Simulation-based training of communication and emotional competence for the improvement of physician-patient relationship

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OUTLINE

- The broader framework: EU-funded “MYSELF project”
- Communication and emotional skills in medical practice
- Soft skills training and technology
- Computer-based simulations in Myself project
- Critical issues and choices
- Conclusions and future directions
Funded by the European Commission under the 6th Framework Programme

14 partners (among Universities, research labs, educational and IT companies and SMEs) from 7 different EU countries

**Goal:** developing a web-based platform with **affective computing** capabilities for individual and collaborative learning simulations

**Target Focus:** training relational (communication and emotional) skills in different professional settings

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**AFFECTIVE COMPUTING IN MYSELF PROJECT**

1. The system’s ability **to express emotions** (affective 3D virtual tutor)

2. The system’s ability **to recognize and react/adapt to user’s emotional states** (multimodal emotional recognition system and personalization of learning path)

3. The use of “computing” in order **to train people in the management of emotions in interpersonal communication** (interactive simulations)
Communication and emotional competence in medicine

The medical encounter is deeply pervaded with emotional elements.

The key role of emotions and communication has been highlighted:

- **in specific medical settings**, like oncology, cardiology, pediatrics, obstetrics, gynaecology, etc. (Fallowfield & Jenkis, 2004; Baile et al., 2002; Farrell et al., 2001)

- **in critical situations** that professionals in the medical field are asked to face and manage, such as breaking bad news, communicating an unfavourable diagnosis, etc. (Buckman, 1984; 1992; Garg et al., 1997; Orlander, Fincke et al., 2002)

Communicative and emotional competence: Effects

According to research evidence, a good communicative and emotional competence can help health professionals:

- **to improve their sensitivity to the emotional aspects** conveyed by patients (van Dulmen & van Weert, 2001) --> better compliance

- **to obtain a better management of their emotions** --> reducing the burn-out risk (Fallowfield & Jenkis, 2004)
Communicative and emotional competence: Training

Even if emotions play a critical role in doctor-patient interaction, research showed that the instrumental and task-focused elements of the conversation are more frequent than the affective ones (Weston, Brown & Stuart, 1989; Roter, Hall & Katz, 1988).

Some communicative and emotional skills have been considered fundamental aspects of medical education (ACGME, American Council of Graduate Medical Education, 1988).

Communicative and emotional competence training: the traditional learning modalities

The training of communicative and emotional skills has been traditionally carried out through classroom and face-to-face learning modalities:
- role playing
- standardized patient method
- observation of a peer or a supervisor’s behavior in a critical communicative situation

What might be the role of technology?
**The role of technology in “hard skills” training**

Computer technology and virtual reality have been used in medical education mainly for the training of clinical competence and technical skills (*hard skills*)

- use of **prototypes based on augmented reality** to train the clinical ability to detect abnormalities related to specific pathologies (McKenzie et al., 2006)
- use of **virtual reality for simulations** of medical procedures and surgical interventions (Satava & Jones, 1997; and many others ...)

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**The role of technology in soft skills training**

Computer-based simulations have recently started to be used for the training of soft skills in different contexts

- **the Virtual Leader** program (Aldrich, 2003)

- **the IDEAS project** (Marsella, 2000)
MYSELF PROJECT
Simulation-based training of communication and emotional competence

General features of the simulations:

a) The computer-based simulations developed in the MySelf project reproduce some critical communicative and emotional situations that medical practitioners are asked to face in their profession.

b) The user plays the role of the physician/health worker and manages the interaction with a virtual patient with a specific medical problem.

c) Simulations are experienced in 3D virtual environments, characters are modelled and animated using Poser 6.
d) For each interactive step, the user has to select the most adequate communicative choice to continue the conversation with the virtual patient.

e) In order to reproduce the complexity of a real communicative situation, the simulations are characterized by a branching narrative approach, combined with elements of dynamic modelling.
f) The system is endowed with a **speech recognition device**: the interaction is voice-based, like in the real doctor-patient interaction.

g) The simulations can be experienced also using a **webcam**
   → the trainee can check his communicative performance, observe and reflect over it
   → the trainee can analyze his performance and discuss it with a **human tutor**
The same system used in the platform to detect emotional state of the trainee and adapt the learning path can be useful in order to improve trainee's awareness of his/her emotional reactions during the simulations.

The platform is also endowed with a collaborative environment: the training can be experienced by multiple users at the same time. The user can play different interactive roles (physician, patient, nurse...)
Some critical issues and choices

- Characters’ animations and speech:
  - Video vs 3D characters?
  - Natural speech vs synthesized speech?
- Modelling: branching narrative vs dynamic models?
- Going through the simulation: continuous flow or step-by-step feedbacks?
- Action perspective: 1st person vs 3rd person perspective?
- Technological immersion: HMD or desktop?
- ….

SENSE OF PRESENCE
Conclusions and future work

- The use of interactive simulations can provide a controlled experiential setting (Schank, 1997; Aldrich, 2001) to enhance the training (and assessment) of communication and emotional skills.

- A few (many ...) limitations and challenges to face, both in terms of technical developments and pedagogical issues.

- Sense of presence.

- Development of consistent theoretical models and research programs are needed, in order to run sound validation studies.

- Interesting possibilities for blended learning.

THANKS FOR YOUR ATTENTION