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REDUCING STEREOTYPIC BEHAVIORS IN CHILDREN WITH AUTISM

A MASTER'S THESIS

SUBMITTED TO THE FACULTY

OF BETHEL UNIVERSITY

BY

SIANNA R. BANHAM

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REDUCING STEREOTYPIC BEHAVIORS IN CHILDREN WITH AUTISM

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APPROVED

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Abstract

Autism spectrum disorder (ASD) is a developmental disability which may cause serious social, communication and behavioral challenges. Individuals with ASD may not look much different from their neurotypical peers, however, they can communicate, behave, learn, and interact in different ways that can set them apart. Moreover, these challenges and symptoms vary greatly in severity, ranging from severely challenged to extremely gifted. Social and communication challenges greatly impact communication development and social outcomes in children with ASD. Challenges in social communication can cause deficits with social interactions, initiating interactions, maintaining reciprocity, and engaging in others. The challenging behaviors that are often associated with individuals with ASD are know as stereotypic behaviors. Stereotypic behaviors encompass a variety of behaviors, which include restrictive and repetitive interests, self-injurious behaviors, and motor and vocal behaviors. This research examines interventions that can help in reducing stereotypic behaviors that children with ASD may exhibit. Specifically, looking into behaviors that cause deficits to social, communicate and behavioral challenges.

Table of Contents

CHAPTER I: INTRODUCTION

What is Autism

Autism spectrum disorder (ASD), ranging from low to high functioning, is one of the most common neurodevelopmental disorders; with statistics that are constantly changing. ASD affects 1 in every 68 children, 1 in 42 boys, and 1 in 189 girls. With boys being 4-5 times more likely to develop ASD than girls (Barton, Robins, Jashar, Brennan, and Fein, 2013 and Friedrich et al. 2015). Children with ASD have difficulties with social, communication and behavior skills, which includes impaired social interactions, limited functional and social communication and restricted or repetitive behaviors. Most parents with children with ASD are prompted first by a concern about their child's development due to early delays or regressions in the acquisition of verbal communication (Mohammadzaheri, Koegel, Razaee, and Rafiee, 2014).

Such behaviors and deficits can impair social interactions and prevent children from establishing appropriate relationships with family and friends (Friedrich et al. 2015). Social-communication skills are vital for academic success, social achievement and a long-term quality of life in inclusion, interpersonal relationships, and self-determination. Proving, that support and interventions for social communication skills are extremely important to the success of children with autism. Along with deficits in social-communication skills, children with autism have stereotypic and repetitive behaviors.

Stereotypic Behaviors

Stereotypical and repetitive behaviors are reported to occur as part of normal childhood development, however, in typical developing children these traits usually diminish during their

second year. Children with developmental and intellectual disorders such as autism can continue to engage in these stereotypic and repetitive behaviors (Joosten, Bundy, and Einfeld, 2012).

Stereotypic behaviors of individual with ASD include; impaired social interactions, limited functional and social communication and restricted or repetitive behaviors. Difficulty with social skills include initiating and maintaining social interactions. Repetitive motor behavior can include, body rocking, hand flapping, repetitive manipulation of objects, repetitive use of sounds, self injurious behaviors such a head banging or hand slapping. Repetitive motor behaviors can hinder children with autism in many ways (Loftin, Odom, and Lantz, 2007). Due to the odd and, for some individuals, noisy nature, repetitive motor behavior can therefore produce social stigmas, further reduce opportunities for interactions with their peers, prevent some students from being included in general education settings, and interfere with the students' ability to attend to and engage within academic instruction. Moreover, some extreme challenging behaviors such as aggression and self-injurious behaviors, compromises the quality of life for children and youth with ASD and threatens the stability of their home life by posing a danger to themselves and others around them (McClean and Grey, 2012).

Children with ASD are more likely to have less friends, less friendship reciprocity, and a smaller social network than their neurotypical peers (Schohl et al. 2014). Reciprocity refers to the exchanges in social communicate that people have and neurotypical peers is a term that is used to refer to an individual without ASD (Crutchfield, Mason, Chambers, Wills, Mason, 2014). Additionally, when children with ASD struggle initiating social interactions, they can display repetitive motor behaviors, such body rocking, and hand flapping. Increasing social interactions by teaching new skills may lead to reductions in problems behaviors, such as motor stereotypies (Loftlin et al. 2007). When children fail to make initiations they often lack learning opportunities

and the independence of seeking out information from the environment. “Developing and implementing effective programs that teach children social skills, emotion regulation strategies, and problem solving strategies that can be easily delivered in general education setting should be high priority” (Beaumont, Rotolone, and Sofronoff, 2015, p.390).

