

Functional use of ear defenders and how they impact a child's regulation and learning

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Executive summary

Managing auditory sensitivities within a classroom through the use of ear defenders is a strategy used among school based Occupational Therapists. This case study offers an insight into the assessment and analysis that goes into this decision along with how this resource when prescribed correctly can support regulation of our sensory systems, increase learning opportunities and promote well-being.

Introduction

This case study focuses on a pupil within Key Stage 2 whose communication method is limited verbal/ signer with echolalia; meaning he may repeat the last option given to him or feign understanding by repeating an adult's utterance.

This pupil also has auditory sensitivities which have a large impact on his engagement in daily activities. This sensory sensitivity became apparent when the pupil began having significant difficulty going to the toilet due to the noise of the hand dryer. His classroom, like so many other school classrooms, is also often noisy which impacted his attention and concentration skills.

The learning objective was to assess if ear defenders would assist with regulating this pupil and therefore increase his ability to learn and achieve targets within a noisy classroom.

Ear defenders aim to reduce the sound level of auditory information being processed; you are able to continue to hear what people are saying, its merely at a reduced volume. This reduces the amount of auditory information the brain needs to process and can have a large impact, providing a reduction in the amount of information your sensory system is being overloaded with.

Method

Observations of the pupil engaging in OT

targets in the classroom were completed over multiple days at different times to ensure observations were holistic and accurate.

Data was then taken on unsuccessful/successful imitation of a vertical line and a horizontal line without the ear defenders for one week and then with the ear defenders for one week. Both times the target was presented in the same manner of;

- Sensory diet activities (warm up);
 - Bouncing on a therapy ball for 1 minute
 - Completing 2 x therapy ball roll out's
 - Completing 10 s lateral stretches with a theraband
- Imitating 2 x vertical lines with a whiteboard marker on a vertical whiteboard
- Imitating 2 x horizontal lines with a whiteboard marker on a vertical whiteboard

The pupil's tutors, instructor and supervisor provided qualitative feedback throughout on any relevant observations.

Results

Within the first week of observation the pupil was observed to have significantly reduced attention and concentration span within the classroom when there were more than 3 others in the class alongside him, and when music was being played nearby or on the big screen.

Within the first week of no ear defenders the pupil scored a N (unsuccessful) for all five trials, one per day for his OT target of imitating 2 x horizontal and 2 x vertical lines. Indicating an achievement percentage of 0%. His tutor also advised that it was difficult for him to engage in the warm up activities and he would often begin to watch computer screens of other pupils. His tutor and supervisor additionally noted that he was spending increased time outside the classroom refusing to go to the bathroom due to the noise of the hand dryer. This combination of poor attention within the classroom and reduced time in the classroom severely impacted the pupil's access to learning.

During the week of the trial of the ear defenders the pupil was observed to score 2Y's and 2N's with one data point stating not run. Indicating the pupil was successful in achieving the OT writing target for 2 days out of the 4 with an achievement percentage of 50%. His tutor and supervisor reported that he appeared to like the ear defenders as he would often attempt to grab them if they were on the table. They also added that he appeared calmer when wearing the ear defenders.

The pupil's supervisor acknowledged that after day two of the

trial the ear defenders was going well so they were also provided to him when transitioning to the toilet which was observed to help him successfully go to the toilet in a significantly reduced amount of time. The ear defenders were continued to be provided to the pupil when accessing the toilet throughout the rest of the trial which resulted in a gradual reduction in time spent outside the classroom going to the toilet.

Discussion

This trial of ear defenders was successful and the ear defenders were provided to the pupil to continue using across his day when an environment was loud e.g. more than 3 people in his classroom and when others were watching videos. They were also provided to him when transitioning to the toilet. The ear defenders allowed the pupil to spend more time in his classroom accessing learning opportunities and also assisted with his regulation as they helped him to optimise his state of alertness which better helped him to engage in learning activities. The ear defenders were also continued across into his home environment where his parents reported a significant improvement in his ability to access toilets in the community and overall 'calmness'.

Further reading

Grajo, C.L., Candler, C., Sarafian, A. (2020). Interventions Within the Scope of Occupational Therapy to Improve Children's Academic Participation: A Systematic Review. *AJOT*: 74.

Ashburner, J. K., Rodger, S. A., Ziviani, J. M., & Hinder, E. A. (2014). Optimizing participation of children with autism spectrum disorder experiencing sensory challenges: A clinical reasoning framework: *Canadian Journal of Occupational Therapy*: 81 (1): 29–38.

Clark, G.F., Watling, R., Parham, L.D., Schaaf, R. (2019). Occupational Therapy Interventions for Children and Youth With Challenges in Sensory Integration and Sensory Processing: A School-Based Practice Case Example. *American Journal of Occupational Therapy*, 5: 73.