

An Empathic Agent that Alleviates Stress by Providing Support via Social Media (Extended Abstract)*

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In order to help people to cope with everyday stress, *peer support* seems to be a promising means. Online social networks are commonly used for this purpose. Indeed, sharing problems and showing affection are among the most common reasons why people use social media [1].

This paper is part of a project that explores the possibilities of *computer-generated peer support* via online social networks. More specifically, we introduce the concept of ‘artificial friends’ that have the ability to analyze text messages that people share via online social networks, and generate appropriate responses to these messages with the aim of helping them to deal with their ‘everyday problems’ (pretending to be a friend instead of a specialist).

In previous work [2], we conducted a survey via a crowdsourcing platform in order to: 1) identify the most common types of stressful situations shared by people via social media and 2) determine the strategies used by users to support stressed friends in these situations. The resulting data were used to provide a categorization of stressful situations and corresponding support strategies in accordance with the literature mainly inspired by Gross [3] as well as Heaney et al. [4].

Taking this categorization as a point of departure, we are developing a chatbot (an agent) that simulates a friend with the ability to help human users to cope with various stressful situations.

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The algorithm behind our agent is based on the results obtained from the previously reported study. The assumption is that the bot receives as input certain messages from users that share stressful personal situations. For each received message, the bot first identifies the type of stressful situation that is involved (for instance, ‘relationship’ or ‘work’). Then, given this stressful situation, the bot selects a type of support strategy that will be used to generate a comforting message. The following support strategies are used: *situation selection* (s.s.), *situation modification* (s.m.), *attentional deployment* (a.d.), *cognitive change* (c.c.), and *general emotional support* (g.e.s.). We know from our previous results how often each strategy was applied to each type of stressful situation. These frequencies are used by the bot as probabilities to select a particular strategy, given a certain situation. For instance, in case an incoming message is classified as a ‘work’ problem, the agent is most likely (with a probability of 44%) to generate a comforting message of the type ‘cognitive change’.

In more detail, the workflow of the application as a whole is as follows. A given user sends a message to the bot, then the bot will try to identify the type of the reported problem and, after this, the bot will select an appropriate support strategy. Finally, after having both the problem and the support strategy identified, the bot will send a support message back to the user. When it is up and running, our bot can be found by searching for ‘stress_support_bot’ on Telegram Messenger App.

A thorough experiment to evaluate the bot’s accuracy as well as its user experience is currently being conducted. Initial results point out that the bot is able to correctly classify incoming messages in the vast majority of cases (over 80%), and that users are generally positive about the appropriateness of the bot’s support messages. Although extensive further testing is obviously required, the expectation underlying this research is that the proposed support agent can help reducing the stress people experience in ‘everyday situations’ by generating tailored response messages, and that this is particularly helpful in cases where users do not receive comforting responses from their human peers.

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