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Using Music to Ease Transitional Challenges in Autistic Children

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Autism is a pervasive developmental disorder that affects approximately one in 68 children in the United States (Baio, 2014). Many behaviors are associated with autism, including vocal stereotypy, idiosyncrasies, and self-injurious behaviors (Bachman, 1972). External factors that can influence these behaviors include over stimulating environments, disruption to a set routine, and anxiety stemming from transitions (Stoner, Angell, House & Bock, 2007). Transition difficulties are a common occurrence in autistic children as it increases both physical aggression and self-injurious behavior (Sterling-Tuner & Jordan, 2007). Many therapies help reduce these behaviors, such as applied behavior analysis, play therapy, and music therapy. Music has been found to reduce anxiety and many behaviors associated with autism, especially when dealing with transitional behaviors (Kern, Wolery, & Aldridge, 2007). There are only a few studies that focused on music and transitional challenge, although the authors found that music can reduce transitional challenges. These studies, however, only focused one type of pace of music. The purpose of this experiment is to examine the use of different paced music on limiting transitional behaviors in preschool aged autistic children. We are focusing on both the difficulty of transitioning, as well as the aggressive behaviors that stem from transitioning an autistic child.

Pages: 18-22

Autism affects approximately one in 68 children in the United States (Baio, 2014). Autism is a pervasive developmental disorder that severely affects communicational abilities and behavior. The causes of autism are unknown, however, both environment and genetics are likely to contribute (Johnson, Giarelli, Lewis and Rice, 2013). Behaviors associated with autism include idiosyncrasies such as rocking, flapping, and violent outbursts. Self-injury, which is inflicting harm onto the body, is another behavior that accompanies the diagnosis of autism (Bachman, 1972). Self-injury can be extremely dangerous to an individual as it can cause serious harm or even death. Vocal stereotypy is described as non-contingent verbal output such as moaning and humming, and it is a common behavior in autistic individuals (Saylor, Sidener, Reeve,

Fetherson, & Progar, 2012).

Anxiety has been found to increase many behaviors in autistic children. Repetitive behaviors can disrupt classroom settings and can be detrimental to an autistic child's success and mood. When autistic children get anxious, repetitive behaviors such as pacing, rocking, and other such idiosyncrasies, may increase (Rodgers, Gold, Connolly, & McConachie, 2012). Similarly, transitional behaviors can disrupt a classroom setting as well. Autistic children have a difficult time transitioning between activities, and transitioning an autistic child usually results in an increase in aggression and tantrums (Sterling-Tuner & Jordan, 2007). Anxiety can increase transitional behaviors as well. The anxiety and confusion that arises from transitioning an autistic individual will directly lead into an aggressive or a self-injurious tantrum (Stoner, Angell, House & Bock, 2007).

Many therapies and interventions have been developed to help behaviors that are associated with autism. For example, occupational therapy can reduce self-stimulating and self-injurious behaviors by 11% after one hour with an addition of sensory integration (Smith, Press, Koenig & Kinnealey, 2005).

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In another study, Kim, Wigram, and Gold (2008) compared play therapy and music therapy and observed how it affected attention behaviors in autistic children. Music therapy significantly increased focus in autistic children as compared to play therapy. Applied Behavior Analysis (ABA) is the application of behaviorist principles to improve human behavior (Axelrod, McElrath, & Wine, 2012). Individual sessions of ABA work on improving speech, reinforcing positive behaviors, and limiting self-injurious and aggressive behaviors (Smith & Eikeseth, 2011). Utilizing visual supports, such as a picture exchange communication system (PECS), can limit transitional behaviors in autistic children. In one study, PECS reduced aggression and the child transitioned easily (Dettmer, Simpson, Myles & Ganz, 2000).

