



Abstract

This user centered design (UCD) research dissertation, aimed to investigate the solution features that increase joy for autistic individuals by enhancing emotional recognition and regulation in oneself and others. The design recommendations discovered will pave the way for future technology solutions to address deficits in communication that exists between all individuals in society. Features that need to be accessible within digital spaces are the ability to understand one's own emotions, recognise other's emotions and provide guidance on responses to these emotions in various social situations whilst catering to the individual's varying needs. These features will ultimately minimise social anxiety, bridge the communication gap for greater mutual understanding and inclusive world.

Introduction & Background

Deficits in social emotional recognition and reciprocity is characterised in autistic individuals, which can result in reduced sharing of emotions and increased difficulty in interpreting emotions in themselves and others (Garcia, 2021). Existing tools used to address these challenges include in person education and therapy, online support communities, video analysis, mobile applications, and VR and AR games. Barriers to adoption and efficacy of these solutions include limited to rote learning and not used in real-life contexts, accessibility and personal elements are lacking, limited to facial expressions, tools can be too gamified with sensory overload causing anxiety and the overall social stigma of using such tools.



HYPOTHESIS

A UCD project giving greater agency and personalisation elements and access of tools in real-time scenarios, with features in digital spaces will enhance emotional recognition by allowing users to express themselves and will therefore elicit increased joy.



RESEARCH QUESTIONS

- How to measure joy against emotional recognition features in digital spaces?
- What features provide the most joy and increase emotional recognition?
- Preferred device, design/sensory elements to be used in these digital spaces?
- What are the gaps in current technologies that need to be addressed?

Research Methodology

Participants: User group ranged from adult autistic individuals who do not require care to those who require caregivers but who all face emotional recognition challenges. Other participants included communication specialists and technology product experts.

Questionnaire: Understand challenges in daily communication and emotional recognition, gaps and benefits from existing tools and opportunities required for future technologies.

Ethnographic Observations: The user's natural home environment provided real life context on user characteristics and social behaviours, allowing insights into what causes them more joy or stress in such situations.

Interviews: 9 interviews were conducted with 5 adult autistic individuals and 4 industry professionals. Questions from the survey were reiterated to further understand motivations and frustrations, barriers to usage of existing tools and future opportunities for emotional recognition in digital spaces.

Existing Solutions Usability Testing: Secondary and primary research initial findings led to 3 existing mobile apps used to test recording emotions, accessing guidance on response to emotions and community support to establish which solution features, design and sensory elements enhanced emotional recognition and therefore elicited the most joy.

Research Evaluation Methods:

Joy measurement:

- Opinions and comments
- User satisfaction after each task within each usability test
- Thematic coding uncover common insights in emotional recognition challenges, existing technology challenges and benefits, preferred methods and design elements

Research Evaluation & Results

Emotional recognition and communication challenges:

- Recognising one's own emotions
- Recognising emotions in others
- Unsure of how to respond to others emotions
- Social anxiety and struggling to form relationships

Challenges with existing technologies:

- Lack of personal features and design elements
- Lack of social community support features
- Limited tools and guidance for learning about emotions
- Lack of funding, training and ease of accessing such tools

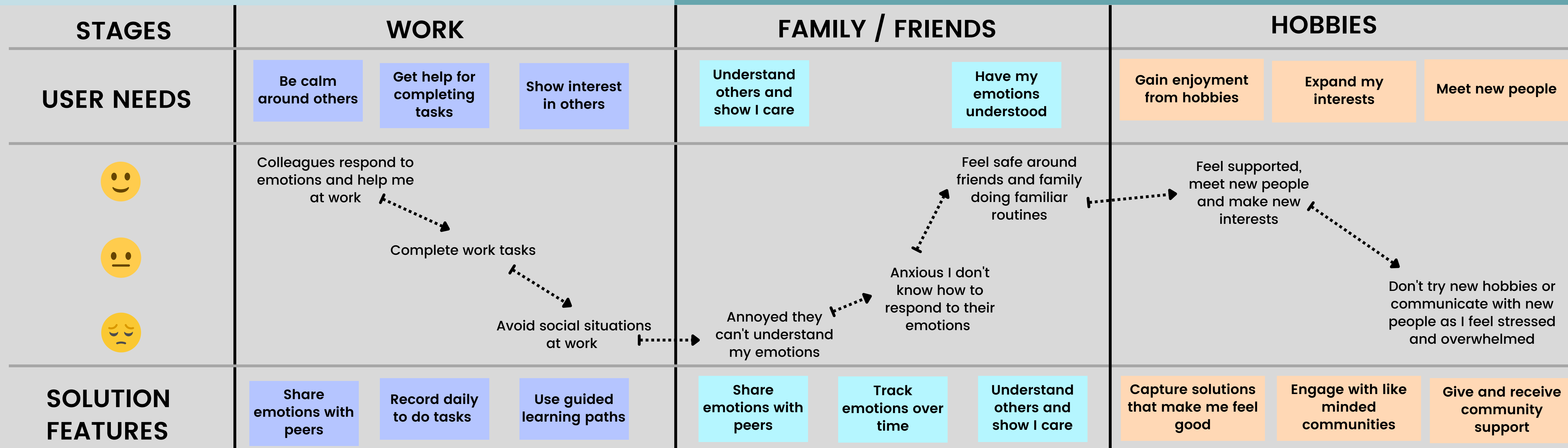
Most beneficial features:

- Record more complex emotions against certain social scenarios (work, school, personal)
- Learn about different emotions and have access to suggested responses and guidance in real-time for different scenarios
- Ability to share emotions and recordings with peers to gain mutual understanding
- View history of emotions to see what triggers certain emotions and what solutions help

Preferred digital space/ device and methods for capturing and learning about emotions:

- Mobile applications
- Both prompted and free text phrases and words
- Real-life images and videos

Diagram / Design - User Journey Map



Conclusion & Future Works

Whilst preliminary research has uncovered design recommendations, further prototyping and evaluation of emotional recognition solutions in digital spaces is necessary. Limitations exist around measuring joy of certain features and design elements within these digital tools as they were not studied over time in real-life contexts. It has been proved however that recording more complex variety of emotions by understanding how emotions relate to one another and against different scenarios whilst tracking these emotions over time gives users and their care circle a greater mutual understanding of emotions, what causes these and guidance on how to respond to these emotions. Further research on exact solution packs and learning paths is required and how these solutions could be more automated and suggested in real-time. As the user group is a broad spectrum future projects and technology designs aiming to address emotional recognition challenges need to take into consideration the varying individual levels of communication and emotional understanding.