

## Interactive Devices Paper Review

**Title:** A Context-Sensitive Device to Help People with Autism Cope with Anxiety

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**Link:** <https://dl.acm.org/citation.cfm?id=1979748>

**Word Count:** 460

This paper describes a mobile application designed to assist people with Autism Spectrum Disorder (ASD) during anxiety attacks. The application is intended to provide greater independence for its users from their parents/carers, while allowing the carer to be alerted/contacted when the user with ASD suffers from an anxiety attack. The authors' attempt to analyse the quality and usefulness of their application by interviewing both children with ASD and also their parents. The study utilises semi-structured interviews and Likert scale questions to gather data.

The authors reference some previous research, namely computer-assisted intervention for increasing the communication and language skills of children with ASD, and also a system for recognising facial expressions. They also reference a paper which discusses how social stories (written/drawn accounts of social interactions) can work as a preventative measure for adverse behaviours. However none of these, nor any other of their references are specifically about improving anxiety for children with ASD, when previous research has explored this area at the time of its publication[1][2].

This work is original and unique however, as no previous studies explore the uses of a mobile application to assist with anxiety for children with ASD. Moreover although now applications that are designed to pre-emptively teach children relaxation and mindfulness are now quite common[3], there is currently no applications that are designed to assist the child during an anxiety attack, i.e. have features to calm and also to contact a carer or parent if necessary. The authors' concept of a context specific response, based on location, ambient audio and who they are with, also has not been explored, however the authors do not provide evidence to support that this was a successful or necessary idea.

When attempting to evaluate the effectiveness of the application the authors conducted an interactive session with 4 teenagers with ASD, 3 parents and 2 psychology students where they gave them questionnaires. Generally the responses were positive, however the authors do recognise that their cohort size is small, so admit that the conclusions they drew were tentative. The parents raised concerns about whether the application may cause children to fixate on the device, also the concern was raised about the levels of stress that could be caused by a flat battery, especially if the child finds themselves in an anxiety producing environment. Both of these concerns were not well or realistically addressed by the authors.

Finally, the authors provide very little technical description, beyond figure 2 of their paper, of how the application performs its context analysis and uses that to provide an appropriate response. Within the feedback they received from both the children and parents, the context-sensitive response was not mentioned, possibly imply the main "selling point" of this application was not considered useful by its potential users.

### References:

[1] Eileen O'Conner. The use of Social Story DVDs to reduce anxiety levels: a case study of a child with autism and learning disabilities, 2009

<https://onlinelibrary.wiley.com/doi/full/10.1111/j.1467-9604.2009.01413.x>

[2] Anne Marie Chalfant, Ron Rapee, Louisa Carroll. Treating Anxiety Disorders in Children with High Functioning Autism Spectrum Disorders: A Controlled Trial, 2006

<https://link.springer.com/article/10.1007/s10803-006-0318-4>

[3] Assistive Technology at Easter Seals Crossroads. (2019). 7 Apps to Help Calm Individuals with Autism, Anxiety, Other Special Needs - Assistive Technology at Easter Seals Crossroads. [online] Available at: <https://www.eastersealstech.com/2017/04/19/chill-outz-relaxation-techniques-children/> [Accessed 13 Nov. 2019]