Including Neurodivergent Voices through Probing Interviews: A Methodological Approach to Enhance Hiring Practices

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Abstract. Neurodivergent individuals often face high unemployment rates due to numerous reasons, among those traditional hiring practices stand out since they fail to accommodate unique information-gathering needs. In this work, we propose a new methodological approach—the probing interview tailored to actively involve neurodivergent individuals in research. Probing interviews enable participants to engage in hands-on activities to communicate. In our past research, we have applied probing interviews to technology design, allowing neurodivergent individuals to contribute valuable insights into developing the FeelSense emotion regulation app. We propose that applying this innovative approach –actively involving neurodivergent candidates in hiring interviews through structured, hands-on activities– enhances interview inclusivity and effectiveness and, thus, neurodivergent candidates' possibilities for success.

1 Introduction

In the U.S., around 3 million individuals are categorized as neurodivergent, including conditions such as Autism Spectrum Disorders (ASD), Cerebral Palsy (CP), and Down syndrome (DS) (6). Often linked to cognitive impairments and intellectual and developmental disabilities (IDDs) (4), neurodiversity can lead to challenges in executive function and emotional regulation (16; 19). Consequently, many face barriers in forging relationships, obtaining jobs, and pursuing educational degrees (14; 22; 17). Neurodivergent individuals are often eager to find employment and make meaningful contributions to society. Yet, a significant number of these individuals face challenges in being recognized and valued in the job market (3). Still, workplaces that include employees with disabilities—including those on the autism spectrum—tend to be 30% more productive compared to those that do not (18; 7).

Researchers are increasingly focusing on innovative solutions to assist neurodivergent individuals facing difficulties in the hiring process. These efforts aim to address the unique challenges that neurodivergent job seekers encounter, leveraging technology and tailored methodologies to create more accessible and equitable hiring practices. For example, Adiani et al. (1) introduced an adaptive virtual reality-based job interview training platform known as Career Interview

Readiness. Similarly, Bills and Ng (5) created a job-matching system designed to pair individuals with autism with potential employers by predicting mutual preferences. As we move from understanding the broader implications of neurodiversity in society to the specific focus of our study, it becomes important to address the systemic barriers that contribute to the high unemployment rates among neurodivergent individuals from early stages. Despite the eagerness to participate in the workforce and contribute meaningfully to society, traditional hiring practices tend to overlook the unique strengths and needs of these individuals. The aim of our research is to rethink how neurodivergent individuals are involved in research by introducing a novel methodological approach. As a result, we present a case study on how probing interviews were used to design an emotion regulation app, as well as posing probing interviews.

2   Case study

Incorporating neurodivergent users actively into the design process is pivotal in promoting the adoption and continued use of technology (15; 23; 20). Proper guidance is essential for researchers to seamlessly engage neurodivergent users from the outset. Failure to do so can result in these users feeling frustrated with technological tools (11). Our research journey offers insights derived from firsthand experiences with neurodivergent adults in a long-term study, enabling researchers to understand and address the complexities associated with designing for neurodiversity. In this work, the authors draw upon their three-year experience of conducting user studies with neurodivergent participants. Central to the discussion are the lessons learned and recommendations derived from the methodologies employed in the design, development, and evaluation of assistive wearables catered to neurodivergent adults. The focus is directed toward a specific case study, which details the creation and refinement of an assistive smartwatch application named FeelSense. Using FeelSense, users can report their emotional state by selecting either "Good", "Okay", or "I need help". If feeling good or neutral, users are reminded to breathe deeply. In case, selecting "I need help" displays interventions such as 'Deep breath', 'Go for a walk', 'Drink water', 'Listen to music', 'Journaling', and 'Talk to someone', all accompanied by text and visual guides. Post-intervention, users confirm their completion of the activity and share if they are feeling better, ensuring feedback on the app's effectiveness.

2.1   Interactive Dialogues: Hands-on Activities in User Interviews

As mentioned before, designing and developing technology for neurodivergent adults presents unique challenges and opportunities, requiring a research approach that is fine-tuned to their diverse needs and experiences. Methodologies must be employed seeking not only to gather data but also to actively engage participants in ways that respect and align with their individual experiences

and communication styles. Our initial study phase indicated that while participants were generally satisfied with the FeelSense app's design and functionality, they were more inclined to discuss general concerns rather than to offer specific improvement suggestions during online workshops. Our work on creating and applying probing interviews for a user study on FeelSense, an emotion regulation wearable app, is not just to assess the app's effectiveness but to deeply understand neurodivergent individuals' needs and desires regarding technology design, ensuring that our proposed solution is truly beneficial for them. This is driven by the observation of limited focused interviews with this group for identifying design principles and requirements (21), despite the challenges involved in such research. For instance, individuals with ASD may face difficulties in effectively and explicitly expressing their needs and desires. Additionally, some may have limited verbal communication skills, which hinders the user requirements elicitation process. Furthermore, the availability of neurodivergent individuals to actively participate in research and interviews can be limited (13), presenting another layer of complexity in understanding their perspectives. Therefore, our approach emphasizes direct engagement through interviews, recognizing that the lived experiences of neurodivergent individuals are vital in providing insights essential for assessing outcomes. The integration of hands-on activities during interviews emerged as a potent strategy for bridging this communication gap. This method, inspired by previous research on various communities (2; 9), provides a reflective space for participants to delve deeper into their experiences. In our study, we incorporated an activity wherein participants conveyed their insights regarding technology use, and specifically the FeelSense app, through words or drawings. This not only enriched the data collection process but also fostered a conducive environment for nuanced insights.

