



Using Virtual Reality to Drive Social Inclusion for Children on the Autism Spectrum in West Africa

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Abstract. There is significant stigma associated with neurodiversity across the globe. In addition, education for children with learning disorders is severely under-resourced in West Africa. This work-in-progress paper describes how we are using virtual (VR) to create an engaged, informed community about autism spectrum disorders and the importance of appropriate, compassionate education for every child. Focusing on parents, teachers and healthcare workers, we used a 2-minute 360 film created by the National Autistic Society UK, from the perspective of a child with autism experiencing sensory overload to educate and sensitise the population to the impact of sensory overload. We reached over 1,000 school teachers, medical staff, family and friends in Lagos, Abuja, Enugu and Accra. We found people were willing to engage with the experience, and teachers expressed increased curiosity and acceptance of children with autism. By bringing the reality of lived experiences of marginalised groups to the public, we are using VR as a tool for social inclusion.

Keywords: Autism, Social Inclusion, Virtual Reality, Educational Technology.

1 Introduction

There is significant stigma associated with neurodiversity across the globe. In addition, education for children with learning disorders is severely under-resourced in West Africa. This project set out to create an engaged, informed community about autism spectrum disorders and the importance of appropriate education for every child.

We wanted to deliver an experience that leads to better attitudes and behaviour towards neurodiverse individuals by recreating what a child experiencing sensory overload sees and hears. The experience leverages immersive technology to educate and sensitise the population to the impact of sensory overload. Promoting connection and compassionate responses towards these children. The secondary goal was to enable knowledge transfer of calming techniques that can be used by caregivers, teachers and healthcare professionals in distressing moments.

1.1 Promoting Connection and Compassionate Responses

Perspective-taking has been shown to be a reliable method in reducing negative stereotyping [1]. It is the ability to see the world from the point-of-view of another person, understanding where someone is coming from [2], and why they might behave the way they do. By actively trying to understand the perspective of a member of an out-group, an observer can more accurately assess how best to communicate with varying individuals [3]. In addition to creating more effective communications, perspective-taking can reduce an observer's biased thinking [4, 5] or positively change his/her opinion about an individual belonging to another group [3], usually one that is commonly stereotyped, as well as the group as a whole [6].

During the VR experience, viewers exhibited empathetic reactions towards the perceived child in the film (upset, overwhelmed and heavy breathing, sometimes confused). After the experience, as viewers recounted similar incidents they had witnessed or recalled children from their communities who may have been experiencing sensory overload, they expressed regret, appreciation and compassion for those children. The reactions we recorded demonstrate the success of the campaign in conveying to the public the perspective of the child experiencing sensory overload (see Table 1). Conducting the outreach in public areas like shopping malls and schools provided an opportunity for situated learning about strategies that can be used for calming a child in sensory overload, for example, breathing exercises, counting on fingers, and taking the child to a calmer location.

2 Method

We used a 2-minute 360 video from the perspective of a child with autism experiencing sensory overload. The film was created by the National Autistic Society UK (NAS) in 2015. It is an intense perceptual/sensory experience with atypical visual and audio input - including vibrant colours, flashing lights, loud sounds that may be unexpected while other sounds that should be loud are muffled.

General public viewers were selected at random in 10 different locations across the three cities. They were asked if they would like to have a free experience of VR. We also targeted educators in schools that had special education programs and healthcare workers in two paediatric hospitals (see Fig. 1).

By immersing the viewer in a world they would otherwise never be able to experience, we share with teachers and caregivers why their compassion and understanding for children on the autism spectrum is desperately needed.

