efficacy in female students, and a *long-term* pedagogical goal of changing rather than reproducing gender prejudices and stereotypes. Attempting to avoid this conflict, the present study explores motivational and cognitive effects of more neutral- or androgynous-looking virtual characters versus more typically feminine-looking and masculine-looking ones – in a recruitment context. A multimedia presentation was developed, featuring four different virtual presenters of a university programme in computer engineering. The characters (presenters) were *visually* manipulated – and pre-validated during the design process – to represent a young feminine woman, a more androgynous young woman, a more androgynous young man, and a young masculine man. (The characters are depicted and described in detail later in the article.)

Participants encountered one of the four characters in the role as presenter (see Figure 2) and were afterwards asked whether and how the presentation had affected their attitude towards the computer engineering programme as well as what they thought of the presenter. Finally they were presented with all four characters and asked to rank them in terms of which one they themselves would prefer as the presenter of the computer engineering programme, and to motivate their ranking.

Issues in Focus

We wanted to:

1a) Explore students' attitudes towards the different characters, as seen in how they *ordered* them as preferred presenters of the computer engineering programme: Would the more neutral, androgynous characters be preferred to the more gender typical characters, or vice versa? Would the rankings of female students differ from those of male students?

1b) Explore how students *articulated* their attitudes towards the four characters: What reasons would they give for their first and last choice?

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