
Putting Technology Design into the Hands of the Users with the ASCmeI.T. App

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Abstract

Participatory design (PD) is well established within HCI, and is increasingly being used and adapted when designing technology for autistic users. Although many PD methods claim to engage end users from the outset, user involvement typically only starts after the technology to be designed has already been decided. We present an overview of ASCmeI.T., an app designed to give autistic people the means to tell designers what new technologies they would like to see developed. We then briefly discuss the implications of ASCmeI.T. in terms of highlighting and challenging the assumptions, values and perspectives that are often implicit in the design of technology for disability.

Author Keywords

Autism Spectrum Disorder; Participatory Design.

ACM Classification Keywords

H.5.2. User Interfaces

Introduction

Participatory design (PD), a methodology for involving end users in the design of new products (technology based or otherwise), has been gaining traction in the field of technology for autism. The rationale for using

PD methods with autistic people stems from the fact that their lived experiences are often markedly different from those of technology designers, who will have little insight into the wants, needs and desires of autistic people. Although many PD methods claim to engage end users from the outset, this process of designing *with* rather than *for* typically only starts once the broad structure of the artifact to be designed has already been determined. Therefore, many PD processes end up focusing on what the technology will be *like*, rather than what it will *be* in the first place.

In this paper, we present ASCmeI.T., an iPhone and Android app designed to give autistic people the means to tell researchers and technology designers what *they* would like to see developed. The app itself is simple, allowing users to record a one-minute video describing their idea (or to send their idea by email if preferred). Although simple, the implications of the app are quite profound. For a start, it changes the power dynamics between end users and designers, giving end users a role in the ideation phase, i.e. well before design even starts. Secondly, it challenges the beliefs and values held by technology designers which often play out, implicitly, in *what* they choose to design, and *how*.

In the next section, we provide a short background to PD research with autistic people before describing the ASCmeI.T. app. We present initial examples of use, followed by a discussion of the implications for both researchers and designers.

Participatory Design and Autism

Participatory design methodologies are well established within the field of HCI, and are increasingly used when designing technology for autistic people. Although the

social and communication difficulties typically associated with autism might suggest that PD is counter-indicated, various techniques have been developed for engaging autistic people in design.

In some cases, the methods are largely unchanged from those used with neurotypical users (e.g. Madsen et al., 2009). In others, standard methods have been adapted for use with individuals with Asperger's Syndrome or high functioning autism (e.g. Millen, Cobb & Patel, 2011; Benton et al., 2012). Using PD techniques to design technology for those with severe autism presents greater challenges, particularly when target users are non-verbal or have limited communicative abilities. Proxies such as parents or teachers have sometimes been used (e.g. De Leo & Leroy, 2008) and, given their substantial involvement in the lives of those with severe autism, it makes sense that they should also have a voice in the design process. Other approaches have engaged directly with individuals with severe autism, using immersive ethnographic and observational methods (Keay-Bright, 2007). Combining these observations with interpretive approaches based on philosophical perspectives such as phenomenology represents an attempt to accurately capture lived experience within the design of new technologies (e.g. Frauenberger et al., 2013).

This proliferation of PD methods and development of new techniques to facilitate engagement with autistic users is to be welcomed. However, the majority of projects share a common feature, namely, that engagement with users only starts once the technology to be designed has already been decided upon. Although this is often inevitable due to research funding mechanisms (where obtaining funding for an "as yet to



Figure 1: The ASCmeI.T. launch screen

be determined” technology is extremely unlikely), it nonetheless has ethical ramifications, namely the risk that decisions about what topics should be addressed through the design of new technologies (and the concomitant research agenda) are being made by people without autism.

ASCmeI.T. has been designed to extend PD processes to the initial stages of technology design. Rather than being limited to input on *how* a given technology should be designed, ASCmeI.T. allows users to decide *what* should be designed and, as such, to set the agenda for future research into technology design for autism.

The ASCmeI.T. App

ASCmeI.T. (<http://ascme-it.org.uk/>) is a free mobile app developed by the paper authors. There are iPhone and Android versions of ASCmeI.T., available for download on the App Store and Google Play respectively. ASCmeI.T. enables autistic people, as well as families, teachers, professionals, and anyone who supports someone with autism, to share their ideas on what kind of new technology would be of most use.

ASCmeI.T. was inspired by the ‘ifOnly’ app (<http://ifonlyitworked.com/>), developed by a team led by Austin, which crowdsourced ideas for assistive technology that could help the elderly and people living with disabilities.

The ASCmeI.T. app has been designed to favour ease of use over extensive functionality. Figure 1 shows the launch screen, which sets the design challenge. The main screen (Figure 2) provides users with the ability to record a one-minute video, and to upload the video

once created. Alternatively, users have the option of submitting their idea via email.

