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Investigating How Children with Autism Respond to Virtual Environments

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Investigating How Children with Autism Respond in Virtual Environments

Mykaela Naragon, Jodi Johnston, M. Ed., and Kelle DeBoth-Foust, PhD, OTR/L

Abstract

- Children with autism often have sensory processing differences.
- Virtual environments can evoke adaptive sensory responses similar to the conventional world.
- This preliminary investigation sought to explore the interactions of students diagnosed with autism within a virtual setting.
- Julie Billhart Schools (JB)- Upwards of 75% of students have a diagnosis of autism and sensory processing differences

Methods:

- Convenience sampling
- 35 participants aged 6-14 years
- Pulled for 6 VR sessions and
- observed/recorded regulation, affect, and behaviors



Results:

- Statistical test of pre and post reported zones of regulation resulted in a p-value of <0.001, indicating highly significant statistical changes Zone of Regulation post VR.

Conclusions:

- Virtual reality (VR) is a positive experience
- VR has potential to be an effective therapeutic tool for self regulation



Brief Biography

Hi, my name is Mykaela. As an intervention specialist and soon-to-be occupational therapist with a passion for working with children with disabilities, I selected my capstone project to investigate virtual sensory experiences and their potential benefits for children with autism. I am looking forward to my future position as a school-based OT and intervention specialist at Julie Billhart, where I can continue my work supporting and empowering children with diverse needs.



To learn more about this capstone project and me, please scan here:



Capstone Experience and Implications

- Identified need for research concerning the use of VR for children with autism
- Acquire all VR equipment and permissions from Floreo
- Submitted for and received IRB approval
- Participant recruitment with VR flyers
- Collaborated with JB faculty to create VR schedule
- Individually pulled participants to engage in 6 environments
- Observed and measured Zone of Regulation, level of affect, comments, attention tracking, and any other notable behaviors



Deliverable: Research Manuscript Draft

In addition:

- Presented relevant findings to JB faculty and opportunity to explore of VR equipment
- Provided opportunities for all JBA students to try VR at school
- GA for Human Machine Systems course at CSU to provide OT perspective

Challenges & Recommendations

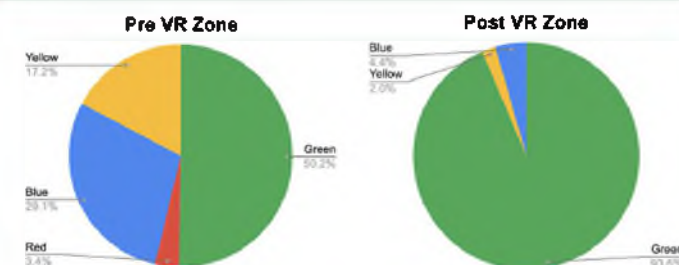
Limitations of this study

- Convenience sampling and participant's prior experience with VR
- Self-reported zones of regulation
- Therapeutic use of self, interactions between researcher and participant
- Floreo technology limitations

Recommendations

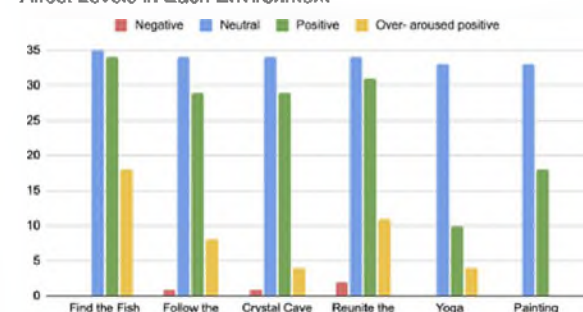
- Use of VR systems that utilize hand/arm movements
- Utilization of VR to teach other occupation-based skills or experiences
- Exploring VR technologies outside of Floreo

Synthesis



- Statistical test of pre and post reported zones of regulation resulted in a p-value of <0.001, indicating highly significant statistical changes Zone of Regulation post VR.
- Positive affect occurred in 151 sessions, over-aroused positive affect in 45 sessions, while negative affect was observed in only 4 sessions.

Affect Levels in Each Environment



- 86% expressed at least one favorable statement during their VR experience, highlighting positive perceptions and engagement: "This is relaxing; I feel stronger; This is fun; Can I do it again"

Clinical Implications:

- Potential of VR technology as a therapeutic tool for enhancing emotional regulation among individuals with autism spectrum disorder.



Please scan here for references:



Acknowledgements

- Julie Billhart Network, especially Gabrielle Redovan and Alyssa Szpak, and all other team members for providing the necessary resources and facilities to conduct my capstone and welcoming me with open arms.
- To all the remarkable students with autism who continually inspire with their resilience, unique perspectives, and endless potential.
- To Floreo for their generosity and support in providing VR equipment and technology for this study.