Exploring the Effects of AI-assisted Emotional Support Processes in Online Mental Health Community

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Introduction

- Sharing emotional supports is considered crucial to the thriving social supports in online mental health communities (OMHCs), yet often difficult for both support-seekers and support-providers
- To support empathetic interactions, we designed an AI-infused workflow that allows users to write emotional supporting messages to other users' posts based on the elicitation of the seeker's emotion and contextual keywords from writing
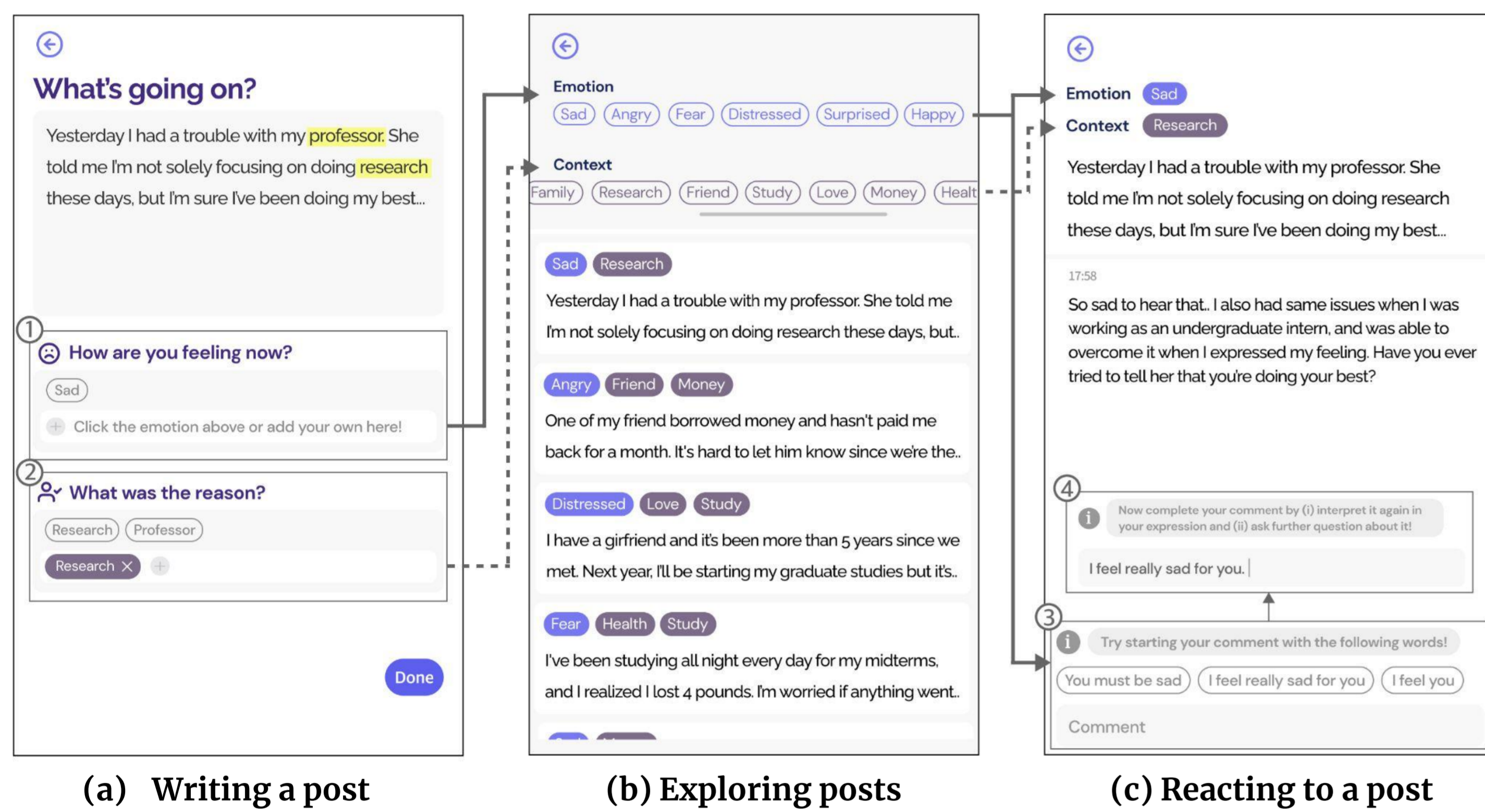
Design & Interaction flow

(a) Writing a post   (b) Exploring posts   (c) Reacting to a post

Figure 1. Keyscreens of our system

1. Support-seeker posts their challenging moment (Figure 1-(a))
2. Once the seeker writes down the post, the system automatically detects and suggests seeker's emotion (Figure 1-(a)-①) and the contextual keywords (Figure 1-(a)-②). The seeker can either choose based on the suggestions, or freely add by themselves. These keywords later serve as filters when the support-providers explore posts (Figure 1-(b))
3. Once the provider chooses a post, the system shows the emotion and keywords from 2 and help users to better identify the situation of the seeker
4. When commenting, the system shows up relevant triggers/prompts targeted to the detected emotion based on the EPITOME, a text-based empathic reaction framework

System development

- In order to detect emotion, we trained Korean emotional dialogue corpus that fall under Ekman's six basic emotions on ELECTRA, a state-of-the-art language model
- To crawl contextual keywords, we used KRWordRank, a WordRank-based unsupervised Korean word extraction method
- The system is implemented as an iOS application, and the models above are deployed on AWS EC2
- Elements in Figure 1 were translated from Korean into English for illustration