2.2 Adopting Diverse Interview Techniques

In our research endeavor, we implemented two distinct interview styles to involve neurodivergent adults, aiming to capture comprehensive feedback and experiences about the FeelSense app.

Visual Activity-Led Interview: The first interview took place during the final workshop meeting, involving a total of 10 participants in a one-hour discussion session. This interview centered around a hands-on activity led by a researcher with special education expertise. Participants were presented with a visual aid—a picture of a watch—segmented into three squares representing different stages of their experience: before, during, and after using the FeelSense app. They were encouraged to reflect and jot down keywords suitable for each stage (Fig1).

Interactive Sketching Interview: The second interview style was more interactive and divided into two phases. The preliminary phase was an open discussion where participants shared their perspectives on their preferred smartwatch
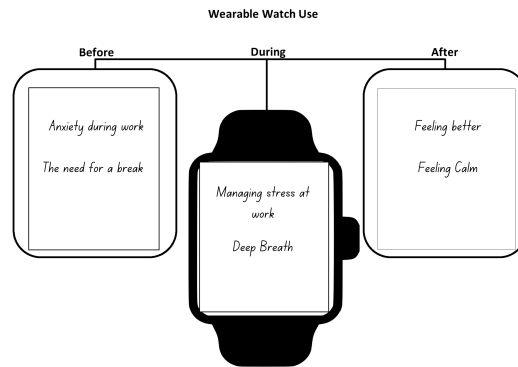
Fig. 1: Experiences of Neurodivergent Individuals Before, During, and After Using the FeelSense App

In this image, a central watch serves as the focal point, symbolizing the FeelSense App. Both sides of the watch are blank squares, ready to be filled with keywords. These keywords will clarify the experiences of neurodivergent individuals before, during, and after their interaction with the FeelSense App, offering valuable insights into the impact and effectiveness of the technology in supporting emotional regulation.

applications. We posed questions to determine their preference for specific features and asked for recommendations for enhancing the FeelSense app. Further enriching this phase, participants were engaged in carefully selected interactive activities. These activities, where participants could use words or drawings (Fig2), aimed to facilitate the articulation of their ideas, ensuring they were not bound by the constraints of verbal communication alone. Such an approach, proven effective in prior research endeavors (2), granted participants the freedom and flexibility to share their insights in a more comprehensive, accessible and inclusive way. Our emphasis was on capturing genuine feedback without pressuring participants into crafting elaborate responses. The strength of this interview style lies in its flexibility. While our structured questions provided a foundational path, participants were free to steer the conversation in directions that interested them.

2.3 Pens, Papers, and Perspectives

Participants mapped out keywords on the provided visual aid at the end of the interview study using the Visual Activity-Led Interview method. Participants utilized the visual aid to sequentially capture their experiences. In the "Before Use" segment, keywords like *"Unpredictability work"*, reflect challenges such as P4's unpredictable job schedule. During the "During Use" phase, terms like *"Support"* surfaced, with P9 valuing the app's assistance during turbulent flights. Finally, in the "After Use" stage, keywords such as *"Coping"* and *"Improvement"* dominated, as participants like P10 and P11 highlighted the app's

long-term benefits in managing stress and enhancing coping strategies. An inter-

Fig. 2: Hand-drawn activities of Participant during the interviews include keywords and drawings that reflect our discussions about their favorite technology and the modifications they requested for the app

active interview was conducted at the end of the third phase of the user study to continue using hands-on activities along with interviews. This configuration allowed us to fully understand the FeelSense app user experience. This interview was intended to get a better understanding of what users liked, aspired to have, and thought could be improved. We queried, "In terms of features, what stands out to you in the apps you love?" and "In what ways do you believe the FeelSense app could be improved to connect more deeply with you?" Encouraging a multidimensional approach to feedback, we prompted participants to express their thoughts not only through words but also via drawings, symbols, and other creative means. Each participant's response was an insightful expression of their unique needs, preferences, and expectations for the FeelSense app. For instance, P2 drew a colorful rainbow, symbolizing her preference for a diverse color palette within the app's interface. She expressed her wish for flexibility in customizing the background. P3 also, with a practical approach, wrote down "Detect anxiety" accompanied by a button illustration. This not only represented a direct feature request but also underscored the desire for active intervention by the app in moments of heightened anxiety. P1 shared a drawing of a boy and a girl. In her vision, these characters could interact with the user, offering strategies and emotional support during challenging moments. This idea emphasizes the need for a more interactive and humanized technological experience.

