Psychotherapists' interest in using the Furhat social robot for clinical training

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Introduction

For more than two decades it has been possible for surgeons and other medical specialists to practice in a simulated environment. This has enabled a safe way to practice complicated procedures systematically. However, for clinical psychologists and psychotherapists very few options exist for similar training procedures.

Recently, we created and demonstrated a prototype of such a simulated environment (Johansson, Skantze, & Jönsson, 2017). The practice environment uses the Furhat social robot (Moubayed, Beskow, Skantze, & Granström, 2012) and the open-source toolkit IrisTK (Skantze & Al Moubayed, 2012) to implement simulated patients in a dialog system. A goal of our research has been to develop means for training, where it would be possible to practice psychotherapeutic methods on virtual patients in a similar way to that of medical training simulators. While there exist studies on using social robots as part of therapy (e.g., Feil-Seifer & Mataric, 2008), there seem to be hardly any research conducted on using social robots as patients for training purposes. We believe this could open up for a completely new approach to training within psychiatry and clinical psychology.

It is however unknown if psychologists and psychotherapists have an interest in this type of training tool. In this study, we aim to explore this, as well as other dimensions of perceptions of the Furhat robot in this population. Finally, we look at the predictive values of these dimensions towards the clinicians' interest in using the Furhat robot as a training tool.

Methods

Details of the psychotherapy training environment has been described elsewhere (Johansson et al., 2017). Briefly, the patients are implemented as conversational agents using a statechart-based XML formalism for designing the dialog flow. Hence, the current implementation relies on hand-crafted rules.

A prototype of the psychotherapy training environment was presented to an audience of prospective end users at a yearly psychotherapy workshop held in Stockholm, Sweden. The theme of the workshop was an advanced application of a form of psychotherapy called Intensive Short-term Dynamic Psychotherapy (ISTDP) in a challenging group of patients. A total of about 65 therapists took part of the presentation, a majority of which had several years of clinical experience. First, the general idea of the system and its overall purpose was presented. Then, a video demonstration was given showing a psychotherapist interacting with the Furhat robot as a simulated patient. Figure 1 shows an example of an interaction with the simulator, as illustrated to the audience. This was followed by a Q&A session. After this, a survey was distributed to the psychotherapists.

The survey contained the GODSPEED questionnaire (Bartneck, Kulić, Croft, & Zoghbi, 2009) and two additional questions: *"How interested would you be in using a simulator such as the one described for your own training?"* and *"How valuable do you think a simulator such as the one described could be for [Intensive Short-term Dynamic Psychotherapy] training in general?"* (Respondents gave their answers by marking a position on a numbered five-step Likert-style sequence ranging from *"Not at all"* to *"Very much"*). The GODSPEED questionnaire is a collection of instruments for measuring the dimensions *anthropomorphism*, *animacy*, *likeability*, *perceived intelligence*, and *perceived safety of robots* (Bartneck et al., 2009).

To explore the value of these dimensions in predicting A) the therapists' interest in using the simulator for own training and B) the perceived value of the simulator for the community, two multiple linear regression analyses

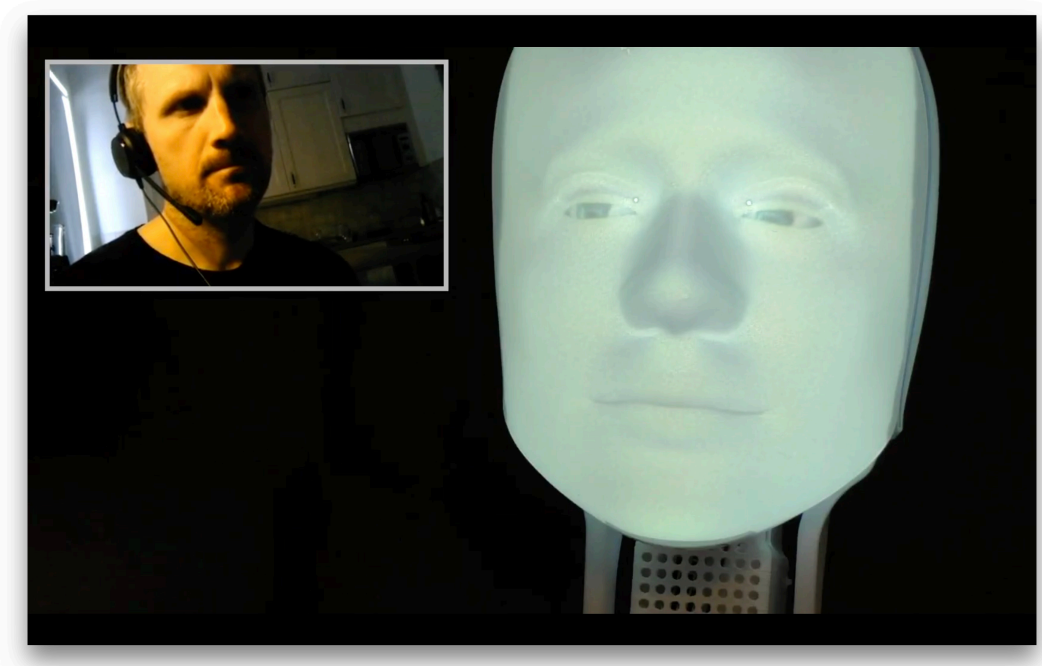

Figure 1. An example interaction with the training environment

were conducted with A and B as target variables and individual GODSPEED dimensions as predictors. Backward stepwise selection with a selection criteria of $p < .10$ was used to decide the final set of predictors in the models.

Results

Thirty-nine therapists completed the survey. The mean interest in using the simulator for own training was 3.95 (*SD* = 1.40, *Md* = 4), and the mean perceived value for the community was 4.08 (*SD* = 1.11, *Md* = 4). Mean values on the GODSPEED scales can be seen in Table 1.

Table 1. Mean values and standard deviations of ratings on the GODSPEED scales.

Anthropomorphism	Animacy	Likeability	Perceived Intelligence	Perceived Safety Beginning	Perceived Safety End
2.65 (0.60)	2.90 (0.60)	3.63 (0.85)	3.07 (0.56)	3.44 (0.71)	3.71 (0.65)

The GODSPEED dimensions *animacy* ($p = .002$) and *likeability* ($p = .053$) was selected for inclusion in the model. A significant regression equation was found ($F(2, 36) = 19.463, p < .001$), with an R^2 of .520. The model predicting perceived value for the community also included *animacy* ($p = .001$) and *likeability* ($p = .064$), with a significant regression equation $F(2, 36) = 19.441, p < .001$, $R^2 = .519$.

Discussion

This study found preliminary indications that clinicians' interest in using the Furhat robot as a training tool was high. Furthermore, the GODSPEED dimensions *animacy* and *likeability* seem to have a predictive value, explaining more than half of the variance in the clinicians' interests. These results indicate that a psychotherapy training environment using a social robot seem feasible. Arguably, two strengths of the Furhat robot are its highly realistic facial expressions, and its perceived "friendliness". Hence, the results from this study point in the direction that the Furhat robot is indeed a good choice for this kind of training environment. Further research is warranted in this area.

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