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ARTICLE

Speeding up usability testing: a quick guide to rapid analysis for intervention development

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Abstract

Usability testing is a critical component of intervention development but is often perceived as time-consuming. To address this challenge, efficient and time-saving methods are essential. In the Opening Up project, we developed a decision aid to support individuals in deciding whether to discuss their mental health issues in an academic setting. After the initial development phase, we applied rapid analysis to process usability testing findings and reduce the time needed to identify and address usability issues. This approach provided quick insights into usability problems and strengths while maintaining the quality of findings. In this article, we describe the rapid analysis method, provide a quick guide for applying it in intervention development, and reflect on its utility.

Key words: Usability, usability testing, intervention development, rapid analysis

Usability testing in the context of intervention development is a research method that evaluates how well an intervention allows specified users to achieve intended goals with effectiveness, efficiency, and satisfaction (Maramba et al., 2019). It is a critical component of iterative intervention development, aiming to optimize the usability of the intervention and ensure that it functions smoothly for future end users, which in turn can contribute to its overall success (Jaspers, 2009). It can occur immediately after an initial prototype is developed (Jaspers, 2009; e.g., Severijns et al., 2024), and is sometimes referred to as alpha testing in certain development frameworks, when testing is conducted by people directly involved in the development process, as seen in the decision aid development process described by Coulter et al.(2013). Alternatively, usability testing may take place after initial testing has been completed, which is sometimes referred to as beta testing, when conducted in real-world conditions with users not directly involved in the development process (Coulter et al., 2013). A project may combine elements of alpha and beta testing (e.g., Gültzow et al., 2020). Additionally, usability testing can be conducted with professional experts, such as eHealth experts (e.g., Gültzow et al., 2020) or directly with the users (Jaspers, 2009; e.g., Severijns et al., 2024). Additionally, various usability testing methods are described in the literature (e.g., the think-aloud method), which usually involve professional experts or intended end users interacting with an intervention to identify potential problems (Jaspers, 2009). Usability tests can use both quantitative methods (e.g., surveys, often providing an overall measure of usability) and qualitative methods (e.g., the think-aloud method). However, qualitative methods are generally regarded as more effective in identifying specific usability problems that need to be addressed (Maramba et al., 2019).

While usability tests are considered a critical component in intervention development, they can be viewed as time-consuming, which can pose a challenge in projects with limited resources – a constraint that is nearly always present to some extent in health psychology or related and other domains. These constraints may contribute to the omission of usability tests, which could help explain why, despite the rapid growth in the number of eHealth apps, studies reporting on the usability testing of these apps have not kept pace (Maramba et al., 2019). Maybe this is also why efforts are made to determine the optimal minimal number of participants (Faulkner, 2003). However, another potential solution to time and resource constraints is to explore more rapid analysis techniques (which can entail optimal sample size estimation), enabling effective use of limited resources Rapid analysis techniques refer to a set of methods used in qualitative research to speed up data analysis, either by summarising instead of formally coding the data, or by using tools like a 'one sheet of paper' summary to limit the time spent on analysis (Taylor et al., 2018).

In our Opening Up project, focused on developing a mental health disclosure decision aid (for more information, see Severijns et al. (2024) and Engbersen-Severijns et al. (2025)), we faced limited resources and, as a result, explored rapid analysis techniques based on a study by Taylor et al. (2018). For detailed findings from the usability testing, we refer to Severijns et al. (2024). In this present paper, we aim to provide a clear and accessible guide for those looking to implement rapid analysis in their intervention development, alongside our reflections on the process.

Data collection

Focusing on the perceptions of the intended end users, we conducted a think-aloud study with potential end users of our decision aid – namely, university staff members and students experiencing mental health issues. We selected the think-aloud method because it is highly valued for identifying usability issues and allows for direct involvement of potential end users (Jaspers, 2009). In practice, this involved recruiting participants from the target group and asking them to use the first version of the decision aid, which had

been developed based on insights from an interview study with the same target group (Engbersen-Severijns et al., 2025). During the interview, participants were prompted to verbalize their thoughts and opinions as they navigated through the intervention. Interviewers used prompts (e.g., "Keep talking") to encourage participants to share their thoughts aloud. Initially, we planned to conduct the think-aloud study in two phases, with a total of 20 interviews, unless no issues were identified in the first phase. Ultimately, we did identify some issues (e.g., broken links) in 10 interviews, but they were deemed minor enough to skip repeating the first phase, especially since we had a follow-up pilot study planned in which potential remaining concerns could have been identified. The interviews were recorded and transcribed verbatim. Although we chose to employ the think-aloud method with direct end users, other usability testing methods and participant groups could also be used in a similar fashion.