Music has been found to reduce stress and anxiety in normal functioning adults (Thoma, la Marca, Bronnimann, Finkel, Ehlert, & Nater, 2013). Sounds such as rippling water, as well as relaxing music were both found to significantly reduce anxiety as compared to not listening to any sounds or music (Thoma et al., 2013). Because anxiety can increase both transitioning challenges (Stone et al., 2007) and repetitive behaviors (Rodgers et al., 2012) in autistic children, music may reduce these behaviors, just as it reduces anxiety in normal functioning adults (Thoma et al., 2013).

Various behaviors in autistic children were found to be reduced by music. For example, music can reduce vocal stereotypy (Saylor et al., 2012). In this study, music and white noise were the conditions, and music was found to significantly reduce and/or completely stop vocal stereotypy as compared to white noise (Saylor et al., 2012). Wigram and Gold (2005) studied the effects of music and no music on challenging behaviors of children with autism. Music had a significant effect with the reductions of challenging behaviors and positive outcomes dealing with social interactions. Lim and Draper (2011) compared Applied Behavior Analysis Verbal Behavior (ABA VB) with no music and ABA VB with music. ABA VB is Applied Behavior Analysis that incorporates verbal contingencies. The study showed how different musical patterns that were involved in the ABA VB can impact speech on children with autism. The difference between the speech ABA VB and music ABA VB was that music ABA VB was more effective in echoic production and speech ABA VB was more effective in tact production.

Unfortunately in some studies, music has not been found to ease autistic behaviors. Quintin, Bhatara, Poissant, Fombonne, and Leviin (2011) experimentally investigated the effect of music on performance of tasks between children with autism and neurotypical children. Music was played for 30 to 50 seconds when both sets of children were asked to identify certain facial expressions. This failed to show any significant difference between neurotypical and autistic children's task performance when listening to music. Bhatara, Quintin, Fombonne, and Levitin (2013), studied the correlation between sensitivity to sound and musical enjoyment in individuals with autism. Bhatara, et al. (2013), found that many of their participants were highly sensitive to loud noises, and that verbal and physical

outbursts would occur. Despite this, they found autistic individuals with sound sensitivity still enjoyed music.

Transitional behaviors can be heavily reduced by utilizing music. Music has been found to ease transitions from home into the classroom environment (Kern, Wolery, & Aldridge, 2007). Parents have noted that this has been a difficult daily process for their autistic children, and music has eased the transition. Teachers are beginning to apply music to their everyday routines in order to ease transitional behaviors. When transitioning a child from a preferred activity into a non-preferred activity, Gadberry (2012) found that music reduced verbal redirections in these difficult transitions. Similarly, teachers have been using musical social stories to teach students how to transition without difficulty (Partington, 2011). These social stories teach children multi-step tasks to deal with certain scenarios, such as transitioning.

There are only a limited amount of studies concerning reducing transitional behaviors with music. On a whole, these studies found that music does reduce these difficult behaviors. Also, some of the aforementioned authors only used one type of music in their studies. Thoma et al. (2013) used rippling water and soft music in their study on anxiety. Similarly, Saylor et al. (2012) used white noise and soft music in their study on vocal stereotypy. Both studies only used soft music and not loud or fast paced music. However, Durand and Mapstone (1998) found fast paced music had a higher effect on reducing behaviors as compared to slow paced music.

Due to these findings, we hypothesize that fast paced music will significantly reduce transitional challenges, while slow paced music will slightly reduce transitional behaviors. When no music is being played, transitional behaviors will not be affected. Transitional challenges disrupt classroom routines, and the routines of other classmates. Utilizing music will help with the classroom setting and increase the success of all the students. These findings are predicted to reflect the findings in the study done by Durand and Mapstone (1998). We will only focus on aggressive behaviors stemming from transitioning and disregard other behaviors such as vocal stereotypy and repetitive behaviors.

PROPOSED METHOD

Study Design

This is a within subjects experimental design with autistic children's performance of transitional behavior while listening to fast paced music, slow paced music, and no music at all.

