

User Centred Design with Disabled Participants: A New SGD Interface Supporting Narrative Prediction

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Despite the increased availability of SGDs on tablet computers and mobile devices, poor usability of AAC devices contribute to high rates of abandonment and slow communication rates [1]. The importance of engaging with end users in the design and development of technology is reflected in industry standard user centred design (UCD) methodologies which demand the early and continual involvement of end users. Design activities require participants to be able to interact verbally and to manipulate physical or software based prototypes which may be difficult for users with severe speech and physical impairments (SSPI). The challenges encountered by designers when including end users with complex disabilities result in the use of proxy users in the early stages of a project; disabled users tending to be recruited for summative evaluation studies only.

In order to develop innovative usable interface design and development, users with SSPI must be involved throughout the design process. Prior [2] demonstrated the potential to engage with end users at an early stage of software design. This approach has been adopted within a research project which is leveraging contextual data to increase communication rates by enhancing language prediction.

Aim

Participants with severe speech and physical impairments (SSPI) were involved in the design of innovative predictive interfaces to explore novel ways of presenting text predictions by evaluating different approaches to scan and locate target words, phrases and sentences.

Method

Participants were recruited via local connections to therapists and charities as well as advertising online on the research group's website. An established group of users with SSPI within the research facility was involved in the early studies. These studies explored: i) the contexts in which participants use their SGD (where, when and with whom do they communicate and what kind of narratives are told); ii) the re-use and re-telling of personal narratives (what do retold stories look like and how do they change); and iii) how an SGD interface design can support the telling of narratives in conversation.

The results of these studies formed the basis of three interface designs to evaluate novel ways of presenting predicted words, phrases and narrative texts for interactive communication. Participants were asked to engage in copy typing tasks and free typing, after which they reflected on their preferences and reasoning within a semi-structured interview. The focus of this study was to identify potential designs with good usability which will be used in the final product.

Results

Participants voiced a clear need for interfaces to support the telling of narratives which should be designed to provide appropriate access to these narratives. It quickly became clear that the implementation of early design ideas required the development of high fidelity prototypes, in contrast with typical design studies which use low fidelity prototypes to explore basic design

concepts. These high fidelity prototypes required the full range of accessibility options to ensure effective evaluation of designs.

Conclusion

A major challenge for this project has been to develop a prototype framework in which prototypes can be quickly adapted to respond to participant feedback. Any prototype must be accessible to a wide range of users so that prototypes can be evaluated effectively without being compromised by issues related to physical access. For example, if a user has a tendency to select buttons incorrectly due to tremor, the prototype must be able to be configured to adapt to this involuntary movement, otherwise results will be skewed by users having to deal with additional access challenges. The results of developing designs with participants with SSPI highlights the additional resources needed if participants are to engage in early design idea exploration.

References

1. Scherer, Marcia J., and Stefano Federici. "Why people use and don't use technologies: Introduction to the special issue on assistive technologies for cognition/cognitive support technologies." *NeuroRehabilitation* 37.3 (2015): 315-319.
2. Prior, Suzanne, Annalu Waller, and Thilo Kroll. "Focus groups as a requirements gathering method with adults with severe speech and physical impairments." *Behaviour & Information Technology* 32.8 (2013): 752-760.