

Exploring Porges' theory of social engagement using a music stimulation program for an 8 year old boy with autism

Dorothy Lockhart Lawrence

Introduction

This case study compares the elements, protocols, and reported outcomes of an enhanced music stimulation program and the listening project created by Porges to test his theory of social engagement on autistic individuals who are known to have difficulties in this area. Porges' Polyvagal Theory proposes that physiological state determines behavior and psychological experience, based on neuroception of the environment and whether or not it is perceived as safe. The polyvagal theory provides a theoretical basis for his treatment approach with a neurophysiological explanation. Both models use modified music to increase function of the middle ear muscles as a portal to the social engagement system. The muscles of the head including face, middle ear, mouth, larynx, and pharynx make up the social engagement system. The model predicts atypical social behaviors, as displayed in autism, when the system is not working. The goal of an intervention would therefore be to turn on the social engagement system. Porges devised The Listening Project to test his theory.

Method

The program used for the study is called The Listening Program® and is similar to Porges' Listening Project. The programs use different music and differ in some aspects, but both deliver acoustic stimulation within the frequency band of the human voice, and both deliver the programs through headphones. Porges' Listening Project used filtration of familiar children's songs with voice and the listening protocol was 45 minutes for 5 days in a clinic. The Listening Program uses early Mozart with listening segments designed to start and end with pleasant, relaxing music and a middle section to engage the middle ear muscles. In addition to filtration, the music contains volume bursts and movement in a spatial environment to train an individual to focus on one target sound.

The participant in the study was an 8 year old boy diagnosed with autism. A history was taken prior to listening. The mother kept both daily and weekly notes of the changes she saw in the first 20-week cycle. The mother's goals for her son were for him to have increased language and social skills, to be connected to adults and to his peers, and to gain in body strength.

Results

A protocol based on the child's previous listening experience was determined to be 15 minutes per day, 5 days per week. During the first week, the mother's report says the child was sleeping better at night, was making more eye contact, and was more affectionate, laughing and having a good time playing with his older brother. As the weeks progressed he engaged with projects longer, began to answer "who" questions more easily, and became more exploratory. By week five, he made transitions more easily, was asking questions more regularly, was speaking more clearly, and his language had increased. By week ten, his teachers noted he was taking turns and interacting more with the other children. He was a less picky eater, was less frustrated, and less overwhelmed. Gains continued to be noted with additional cycles. His handwriting improved, he began to be involved in more pretend play, and was better at reading emotional expression in faces.

Discussion

The enhanced music stimulation program was successful in initiating, improving, and maintaining the elements of social engagement, social interaction and communication behaviors, as outlined by Porges. These include eye contact and looking at others, gaining in facial and emotional expression, vocalization and language, and interacting with others. The family had tried two other stimulation programs, one with a 2 hour per day protocol that occurred in a clinical setting. This had proven to be far too much stimulation for the child and caused diarrhea, indigestion, and sleep problems.

The vagus nerve regulates the gut area so it is plausible to suggest that these difficulties may have been due to over-stimulation of the vagus nerve. Sleep is related to regulation by the HPA axis, which may also have been over-stimulated. The program used in the study begins with moderate levels of stimulation that increase over time and appear to have created change in this child that was easily tolerated. In addition, it appears that as a result of long term usage, other areas related to improved vagal regulation, both visceromotor function (heart and lungs) and somatomotor function (muscles of the face, head, middle ear and mastication) improved and have been maintained.

Protocols appear to be important as well as levels of stimulation and delivery in a safe environment. The child also became more affectionate, was sleeping better, and had easier transitions, indicating he had more adaptive reactions to challenge. These all suggest improved vagal tone over a longer listening period with improved regulation of the system, particularly the visceromotor portion, which regulates behaviors. Parental goals were achieved and parent satisfaction was high with the mother indicating that the foundation had been laid for her son to progress in many areas.

Porges polyvagal perspective and view of the social engagement system allow for an understanding of the mechanisms involved in the behaviors associated with autism as well as a way to examine the efficacy of the intervention examined in this study.

References

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