Addressed within the U.S. Individuals with Disabilities Education Improvement Act (IDEA, 2004), children with special needs must have access to core curriculum. Accordingly, children with autism are receiving their educational programming within the general education classroom at a much higher level than prior to this act. This presents a number of challenges that need to be addressed by teachers and educational professionals. An example of one of these challenges is that if children with autism are engaging in high levels of off-task behaviors within the general education classroom, they may have less learning opportunities and fewer chances to engage in positive social interactions with others. Additionally, some off task behaviors can not only be hindering to the student with autism but can also be disruptive to the other students within the classroom. Thus, reducing and replacing stereotypic behaviors in children with autism can profind benefits to the child and the class as a whole (Kuo & Plavnick, 2015).

It is increasingly important that children with ASD are able to improve and learn skills such as reciprocity, nonverbal communication, appropriate relationships, so that they can improve or replace stereotyped speech, motor, or object use, routines/rituals, restricted interests, and sensory issues. Children with ASD tend to struggle with learning during a large group instructional setting because they often have deficits in language comprehension and social interactions paired with engagement in restricted or repetitive behaviors. Functional strategies that can be used to increase the involvements of learner with autism in a large group instructional setting have therefore become a significant priority in school. “Children with autism are highly

individual, and what motivated one child to engage may not be intrinsically interesting to others. Therefore, finding further naturalistic means to engage students with autism in interactions and their education environments seems important" (Stevenson, Jerred, Hinchcliffe, & Roberts, 2015, p. 343).

When examining core deficits in social communication and reciprocal social interactions, restricted repetitive and stereotyped patterns of behavior, interests and activities, the impact of sensory sensitivity has also been displayed. Motivating and encouraging children with ASD into interacting socially and drawing them away from preferred sensory or solitary activities is a key factor to successfully rewarding educational groundwork. Providing a child with their natural interest to motivate them in learning and behavior change may promote the development of social communication and play skills. This may increase a child's intrinsic motivation in participating and learning increased engagement and learning opportunities. (Stevenson et al. 2015)

An estimated $35-90 billion dollars are spent annually on proper care for children with ASD. Teachers and parents are consistently looking for new strategies and techniques to better serve students with autism and to equip them with the skills necessary to become as independent as possible so that their life is as fulfilling as possible (Stadnick, Drathota, and Brookan-Frazee, 2013). New strategies and techniques are also need to help teachers and support staff. Some symptoms of ASD such as, aggression and self-injurious behaviors can negatively impact school staff members, as well as the student and their classmates. Aggression in children with autism and intellectual disability as been found according to Kanne and Mazurek (2011), to be significantly associated with burnout and emotional exhaustion among teachers and special education support staff. Many of the characteristics and stereotypic behaviors of autism are

believed to be diminished with the proper ASD-specific intervention services. Understanding the motivation for individuals to engage in stereotypic repetitive behaviors, empowers caregivers and professionals to develop interventions for reducing these behaviors (Joosten, Bundy, & Einfeld, 2012). If teachers and parents are able to give direct support and instruction to replace unwanted behavior with a more desirable one, children with autism may be able to have a more successful, independent, and rich life.

Research Question

Based on research this thesis will provide information in answering the following question: What are some of the strategies that can be of benefit or used to reduce stereotypic behavior in children with autism? This research examines interventions that can help in reducing stereotypic behaviors that children with ASD may exhibit to help these students to be able to function within their home, community and school. Specifically, looking into behaviors that cause deficits to social, communication and behavioral challenges, as these are the most prominent challenges that children with ASD suffer from.

CHAPTER II: LITERATURE REVIEW

Literature Review Search Explanation

In order to locate the literature for this thesis, the focus was on intervention strategies to help children with autism reduce stereotypic behaviors. Literature was found from searches of ERIC, Educational Journals, JSTOR, and EBSCO MegaFILE. The publications of the scholarly peer-reviewed articles were from 2007-2016. The key words used in the searches included "autism spectrum disorder, interventions, stereotypic behaviors, restrictive and repetitive behaviors, social skills, and strategies." This chapter is structured to begin by outlining the different strategies that may help to decrease stereotypic behaviors in children with Autism Spectrum Disorder and how these behaviors affect children in their personal and educational life.

Antecedent-based Interventions

Structural analysis

Children with autism are known to have impairments to their social skills, and communication skills, as well as displaying odd behavior patterns. What is less known is the varying natures and implications of these impairments on the student's functional ability across different environments. Challenges often arise in the school setting due to multiple contextual and individual expectations. Despite the use of interventions in these contexts, these interventions regularly fail due to the challenges in the ability to identify interventions that are appropriate across multiple settings. The lack of individual behavior goals within these strategies, and the lack of attention given to the contextual differences (Stichter, Randolph, Kay, & Gage, 2009).