The submitted ideas are then curated by the researchers, starting by categorizing the ideas, followed by considering the technological feasibility of each idea as well as potential existing availability. Our intention is to draw up initial specifications for the ideas submitted, with a view to implementing selected apps.

ASCmeI.T.: Initial Observations

The ASCmeI.T. app was launched in October 2015 and has received just over 30 submissions at the time of writing. A few initial observations are provided below.

Interestingly, not all of the ideas proposed are related to the impairments typically associated with autism. For example, there are a number of suggestions for technology to support academic learning, particularly maths skills. Additionally, there is very little overlap between the ideas proposed by individuals with autism and those proposed by parents, carers and education professionals. Indeed, the latter put forward suggestions more closely aligned with the “triad of impairments”, for example, technology to teach social and communication skills, emotion regulation, etc.

Furthermore, a number of ideas focus around the provision of “just in time” context-specific *support*, rather than interventions designed to *teach* skills.

Implications for Design

These initial observations, however brief, have a number of implications for designers and researchers in the field. When designing technology for autism, there is an implicit assumption that the technology should

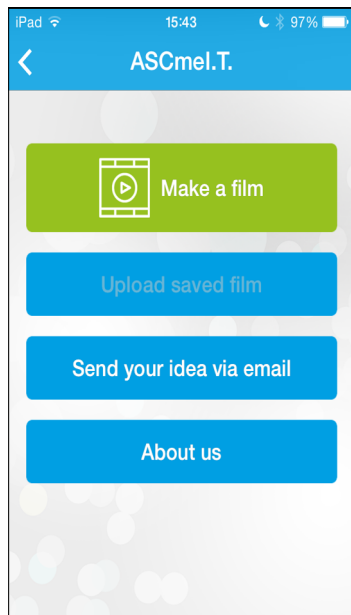


Figure 2: The ASCmeI.T. main screen

support the autistic user in developing neurotypical skills which they seemingly lack, or mitigate the unwanted consequences of their autistic traits. However, the fact that the technology desired by autistic people is often not related to their autism per se serves as a sharp reminder of the need to keep our focus on the “whole person”, and to be aware that the concerns, needs, wants and desires of autistic people are likely much broader than our assumptions.

At the same time, requests for seemingly generic technologies (e.g. those focusing on developing academic skills) might suggest that existing technologies do not meet their needs, and that we instead need to develop technologies which are more tailored to the needs of autistic people (or which they themselves can tailor as desired).

Author Bios + Workshop Participation

Judith Good is a Reader in Informatics at the University of Sussex, and interested in participatory design methods for autistic people, and developing technologies which enhance quality of life. Nicola Yuill manages the Children and Technology Lab at the University of Sussex and is interested in the design of environments to support children’s collaboration, informed by psychological and developmental mechanisms. Sarah Parsons is a Reader in Education at the University of Southampton and has longstanding interests in participatory technology design with people with autism, their teachers, and families. Mark Brosnan is a Reader in Psychology at the University of Bath. His research focusses on developing digital technologies to support children with Autism Spectrum Disorder (ASD) and their families. Lisa Austin is a Research Manager in the University of Bath with an interest in applied health

and technology, and using technology to engage and connect new communities.

We believe that there is a need to continue developing participatory design processes which truly respect and value the needs and perspectives of autistic people. By engaging in the workshop, we hope to contribute to furthering knowledge and understanding in this area.

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References

1. Benton, L., Johnson, H., Ashwin, E., Brosnan, M., & Grawemeyer, B. (2012). Developing IDEAS: Supporting children with autism within a participatory design team. In *Proceedings of the SIGCHI conference on Human factors in computing systems* (pp. 2599-2608). ACM.
2. De Leo, G., & Leroy, G. (2008). Smartphones to facilitate communication and improve social skills of children with severe autism spectrum disorder: special education teachers as proxies. In *Proceedings of the 7th international conference on Interaction design and children* (pp. 45-48). ACM.
3. Frauenberger, C., Good, J., Alcorn, A., & Pain, H. (2013). Conversing through and about technologies: Design critique as an opportunity to engage children with autism and broaden research(er) perspectives. *International Journal of Child-Computer Interaction*, 1(2), 38-49. <http://doi.org/10.1016/j.ijcci.2013.02.001>
4. Keay-Bright W.E. (2007). The Reactive Colours project: Demonstrating participatory and collaborative design methods for the creation of

software for autistic children. *Design Princi Prac Int J* 1:7-16 31.

5. Madsen, M., El Kaliouby, R., Eckhardt, M., Hoque, M. E., Goodwin, M. S., & Picard, R. (2009). Lessons from participatory design with adolescents on the autism spectrum. In *CHI'09 Extended Abstracts on Human Factors in Computing Systems* (pp. 3835-3840). ACM.
6. Millen, L., Cobb, S., & Patel, H. (2011). Participatory design approach with children with autism. *International Journal on Disability and Human Development*, 10(4), 289-294.