Data analysis

Commonly used data analysis methods such as thematic analysis (Braun and Clarke, 2006) or the framework method (Gale et al., 2013), involve assigning "codes" to data fragments that capture constructs, terms, expressions, concepts, or ideas relevant to the research questions (Zörgő and Peters, 2022). These codes are then integrated into the broader analysis, for instance, by identifying themes among the codes (Braun and Clarke, 2006). However, following Taylor et al. (2018) we opted not to use formal coding. Instead, for each interview, two researchers independently filled in a predetermined "summary template" adapted from Taylor et al.(2018) that summarized the (1) points for improvement and (2) appreciated elements mentioned in the transcripts. Points for improvement included all aspects mentioned by interviewees that they disliked, found to cause usability issues, or explicitly suggested could be improved. In contrast, appreciated elements referred to features that were positively received and did not require any changes. The two versions of the summary template were then compared and any differences discussed by the two researchers to create a final template for each interview. After completing all templates, two researchers summarized the findings into one list of (1) points for improvement and (2) appreciated elements. The team then categorized each item as (1) needing modification now, (2) can be modified in future iterations, (3) will not be modified, and (4) is valued as it is. The summary template used for our study can be reused and found on the Open Science Framework: `https://osf.io/n4pkr`. Those interested in using the template can download it and create copies for use in their own projects and usability studies.

Summary

To apply rapid analysis in usability testing, intervention developers can follow the straightforward steps shown in Figure 1 to organize findings and guide further intervention improvements, rather than relying on more labor-intensive analytical methods.

Fig. 1. Figure 1. Steps of the approach to rapid usability testing. The figure, along with alt text, can also be accessed at https://osf.io/vah8w. License: CC-BY Attribution 4.0 International.

Reflection

Although we did not perform a comparative analysis similar to Taylor et al. (2018) our team has experience in qualitative research in general and qualitative usability testing in particular (e.g., De Krom et al., 2020; Funk et al., 2023; Gültzow et al., 2020, 2022; Severijns et al., 2021, 2023; Engbersen-Severijns et al., 2025). This enabled us to reflect on how our current approach compared to previous studies we conducted. However, we emphasize that this reflection is based on personal experience rather than empirical comparison.

In comparison to previous studies, we found that the approach described in this paper enabled us to analyze usability test findings efficiently while achieving our primary goal: developing an improved version of the intervention in the limited time at our disposal. Ultimately, it took us only about two years to conduct preliminary research (Engbersen-Severijns et al., 2025), develop the initial version of the intervention, carry out usability testing, and finalise the intervention – despite not having any full-time personnel on the project. This underscores the added efficiency of our approach. This was accomplished without compromising analytical rigor. Our approach was straightforward, focusing exclusively on summarising user-identified issues and appreciated elements using predefined templates in a purely deductive manner. While more complex patterns or themes might have been identified through other analytical approaches, these were not our objectives for this project. Thus, we considered the trade-off between simplicity and time savings to be acceptable.

Similarly, our approach did not aim to compare usability patterns across different user segments, a task that might prove more challenging with the rapid techniques described in this article. Nonetheless, we found this trade-off acceptable within the scope of our study. Notably, no additional usability issues were identified in the subsequent small-scale feasibility study (Severijns et al., 2024).

It should be noted that the process could have been further simplified, for instance, by assigning a single researcher to each summary template or by foregoing transcript summaries altogether. However, we believe our approach struck a balance between analytical rigor and time efficiency, ensuring that neither was entirely compromised.

In other words, while we conclude that we successfully conducted the necessary usability test of our intervention within the limited time available by simplifying our analytical approach, we did so without compromising analytical rigor. Overall, we recommend the approach outlined in this tutorial for straightforward usability testing, particularly when time and resources are limited. This method is ideal for evaluating an intervention's usability during the intervention development process and is not focused on generating empirical findings. However, for projects requiring more in-depth comparisons or the identification of complex themes, traditional qualitative analysis methods may be more suitable. It would also be valuable to compare these approaches empirically, as Taylor et al. (2018) have done, to better understand their respective strengths and limitations in the context of usability testing.

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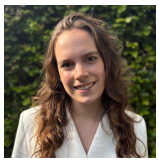

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