

User experience with the LvL UP mobile health intervention: An Agile approach using think-aloud sessions

Ahmad I. Jabir; Jacqueline L. Mair; Bea Frese; Lorraine Tudor Car

Context: Iterative user experience studies are imperative when designing mobile health applications (apps). Apps designed with users' needs and preferences are necessary to solve long-term engagement and user experience challenges.

Background: LvL UP is a smartphone-based, conversational agent (CA)-delivered holistic lifestyle intervention designed for the prevention of non-communicable diseases and common mental health disorders. Development of the first prototype was informed by existing evidence and formative qualitative studies and was evaluated in a feasibility trial. The aim of this user-experience study was to iteratively refine the first prototype into a new version of the LvL UP app for future definitive trials.

Methods: An iterative think-aloud study was conducted to 1) explore user experience with the LvL UP app; 2) identify potential technical issues and design improvements; and 3) understand user behavioural intentions regarding healthy lifestyle change. Data were collected through objective app usage, screen recording during session, brief post-session interviews, and using the AttrakDiff2 and System Usability Scale tools. Participant feedback was discussed in bi-monthly Agile sprint meetings to make iterative improvements to the app. A sub-sample took part in additional A-B testing by reviewing previous recordings in comparison to the improved version.

Results: Twenty participants took part in one session only or up to 10 different sessions at our lab. Most participants were undergraduate students or previous LvL UP study participants. Participants were asked to focus on 5 key app components: a step tracker, food diary, blended support channel, journal tool, and CA dialogues. Major improvements were made to the CA dialogue flow to improve user experience, including enhanced motivational interviewing inspired conversational turns and additional branching and answer options for a more personalised experience.

Conclusions: The iterative think-aloud model allowed us to collect objective user data over multiple sessions to conduct A-B testing. The Agile approach allowed us to iteratively design the app by incorporating objective and subjective user experience data into the design.

Implications: The ongoing user experience study allowed us to optimize LvL UP based on the context of the development. Our approach may be useful for labs interested in optimizing user experience with an app-based intervention.

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Introduction

LvL UP is a smartphone-based, chatbot-delivered holistic lifestyle intervention designed for the prevention of non-communicable diseases and common mental health disorders.

The development of the first prototype was informed by existing evidence and formative qualitative studies and was evaluated in a feasibility trial. We aimed to iteratively refine the first prototype into a new version of the LvL UP app for future definitive trials.

We incorporated a think-aloud procedure within our development process to better understand users' thought processes while they completed specific tasks within the app.

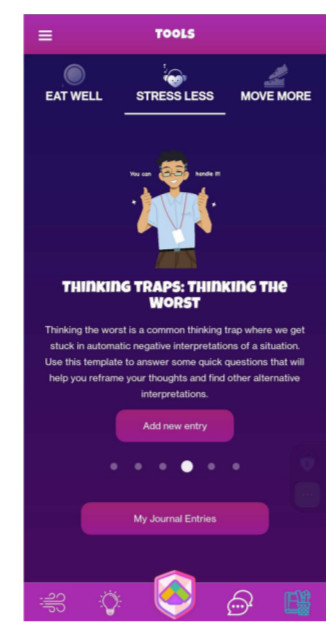
Methodology

Participants were recruited from our previous trials and via a snowballing procedure. All participants (n = 9) were shown a short video on the think-aloud procedures and practiced on a simple task.

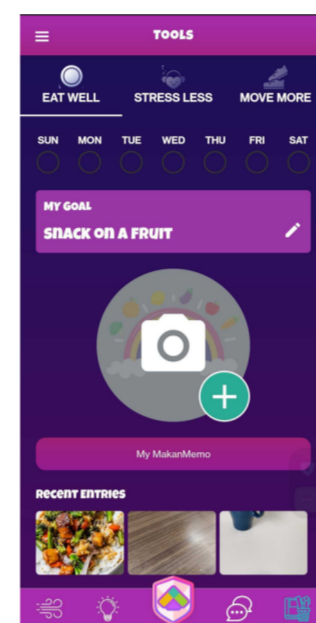
We analyzed data from objective app usage, screen recordings during the session, brief post-session interviews, and field notes. Participants also completed post-session surveys, namely, the AttrakDiff2 and System Usability Scale.

Participants' feedback was analyzed and discussed in bi-monthly Sprint Planning meetings. A subset of the participants (n = 2) was invited to participate in the think-aloud session again after improvements were made to the feature.