Participants

Through convenience sampling, 250 participants will be selected for this study. The participants will be ages three through five and will currently be attending a preschool that offers applied behavioral analysis (ABA). We will go to at least

fifteen different preschools, as this experiment will partake within the preschool. Additionally, these participants will also be diagnosed with autism, as per the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5). These participants also need to attend ABA therapy, where they receive ABA during school hours. Also, the student needs to be a regular set schedule, where they are transitioned from the classroom to an ABA therapy room.

Materials

For this experiment two songs will be played. "Moonlight Sonata" by Beethoven will be used for the slow paced condition and "The Flight of the Bumblebee" by Rimsky Korsakov will be used for the fast paced condition. Additionally a survey for each condition will be provided. (Appendix) All three parts are identical and are separated into two sections. The first section is a checklist that measures certain aggressive behaviors. The second section is a 5-point Likert scale that measures difficulty in transitioning the child. This survey was based off of the antecedent, behavior and consequence chart (ABC Chart), (Kansas Institute for Positive Behavior Support, 2012).

Procedure

The 250 participants will partake in all three conditions; a no music condition, a fast paced condition, and a slow paced condition. Every week will be a different condition, over a course of three weeks. Additionally, each condition will only happen once during that week. Participants will be randomly assigned a number, to keep confidentiality. For the first part of the test, the 250 participants will engage in free play in their classroom, while no music is playing. Free play will last for thirty minutes, and then the ABA therapist will transition the participant into a therapy room during an unscheduled time. The ABA session will run as normal, after the participant returns to the classroom, the ABA therapist will fill out part one of the survey. A week later, participants will engage in free play in the classroom while fast paced music is playing in the background. The music will loop throughout the free play time, to avoid any silences during this experiment. Once again, the ABA therapist will transition the child during an unscheduled time, and return the child after the ABA session is over. The ABA therapist will then fill out part two of the survey. During the third week, the participants will engage in free play in the classroom while slow paced music is playing in the background. The ABA therapists will once again transition the child from free play to participate in their therapy and the therapist will fill out part three of the survey. We are going to compare the results from the control condition, no music, to the two experimental conditions, fast paced music and slow paced music.

CONCLUDING REMARKS

Limitations

Limitations in this study include the availability of ABA therapists, class size, and how the child is behaving that day. We will use 250 students, however, each class size is different, which means we will have to use different classes with different therapists, teachers, and environments. Different ABA therapists have gone through different training and know how to handle different situations. Although they all passed the board exam, each therapist is unique and has experienced different levels of aggression. What is horrible behavior to one therapist may be moderate behavior to another. If a child is having a bad day, one can only assume that the child will be behaving like that all day which may alter the results. We also have to take into consideration the fact that parents might pull their child or children out of the study

Significance

Autism affects seven children in one thousand. Autism is becoming prevalent in today's society. Different paces of music can have a dramatic effect in children with autism and the behaviors they engage in. Durand and Mapstone (1998) found that slow paced music led to more aggressive behaviors compared to fast paced music. The more we learn about autism, the more we can understand how we can reduce the aggressive behaviors that are exhibited. This study more deeply examines the effect of fast paced music on reducing aggressive behaviors when transitioning children with autism.

This study will specifically look at children between the ages of three to five years. Previous studies have looked at adolescence when behaviors have manifested and can cause more harm. Since we will be experimenting on children who are aged three to five, we can try to reduce the behaviors before these children get older.

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APPENDIX A

Part 1

When transitioning the child from classroom to therapy, he/she:

(Please check off ALL that apply):

- Bit me
- Hit me
- Kicked me
- Self-Injured
- Dropped to the floor
- Screamed
- Cried



_____Used Profane/Inappropriate Language
_____Spit

When transitioning the child from classroom to therapy, how difficult did you find the transition?
(Please circle ONE answer)

(1) Not at all difficult	(2) Somewhat difficult	(3) Difficult	(4) Very difficult	(5) Extremely difficult
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