The process of behavioral antecedent evaluation, structural analysis (SA), is highly necessary yet under-investigated. This assessment tool has been able to extend across settings to

reduce challenges that educators face with the link between assessments to interventions. Formed hypotheses developed structural analysis by linking the relationship between antecedent-based contextual variables and subsequent behaviors. This provides educators with a detailed systematic evaluation of antecedents under which the behavior will occur.

Studies have shown, (Stichter et al. 2009) that the use of antecedent variables such as altering instructional practices and changes to the environmental characteristics continue to increase prosocial and adaptive behaviors in students with disabilities. Specifically, this study used systematic practitioner-implemented structural analysis within school setting to determine antecedent variables which affect the prosocial behaviors in children with autism. The researchers used optimal antecedents along with intervention packages which were assessed using multiple baselines across many settings. During which time data was gathered on a specific prosocial target behaviors through a rotation of conditions in environmental or instructional antecedents. An example of this would be to structure the environment differently by adding verbal pre-corrections such as verbal or visual prompts for behaviors to cue the student on that specific prosocial target behavior (Stichter et al. 2009). On the next rotation during that same time there would be no pre-corrections given. If any of the guidelines were violated during these rotations the condition would be rerun to ensure reliability. All other elements throughout the environment would remain the same. Data from the two conditions, with and without verbal pre-corrects, were then compared in determining which, if either, conditions resulted in an increase to the prosocial target behavior. Once the effectiveness of the carious antecedent variable are assess and the most notable antecedents impacting the children's prosocial behaviors are identified, the combination of these antecedent are used to develop or inform optimal intervention.

All three of the students assessed demonstrated improvements across all three of the settings observed. Classroom peers were used as benchmarks, observing the rates of engagement and social interactions. These findings reveal that educators can successfully implement structural analyzes and with corresponding interventions for students with autism spectrum disorder within educational settings. The combination of optimal antecedents, increase prosocial adaptive behaviors, while concurrently decrease maladaptive behaviors. These finding maintained during follow up probes. All three of the students increased their levels of engagement across contexts comparable to those of their typical peers (Stichter et al. 2009).

The results showed that high structure was the most critical variable associated to prosocial behavior for successful inclusion in the general education setting. Another critical variable was proximity, when manipulated, proximity prevented maladaptive behavior and promote enhanced learning. When these needs are met then the need for escape or attention can be prevented.

The students benefited from a combination of antecedents, which included pre-corrects to support prosocial behaviors, peer support in prosocial concentrations during transitions, as well as simplified and consistent work and interaction routines to support understanding of the structure of contextual expectations. Another intervention supported appropriateness of increased opportunities to respond, a planned intermittent schedule of prompts, scheduled access to self-stimulatory items and routines, and increased levels of structure.

Art intervention

Another type of antecedent based intervention is looked at by Kuo and Plavnick, (2015). They sought to research the success of an antecedent art intervention for 3 year old children with autism; aiming to reduce off task behaviors. The researchers used a one-to-one art instruction

prior to the large group instructional session to decrease levels of off task behaviors, compared to the baseline conditions.

Scholars and school practitioners suggest that using art as an early intervention has a numerous amount of benefits for children with autism. Art activities promote opportunities for children with autism to focus on a task, obtain sensory stimulation, and receive attention from adults. Moreover, through art activities children with autism can express imaginations and abstract thinking. Furthermore, art may enhance a child's sensory regulation and integration as well as enable them to express their emotions. Additionally, teachers can use these art activities to promote cognitive development and build visual-spatial skills which developing these children's recreation and leisure skills. Case studies of art intervention show that children display an increase attention to directions and could better predict sequences of events. Another showed that a child was able to have a conversation in a voice that sounded less mechanical. In addition, he became more engaged in tasks and his language skills improved. His painting became more concrete and related to his school and home life (Kuo and Plavnick, 2015).

Antecedent based interventions (ABI) are evidence-based methods that depend on engaging stimulus changes before a situation wherein a known problem behavior occurs, to reduce the likelihood of the problem behaviors. They have been researched to determine the the effects of settings, stimulus conditions, alternative seating, social contexts and verbal skills and the antecedent of the behavior. These antecedent based interventions can include methods such as a children highly preferred activity, changes in routines, pre-activity interventions, offering choice, altering the presentation of instruction, and enriching the environment to provide sensory stimulation that is functionally equivalent to a problem behavior. As there are so many benefits

from art activities, consequently, art based interventions are a beneficial type of antecedent based interventions.

