Alternative Story Construction Support System for Narrative Therapy through Fact Recall Assistance

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Abstract: Students who suffer from psychological stress tend to perceive their experience negatively and estimate themselves low. In order to support such students, narrative therapy is important. The narrative therapy is the psychotherapy by changing dominant stories, which consist of the negative aspects of the facts, to the alternative stories, which consist of the positive aspects of them. Such therapy is achieved by the skilled therapists, but it is difficult for the schools to prepare enough number of therapists for the stressed students. This study proposes a system that substitutes for human therapists by supporting the construction of alternative stories.

Keywords: Narrative therapy, self-evaluation, alternative story, dialogue system, fact recall, psychological support

1. Introduction

In these years, schools are required to provide students with emotional support. Students who suffer from psychological stress tend to perceive their experience negatively and estimate themselves low. Narrative therapy is a form of psychotherapy aimed at improving self-esteem by reframing dominant stories which consist of the negative aspects of the facts, to the alternative stories, which consist of the positive aspects of them (White, M., et al., 1990). This approach is achieved by the skilled therapists, but it is difficult for the schools to prepare enough number of therapists for the stressed students. Based on this, our research aims to construct a system that can serve as a substitute for a narrative therapist.

In research targeting therapy support, chatbots such as Woebot (Fitzpatrick, K. K., et al., 2017) have emerged. Woebot detects negative thought patterns through daily conversations and applies techniques from Cognitive Behavioral Therapy (CBT) to guide users toward more realistic, positive interpretations. This agent focuses on alleviating emotional distress and correcting cognitive distortions. However, as they do not model how self-evaluation is formed, they may only offer temporary relief.

This study models human self-evaluation process. Based on this model, it proposes a system that can help recall positive facts to construct alternative stories.

2. Self-Evaluation Model

Self-evaluation is the process through which individuals determine whether they perceive themselves positively or negatively based on their own facts.

Figure 1 illustrates the self-evaluation model expressed in these three levels. Fact Evaluation is the evaluation result of individual fact from a specific perspective. Perspective Evaluation indicates the evaluation result of perspective, which is derived by

the fact evaluations of associated facts. Overall Evaluation is the self-evaluation derived from all perspective evaluations. It is calculated by adding perspective evaluation by considering each perspective's weight.

Based on this model, to improve overall evaluation, either the weight of a perspective or its evaluation must be changed. Since perspective weights represent personal values, they are not easily altered. In contrast, perspective evaluations can be changed by modifying the set of fact evaluations. This can be done by either recalling new relevant facts or reevaluating known facts from different perspectives.

Figure 1. Self-Evaluation Model

This study proposes a therapist system that engages in dialogue to encourage the recall of new facts and the reevaluation of existing ones, thereby generating new fact evaluations.
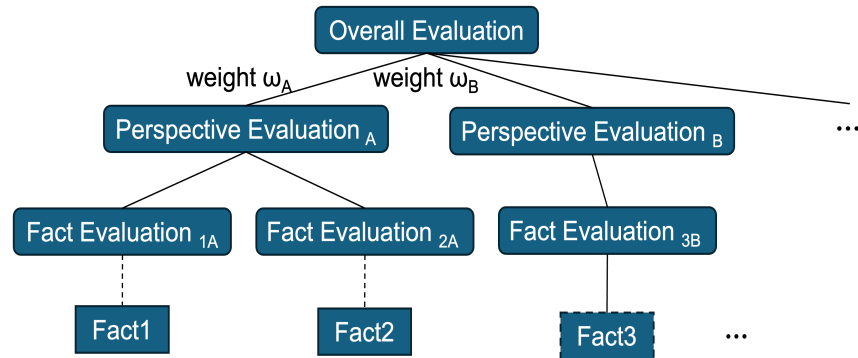
3. Narrative Therapist System