After presenting their illustrations and keywords, we delved deeper into the stories and rationales behind each representation. For example, P2, who wrote the keywords "roommate" and "help" on her paper, elaborated on the significance of her roommate's influence. According to her notes, external recognition and recommendations heightened the app's utility, especially those from close

friends and family members. Her roommate, recognizing P2's emotional states, became a proactive advocate for the app, reinforcing its use in moments of outburst. The words, *"When I'm stressed out, my roommate does not know how to help me and suggests I use my watch,"* captured this dynamic. It's not about an app here; it's about how technology seamlessly integrates into social contexts.

By integrating hands-on activities with our interview process, we were able to elicit more detailed feedback from neurodiverse individuals. While similar methods have been employed in prior work (2; 9; 8), to the best of our knowledge, there has not been a study that specifically applied this approach with the neurodivergent community. Based on our experience, we advocate adopting this approach for future endeavors focusing on the neurodivergent population, as it demonstrates a clear potential for yielding more comprehensive and nuanced understandings.

3 Implementing Probing Interviews in the Hiring Process

Implementing probing interviews in the hiring process involves creative and inclusive approaches that cater to the strengths of neurodivergent candidates, allowing them to showcase their capabilities beyond traditional interview settings. Next we propose recommendation to define protocols for interviews that involve visual and sketching activities.

3.1 Visual Activity-Led Interview

– **Pre-Interview Assignment:** Candidates could be given a creative task prior to the interview, such as creating a two-part visual diagram. The first part of the diagram would ask them to depict their professional journey, skills, and notable experiences up to the point of applying for the position. The second part would encourage them to visualize their aspirations and how they see themselves contributing to the team or project.
– **Interview Discussion:** During the interview, candidates present their diagrams and discuss them with the interviewers. This serves as a starting point for a deeper conversation about the candidate's background, skills, and fit for the role.

3.2 Sketching Interview

– **Dynamic Questioning:** Incorporate questions that invite candidates to respond not just verbally but also through sketching. This method allows candidates to convey their problem-solving processes or conceptualize their approach to challenges visually.
– **Sketch and Share:** Provide candidates with paper and drawing tools (or a digital equivalent) and ask them to sketch their answers to certain questions. They then explain their sketches, offering insights into their thought processes and strategies.

3.3 Implementing These Techniques

- **Preparation and Communication:** Clearly communicate the format and expectations of the probing interview to candidates well in advance to ensure they can fully engage with the process.
- **Inclusive Environment:** Create an interview atmosphere that values open-mindedness and creativity, making it clear that there are no "wrong" answers in the activities. Ensure participants are comfortable by reiterating that there is no need to perfect the drawing or sketch.
- **Integration with Traditional Interviews:** Combine probing interviews with traditional interview questions to create a comprehensive assessment process and gather complementary information.
- **Feedback Loop:** Provide candidates with feedback on the process and their participation, valuable for continuous improvement, constructive and positive comments seeking to encourage neurodivergent candidates.

4 Discussion

Our research showcases the probing interview technique, primarily within the domain of hiring neurodivergent individuals, highlighting its potential to enhance inclusivity and effectiveness. However, the scope of this methodology transcends this specific application or technology design. Probing interviews, characterized by the individual engagement through hands-on activities and interactive dialogue, offer an adaptable framework that can be beneficial across various organizational domains, such as clinical or educational settings. These also include performance evaluations, team-building exercises, and the development of inclusive workplace policies. The flexibility provided by this method allow for a deeper understanding of neurodivergent employees' experiences and contributions in diverse settings.

Moreover, our research aligns with existing literature (10; 12) that emphasizes the varied cognitive styles characteristic of neurodivergent individuals, including visual and pattern thinking. Current traditional interview methods, often heavily reliant on verbal communication, may not effectively capture the diverse talents and thought processes of neurodivergent populations. This information further motivates the adoption of probing interviews with hands-on activities, which are designed to offer alternative modes of expression beyond verbal communication.

5 Conclusion

The integration of hands-on activities during interviews proved to be a valuable methodological approach for information gathering, enhancing the results of our technology design study. In addition to bridging communication gaps, probing interview approaches provide participants with an in-depth platform for interacting with the FeelSense app. In wrapping up our exploration, it is clear that the journey of integrating neurodivergent voices into both technology design and

hiring practices is not only a matter of inclusivity but also one of enriching the technological and workplace landscapes with diverse perspectives. Our research underscores the transformative potential of probing interviews, revealing that when neurodivergent individuals are actively involved in the research process through hands-on activities, the insights gained are more nuanced and detailed. Importantly, the benefits of such a participatory approach extend beyond the realms of technology design and employment practices. They can be effectively applied in clinical settings and educational contexts, where understanding diverse needs and responses is crucial. Thus, the future of technology design, employment practices, and more broadly, service provision in clinical and educational environments, lies in our ability to embrace diversity at every level.

6   Acknowledgments

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