Observation of the student during whole-class instruction was used as the baseline in this study. During the interventions, the researchers organized a 10 minute antecedent art intervention with the student prior the observations of his behaviors during the large group instructional settings, as was observed during the baseline. The researchers found that there were eminent differences in the types of off task behaviors observed during the baseline and the intervention conditions. This revealed that antecedent art interventions can be effective procedures to reduce off-task motor and verbal behavior of children with autism during large group instructional settings when followed by this ABI (Kuo & Plavnick, 2015).

One explanation for these results include that the one-on-one attention given during the antecedent art intervention sessions reduced the need of attention. Providing a decrease in off-task behaviors. Art intervention involved contact to material which present sensory stimulation. Another explanation could be argued that some elements of the intervention procedures, such as a quieter environment, choices, or a consistent schedule, may have led to a more predictable environment than what was prior. When establishing these routines and increasing predictability a decrease in problem behavior by children with autism were shown.

Applied Behavior Analysis

Applied behavior analysis (ABA) provides intensive behavior education and function based behavioral interventions for children with autism between the ages of three and 18 years old. ABA is a clinical application of scientific knowledge regarding behaviors and the educations of socially significant behaviors. It utilizes principles that teach a range of skills which create a

meaningful difference to the specific individual and their family. There has been adequate evidences that supports the use of these interventions based on the principles of applied behavior analysis with children with ASD and other intellectual disabilities. Children with these disabilities who have received educations based on these principles have increased their social, language, and cognitive skills as compared to children who received standard interventions (Foran et al. 2015).

There were two applications of ABA that were used during this study, early intensive behavior intervention (EIBI) and behavioral interventions based on functional analysis. Early intensive behavior intervention (EIBI) are educational based ABA models that are used for teaching young children between the ages of two and six with ASD. The program is intensive with 20 to 40 hours per week either within the child's home or in a special center. The team that delivers EIBI consists of therapists and parents. EIBI focuses on the scientific principles of learning and behaviors; which is based on the belief that behavior is learned through interactions between individuals and the environment. For learning to occur three components are necessary (Foran et al. 2015). First, a stimulus must prompt the child's response (antecedent); second, the child responds (behavior); third, there is a consequence that will increase (reinforce) or decreases (punish) the future consistency of that specific behavior. This is an antecedent behavior consequence framework. This can be used to teach many skills, such as, imitation, communication and social skills. These skills are essential for furthering learning and development (Foran et al. 2015).

There was an ample amount of evidence that was in support of the use of EIBI for children with autism (Foran et al. 2015). They also found that children who received EIBI outperformed students on measures of intelligence quotient (IQ), adaptive behavior and language

skills to those who received their usually treatment. The parents of these students reported improvements after receiving EIBI in the areas of communication, behavior, independence and in their overall quality of life. When examining the efficacy of high intensity (20-40 hours a week) of EIBI, Foran et al. (2015) found that 47 percent of children who received 40 hours of EIBI made remarkable gains in IQ and were able to attend their mainstream education without any further supports. Only 2 percent of the control group displayed such outcomes. The demonstration of the efficacy of high intensity (20-40 hours a week) of EIBI has been shown in a number of students in meta analyses and systematic reviews. More recent studies have found that lower intensity (6.5-15 hours per week) one on one school-based ABA programs are also making significant gains as well (Foran et al. 2015). Children receiving low intensity ABA-based teaching made expressive gains on the measures of Intelligence Quotient (IQ), adaptive behavior, social skills, and communications skills than their peers who received treatment as usual.

The second early intervention application of ABA that was used during this study was behavioral interventions based on functional analysis. This use of functional analysis when identifying the function of problem behaviours is a well-documented area of ABA. Extensions to this methodology has been used to identify the various functions of response topographies. Behavior analysts can teach alternative communicative responded to replace challenging behaviors if the function of the problem behavior is identified. Success increases when the interventions increase appropriate behaviors and decrease inappropriate behaviors based on the results of the functional analysis (Foran et al. 2015).

Significant within-group gain in language, social and play, and academic skills were made with low-intensity ABA-based interventions following eight months of these inventions.

The skills that these children are learning such as academic, functional and social skills are skills that are prerequisites for higher learning. The children who were engaging in challenging behaviors learned appropriate replacements behaviors, which in turn lead to the reduction in challenging behaviors overall. The new skills that these children are learning are created children who are better equipped to learn than children similar to them that did not have access to these early interventions or function based behavioral interventions. This proves that a cost-effective intervention based on the principles of ABA can be effectively implemented in schools. Nevertheless, the early intervention group was a small and did not have a control group which is a limitation. However, gains made within-group between baseline and year 1 assessments were statistically significant.