3.1 System Interaction

Figure 2 illustrates the Interaction of the narrative therapist system. The system behaves like a narrative therapist and support a user to construct the alternative story based on his dominant story. The system does not create the alternative story, but it supports users to derive new facts and their evaluation perspectives that help users to create the alternative story by themselves.
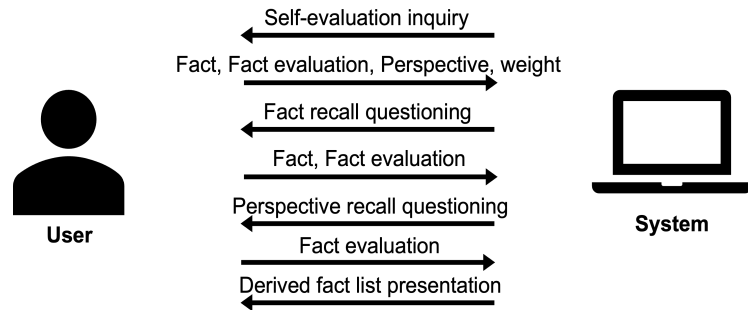

Figure 2. The Interaction of The Narrative Therapist System

3.2 Fact Recall Questioning and Perspective Recall Questioning

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Fact recall questioning to the given facts and perspectives helps the user to recall new facts evaluated from a particular perspective. It fills in the template of each question using the facts and perspective given as a dominant story. (Type of action) (characters) (place), and (time) are the components of the given fact. (Perspective) means given the perspective. Followings are the templates: *"Do you have another episode where you (type of action) in a different place, related to being a (perspective) person?"* , *"Do you have another episode where you (types of action) (place) at a different time, related to being a (perspective) person?"*

Perspective recall questioning asks the user to evaluate known facts from new perspectives. For all perspectives that have not been applied to a fact, the system generates questions using the template: *"Does the fact that you (type of action) (place) (time) relate to being a (perspectives that are not applied to the fact) person?"*

3.3 Prototype System

The interface of the prototype system is shown in Figure 3. The interface is composed of a dialogue display area for conversation between the system and the user, and a response input area for answering questions. In the dialogue area, the system's messages appear in grey on the left, and the user's responses appear in blue on the right. The input area changes according to the given questions by the system so as to make the user fill in the required elements easily. Questions asking for perspectives are answered in free text, questions asking for

Figure 3. The System Interface

perspective evaluation and fact evaluation use a five-point scale input, and questions asking for entering facts use a structured input in the format "I (type of action) (place) (time)". For organizing facts chronologically, the input is a selection of Fact 1 and Fact 2 in the form "after Fact 1, before Fact 2". A "None" button is also available in case the user cannot think of an answer.
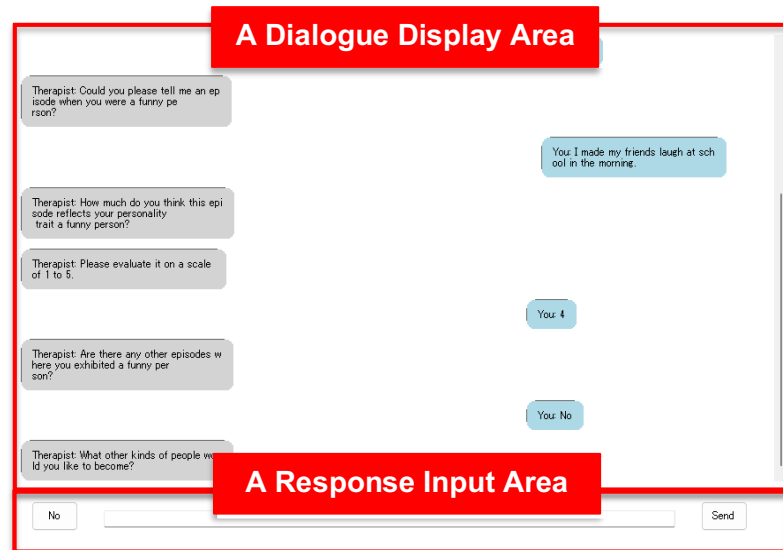
4. Conclusion

In this study, we proposed a self-evaluation model consisting of fact evaluation, perspective evaluation, and overall evaluation. Based on this model, we developed a system that simulates the role of a therapist and guides users in deriving elements for constructing alternative stories. The system generates questions based on the user's self-evaluation to support them recall new facts associated with the same perspective, or to reevaluate known facts from different perspectives. As our next step, we will conduct experiments to evaluate the validity of the activity model and the effectiveness of the proposed system.

References

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