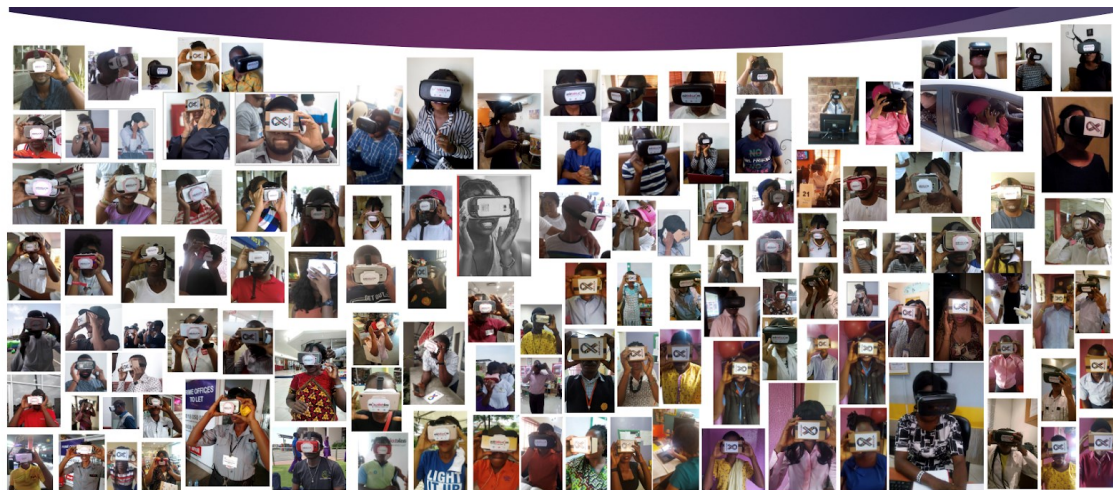


Fig. 1. Sharing the experience.

3 Outcome

The advocacy campaign reached over 1,000 school teachers, medical staff, family and friends in Lagos, Abuja, Enugu and Accra. After experiencing the VR film, viewers expressed some knowledge gains and curiosity around sensory overload and also displayed more positive attitudes toward children with neurodiversity. There has been an overwhelming sentiment of acceptance amongst the reactions seen, as well as a sense of helping teachers and caregivers understand what is happening for the child so they can better support them (see Table. 1). Similar findings from Markowitz and his colleagues in their 2018 paper, *Immersive VR Field Trips Facilitate Learning about Climate Change* describe the power of immersive VR to elicit knowledge transfer [7].

4 Conclusion

Social inclusion campaigns like this one support studies that show that immersion in a digital environment can enhance education in at least three ways: by allowing multiple perspectives, situated learning, and transfer [8].

This project set out to challenge myths, misconceptions and stereotypes about autism that mean that 79% of autistic people feel socially isolated [9]. By bringing the reality of lived experiences of marginalised groups to the public, we are using this immersive experience as a tool for social inclusion. Our future work focuses on adapting features of the immersive experience to promote knowledge transfer and build capacity among educators and caregivers of children and adults on the autism spectrum. We are also working on expanding the experience to address situations that potentially trigger anxiety in adults with autism such as social situations, workplace interactions (interviewing), and encounters with law enforcement. We endeavour to create a range of experiences that are culturally relevant for globally underserved populations.

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Appendix A

Table 1. Summary of reactions observed from people who did the experience.

Participant reaction	Reactions observed
Moved	Shocked, felt bad for the child
Overwhelmed	Trying to make sense of what was happening, disbelief
Recall	Recounting incidents or children they have witnessed, recalling symptoms and behaviours
Awestruck	Excited or impressed by the scene itself, grateful for the experience
Participant reaction	Verbal reactions captured
Curious	What was that huh huh huh...? Wow is that how it feels? Can different activity suffocate a child? What is happening, why did it go black, is it...?
“Aha” moment (moment of realisation, understanding)	Wow that’s terrible Normal children can go through this too and we have to understand it’s not just you wanting to force things down their throat. You have to meet them at a point and realise what they need at a point in time... let’s them have their way and say let’s have a break All teachers should have a one-on-one with this virtual stuff, it’s necessary because it helps the teacher to understand where the child is coming from and how to help the child. Outside of this we need to educate every member of staff on how to handle children having tantrums So it’s not really their fault