Journaling tool

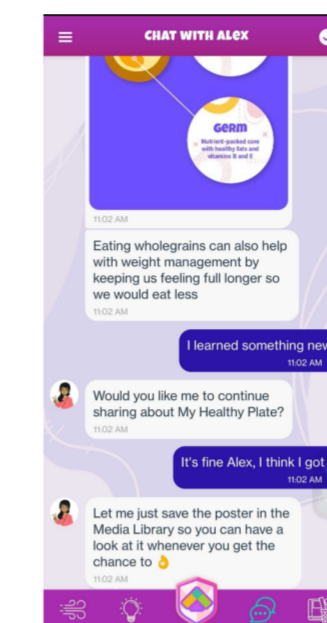


Food diary



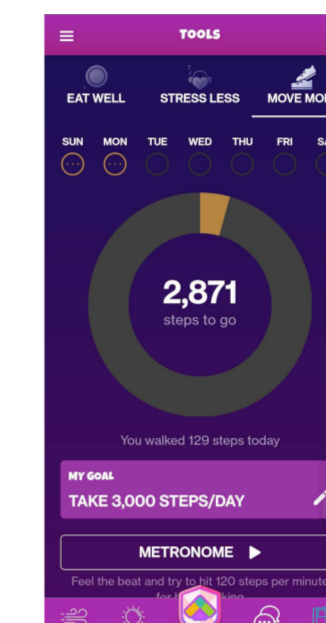
n = 1

Chatbot-delivered coaching session

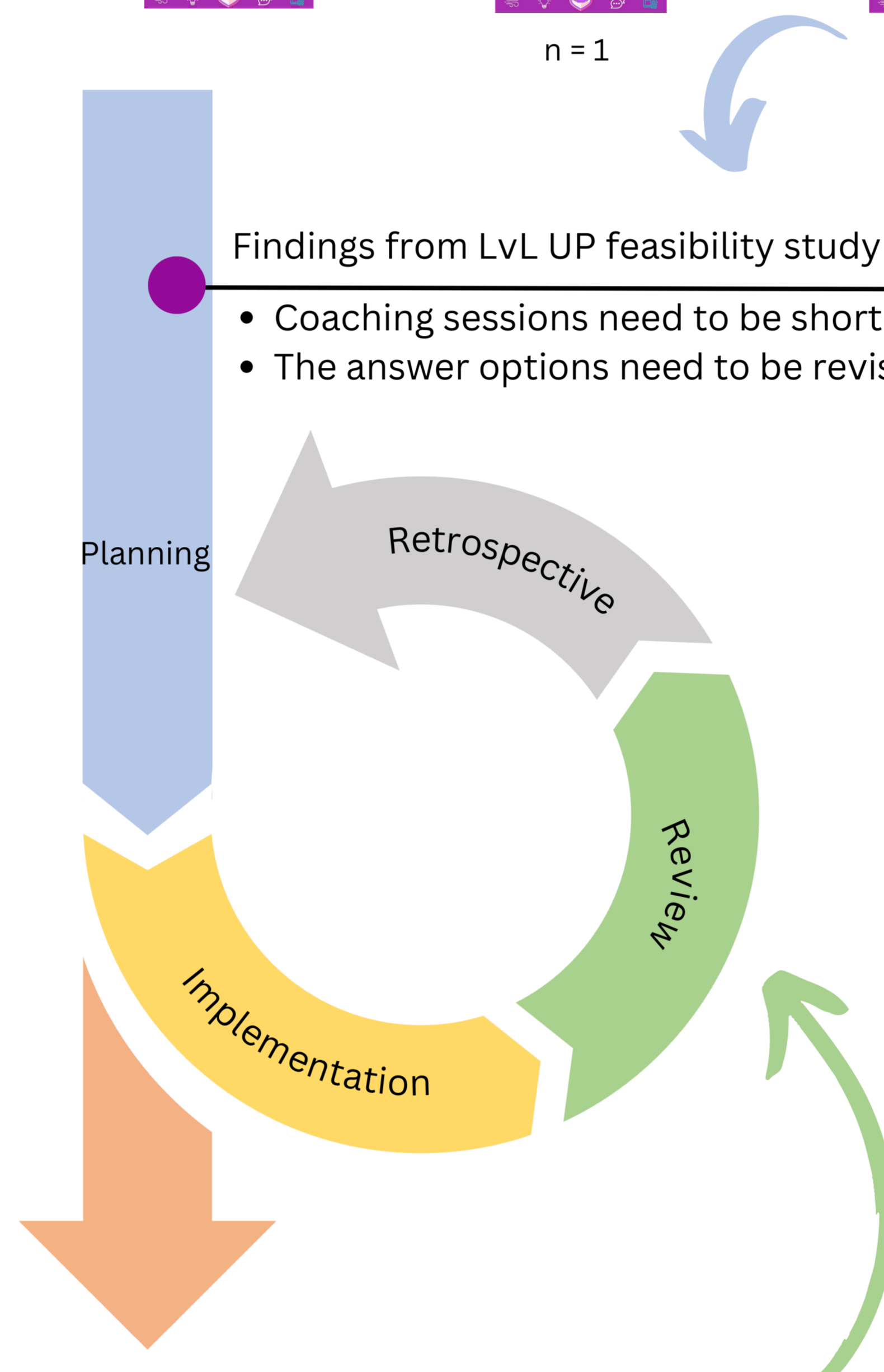


n = 8

Steptracking tool



Human Support via WhatsApp



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“...I think no matter what [answer option] I choose, the outcome will be the same. I don't know why there need to be 2 options that have the same outcome.”

