

# A Qualitative Evaluation of Social Support by an Empathic Agent<sup>1</sup>

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## Abstract

This paper presents a qualitative study of the supportive behavior of an Embodied Conversational Agent (ECA) that provides social support to cyberbullying victims. The results indicate that social support is conveyed. In addition, we demonstrate a method that can be utilized to evaluate embodied agents for vulnerable target audiences (e.g., children), and in sensitive domains (e.g., cyberbullying).

## 1 Introduction

There is a growing interest in employing embodied agents as companions and coaches. Increasingly, this type of agents is equipped with the ability to understand and express emotions. However, to what extent the behavior of emotional agents actually affects the perception, attitudes, and behavior of users remains unclear [1]. In order to understand the impact of emotional agents on users, Beale and Creed argue that a fine-grained approach is required [1].

In embodied agents research, quantitative studies are the norm. However, quantitative studies provide little insight into *how* and *why* certain interaction strategies affect user attitudes and perceptions. Therefore, they are less suitable to provide for a fine-grained analysis. Qualitative research methods seem more suitable to explore what aspects of an agent's behavior contribute to achieving certain effects in users.

Our research concerns an embodied conversational agent (ECA) that provides social support to cyberbullying victims aged 10–14 years old<sup>2</sup>. This paper presents a qualitative evaluation of the supportive behavior of the virtual buddy prototype we implemented. Since we are dealing with a vulnerable target audience and a sensitive application domain, the evaluation was conducted by pedagogical experts.

## 2 Method

We implemented a prototype of an empathic virtual buddy that uses verbal and nonverbal behavior to comfort users. Interaction is based on a scenario in which a 14-year old boy is being verbally abused and threatened by a classmate. The virtual buddy guides the user through a structured conversation about these events, during which it provides emotional support and practical advice. Details about the conversation structure can be found in [3].

A focus group was organized to explore different aspects of the virtual buddy's supportive behavior. A focus group is a group discussion in which individual views and experiences are explored through group interaction [2]. Six pedagogical experts were invited to try the virtual buddy and discuss their opinions

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<sup>2</sup>We would like to emphasize that our research is focused on designing supportive interactions between ECAs and users. Our research objective does not include evaluating the agent's suitability or effectiveness as a tool against cyberbullying.

on its supportive behavior. The session took approximately three hours; it was audiotaped and transcribed verbatim for analysis.

### 3 Results

In general, the experts were positive about the virtual buddy's supportive behavior, and stated they felt supported by the interaction. The experience of being supported was mainly contributed to the combination of verbal utterances and facial expressions. The following quote illustrates the combination of verbal and nonverbal behavior works better than verbal-only support:

Expert 2: *I find Robin<sup>3</sup> left a very sympathetic impression, precisely because of the combination of language and those different expressions. [...] I say it works better than text-only; it really struck me that that did something more to me than just reading.*

A suggestion made by the participants was to add more verbal support to the conversations:

Expert 3: *It has already been said a few times that there should be more empathic responses, for example Robin asks, 'do you know the bully?' and after the response immediately there is another factual question, 'how long have you been bullied?' It is better to first give a response to every answer, such as 'that's annoying' or 'that's awful'.*

An important threat to the experience of support is the certainty with which the buddy assumes it is being helpful when it gives advice. Therefore, the virtual buddy should check whether its advice is acceptable:

Expert 3: *I think you can give advice, but you should always check whether it is helpful.*

### 4 Conclusion

In this paper, we presented a qualitative evaluation of the supportive behavior of our virtual buddy prototype that provides social support to cyberbullying victims. Six pedagogical experts were invited to try the prototype and discuss their opinions in a focus group. The results show that the virtual buddy is able to convey support. The experience of being supported was mainly contributed to the combination of verbal supportive utterances and facial expressions. Important improvements suggested include adding more supportive utterances to the conversation, and requesting feedback to check whether the buddy's advice is helpful. The second contribution of this paper is the demonstration of a method that can be used to evaluate embodied agents for vulnerable target audiences (e.g., children), and in sensitive domains (e.g., cyberbullying). In particular, the virtual buddy was evaluated by experts, instead of its actual target audience.

### Acknowledgements

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### References

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<sup>3</sup>Robin is the virtual buddy's name.