Author: Lina Sadoukri | l.w.sadoukri@student.tudelft.nl
Supervisors : Esra de Groot, Ujwal Gadiraju

CSE3000 RESEARCH PROJECT

TU Delft

The Impact of Empathetic Language on Mental Health Information Disclosure to a Chatbot

Background

Mental health issues are rising, yet sharing personal mental health information remains sensitive and challenging [1]. Chatbots offer anonymous, non-judgmental environments that may encourage openness and reduce stigma [2]. Prior research suggests empathy, defined by cognitive (understanding one's perspective) and affective empathy (validating one's emotions) [3], can increase trust and disclosure [4]. However, there remains a gap in finding the specific impact of empathy on mental health disclosure and whether this depends on the type of questions asked.

Research Questions

Does empathetic language in a chatbot affect users' willingness to disclose mental health-related information, and does this effect differ depending on the type of questions?

RQ1: Does empathetic language in chatbot interactions increase users' willingness to disclose personal mental health information compared to neutral language?

RQ2: Does willingness to disclose differ between emotional and behavioural health questions, regardless of chatbot style?

RQ3: Does willingness to disclose differ between emotional and behavioural health questions, regardless of chatbot style?

Methodology

2x2 Mixed Design Study

Between-subjects: Chatbot style (Empathetic vs. Neutral)

Within-subjects: Question type (Emotional vs. Behavioural)

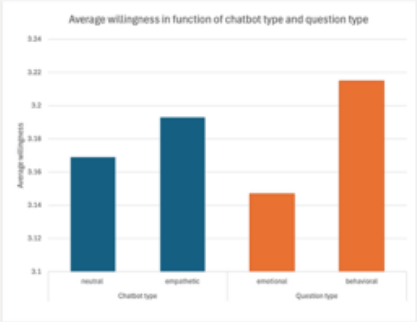
Procedure: 1. Pre-task survey assessing chatbot familiarity, trust and general willingness to disclose mental/physical health information. **2. Chatbot interaction** (random assignment of empathetic or neutral) which asked mental health-related questions (emotional and behavioural). **3. Post-task survey** to assess percieved empathy. Responses were given on a 5-point Likert scale indicating willingness to disclose.

Ethical research: Participants gave their informed consent. No open text or personal data was collected.

Results

Demographics:

Total participants: 114, mainly aged 21-25 (56%)
Gender: 64% female, 35% male
Familiarity with chatbots: Moderate (68%)

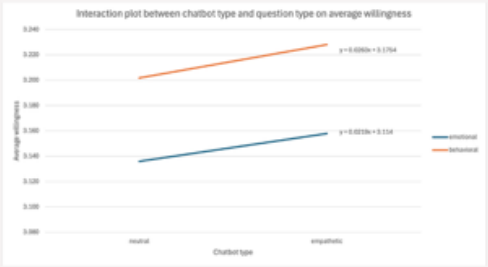


Empathetic chatbot was perceived as more empathetic (M = 3.68 vs. 2.68). Cronbach's alpha = 0.855 shows good internal consistency.

No significant difference in willingness to disclose between chatbot styles (M = 3.19 vs. 3.17, p = 0.873). Very small but not significant difference between emotional (M = 3.15) and behavioural questions (M = 3.21), p = 0.261.

No interaction found between chatbot style and question type (p = 0.971).

Key Finding: Participants' pre-existing willingness to disclose (from pre-task survey) significantly predicted their final disclosure scores (p = 0.001).



Conclusion

Although empathy was successfully perceived, it did not increase participants' willingness to disclose mental health information. Neither the type of question (emotional vs. behavioural) nor the combination of empathy and question type influenced disclosure behaviour.

Participants' pre-existing readiness to disclose mental health information before the interaction was the strongest predictor of their willingness to share during the task.

Limitations & Future Work

Limitations:

- Only willingness was measured, not actual disclosure.
- Single, brief interaction may not build enough trust.
- Sample was not diverse in age and culture background.
- Rule-based chatbot lacked natural conversation flow.

Future Work:

The findings suggest that a single short chatbot interaction may be insufficient to show a meaningful effect in willingness to disclose. Future work should study actual disclosure behaviour, while exploring long-term chatbot use. Additionally, recruiting diverse participants across age, culture, and background would be beneficial.

References

[1] Riedl, R., Hogeterp, S. A., & Reuter, M. (2024). Do patients prefer a human doctor, artificial intelligence, or a blend? Frontiers in Psychology, 15.

[2] Denecke, K., Abd-Alrazaq, A., & Househ, M. (2021). Artificial intelligence for chatbots in mental health: Opportunities and challenges. In Lecture Notes in Bioengineering (pp. 115–128).

[3] Riess, H. (2017). The science of empathy. Journal of Patient Experience, 4(2), 74–77.

[4] Mármol-Romero, A. M., García-Vega, M., García-Cumbreras, M. Á., & Montejo-Ráez, A. (2024). An empathic GPT-based chatbot to talk about mental disorders with Spanish teenagers. International Journal of Human-Computer Interaction, 1–17.