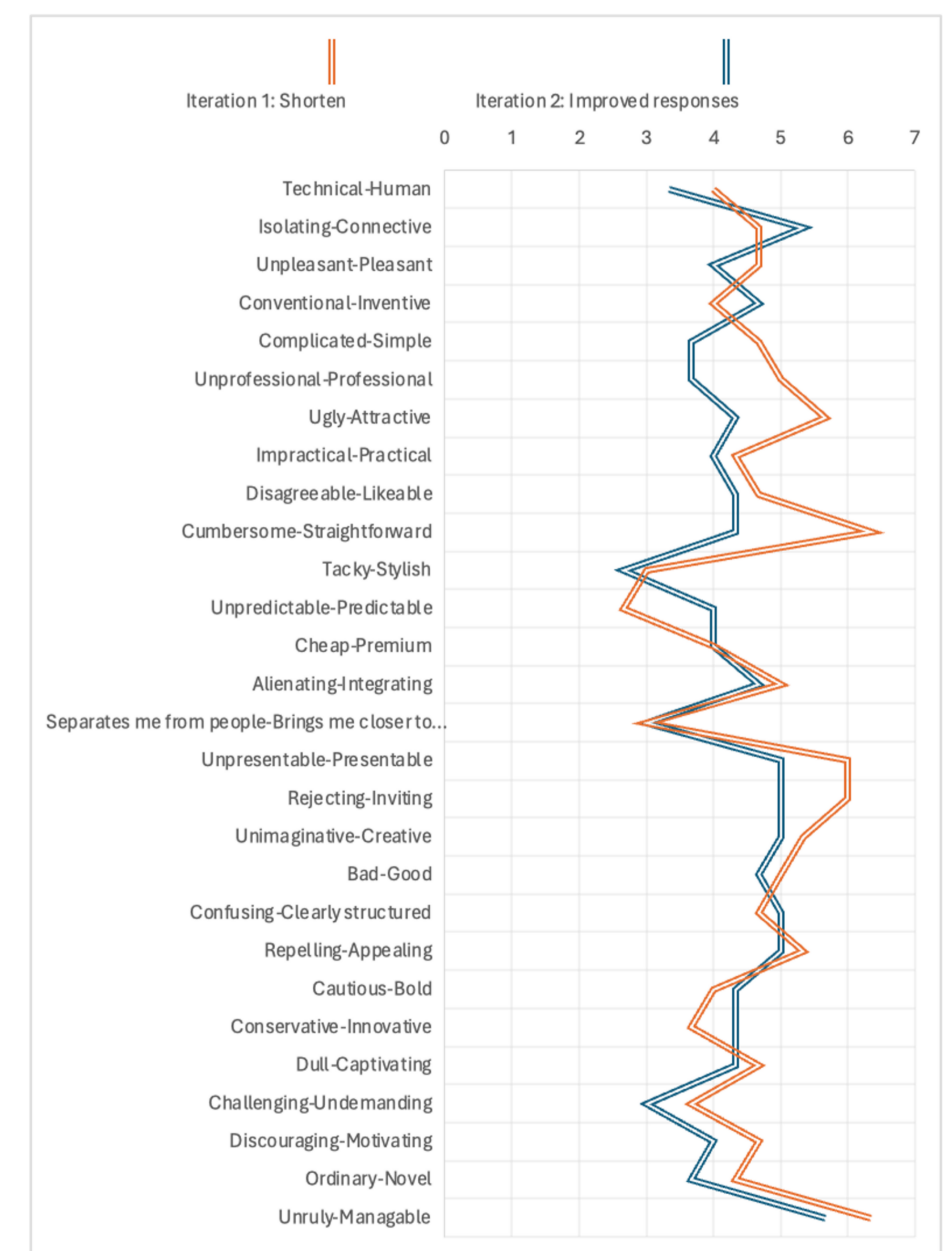
(P05, Female)

“[The session was] quite impressive, but a bit long.”

(P04, Female)

”

Figure 1: Results from post-session survey using AttrakDiff2 after completing the coaching session. Higher scores indicate the more positive word pair.



Results

We present here two implementations of the chatbot dialogue: 1) shortened dialogue; 2) revised answer options with Motivational Interviewing (MI)-inspired coaching.

Results from AttrakDiff2 showed that while the added MI elements felt “connective,” the conversations were less straightforward.

Further discussions during the think-aloud session suggested that the added “reflection” elements were not appreciated, although participants felt that the sessions were more responsive (S06, Male).

Conclusion

Through this iterative process, we have identified potential pain points early and worked on solution together with the potential users. We hope that this eventually leads to better user experience and retention.