Experimental setup

- We ran a preliminary user study, where 10 participants (M_{age} = 22.6, 6 female) were recruited from the online college communities
- Participants were asked to (i) write two new posts about anxious situations they often faced in daily life, and (ii) write reactions to two of others' posts
- The procedure above was run twice, once with our interface and once with the interface without recommendation/filtering function (control interface)
- Once completed, we asked university mental health counselor to rate the quality of participant-generated posts and comments

Results & Enhancements

- From the survey, participants rated our interface to be easier to use than the control interface, across every interaction (posting, reacting, exploring posts) in our interface (Figure 2-(a))
- They also showed high satisfaction on the assist of AI in our interface (Figure 2-(b))
- From the analysis of mental health counselor, provider-generated comments from our interface presented significant improvement in terms of empathy compared to comments from control interface (t = -4.4316, p < 0.0001). However, seeker-generated posts of our interface showed no difference in inducing empathy, compared to that of control interface (t = -0.1787, p = 0.43)
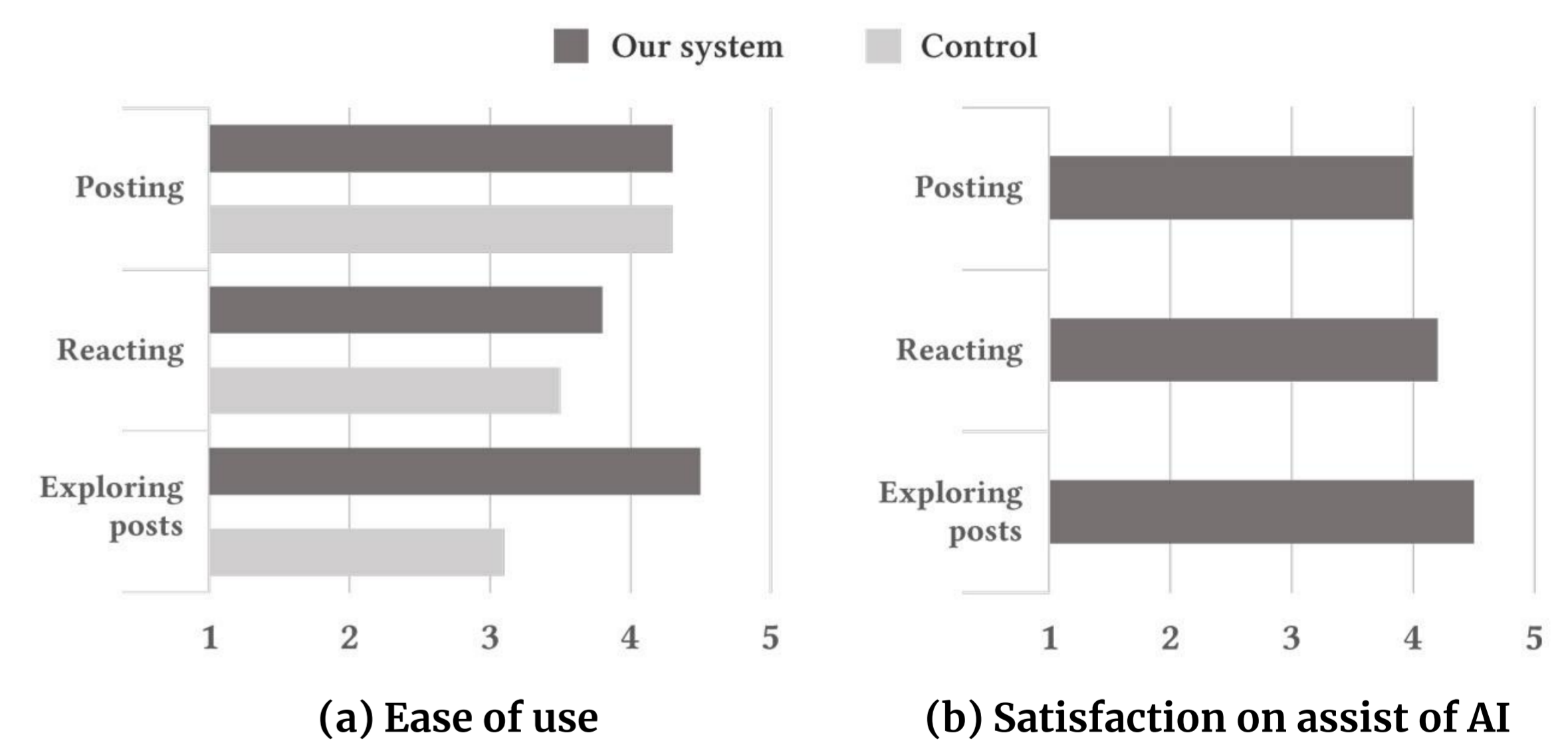- From the post-hoc interview, we could also gain user feedback that supports these statistics

(a) Ease of use   (b) Satisfaction on assist of AI

Figure 2. Survey results

Discussion

- Leveraging AI-driven emotion/contextual keyword elicitation was reported to induce seekers to clarify expression for AI to better understand, yet such concreteness did not necessarily lead to emotional support
- Some participants worried if our community setting might only be filled with monotonous reactions. Thus it would also be beneficial to diversify the type of reactions (e.g., supporting energetic reactions) to enrich the community environment

Limitation

- We conducted our study only with 10 participants. Thus, additional participants may be required in terms of generalizability
- This study was run in a lab-based setting. Thus, to collect lively experience of user interactions in OMHCs aided by the AI-assisted writing process, a deployment study in the wild might be required