Overall, the researchers have made many significant improvements from both high intensity and low intensity ABA based interventions. Moreover, they found that children under the age of seven made substantial gains on intelligence quotient and on a range of skills, such as, language, social and play, academics skills.The interventions provided with this program increased independence in children and integrated the access to curricular activities.

Nasal oxytocin

Dadds et al. (2014) found that over the last two decades research has been conducted in investigating the application of oxytocin as a method of improving social behaviors in humans. Oxytocin is powerful hormone that acts as a neurotransmitter in the brain and is highly linked with the production of social bonds. According to evidence suggested by preliminary data, oxytocin may have potential as an intervention for autism.

The effects of the tested treatment, daily administration of intranasal oxytocin, were conducted for over a week. They observed a range of measures in a sample of children with

autism spectrum disorder. The researchers conducted a five day double-blind randomized controlled intervention trial. Using 38 male children with autism ranging in age from 7 to 16 years old. 24 or 12 internasal units of transnasal placebo or oxytocin were administered depending on their weight, once daily over for consecutive days. Behaviors were assessed incorporating parent reports, clinician readings, and independent observations. Side effects, social interaction skills, repetitive behaviors, emotional regulation, and diagnostic status were measured (Dadds et al. 2014).

In comparison to the placebo, intranasal oxytocin did not significantly improve emotional regulation, social interaction skills, or general behavior adjustment in male with autism spectrum disorder. Furthermore, according to parental report and independent observation there was no reduction in repetitive behaviors with intranasal oxytocin. A similar study, found that there was no compelling difference within ritualistic, sameness, compulsive and restrictive and repetitive behaviors following daily doses of intranasal oxytocin over a six week period using the same measures. Consequently, the results show no benefit of oxytocin for young individuals with autism spectrum disorder and caution is advised when recommending nasal oxytocin as a possible treatment for children with autism (Dadds et al. 2014).

Dog Therapy

The interaction with dogs has been said to have major benefits for children with disabilities; especially children with autism. Stevenson et al. (2015) sought to find if sessions with a student with autism, a dog and a teacher can elicit and expand social interactions and engagements while reducing isolation, sensory stimulated, repetitive and negative behaviors.

Five repeated quantitative and qualitative observations of three male subjects in semi-structured sessions were used (Stevenson et al. 2015). These sessions were conducted with the

student's teacher and school dog. Observations and measures focused on social behaviours, negative or repetitive behaviors and stereotypic behaviors linked to autism. Dogs can have a positive impact on children with autism within the terms of interaction and communication. Furthermore, within sessions, dogs can decrease social withdrawal and repetitive behaviors. Two of the three students were more focused and meaningfully engaged following sessions.

Sessions with dogs were highly individual in their effectiveness. However, all children showed an increase in meaningful social interactions with the dog and their teacher. Which in turn decreased their solitary or repetitive behaviors within the sessions. Moreover, researchers found a reduction in challenging behaviors, reducing phobias and anxiety and an increase in the students independence (Stevenson et al. 2015).

Human interaction with animals has been well documented in enhancing the psychological health of people. Consequently, therapy dogs have increasingly been visiting schools to help children with a range of difficulties and disabilities. These dogs aid in motivating and reducing struggles with motor skills and reading. They also contribute to helping with emotional stability and children having a more positive attitudes towards school for those with severe emotional and behavioral disorders. It has been researched that therapy dogs may deliver emotional, social, physical, and psychological support for children perhaps by giving a non-judgmental quality and providing a calming effect. This calming effect provides children with a sense of safety and security (Stevenson et al. 2015). Dog therapy can also increase the overall positive behaviors these children have towards the teachers and dogs, while decreasing negative behaviors. Moreover, the use of dogs in the classroom for specific skills or as part of the general curriculum may aid the participation in activities for some children. By establishing a bond with dogs children with autism could then extend this bond with humans.

All three of the students observed showed increased levels of interaction, visual interest and meaningful vocalisation within the sessions with the dog and teacher present. Teacher questionnaires showed that this effect generalized to the classroom setting. Additionally, there was a parallel reduction in playing alone and sensory/repetitive behaviors during the sessions. Children with highly withdrawn behaviors had an increase in their frequency of verbal and nonverbal social interactions. There was an increase directed towards the dog and therapist, and with a parallel decrease in with the withdrawal behavior. One month later, a follow up indicated a there was a slight decline in the children's social interactions levels, however their levels were nevertheless at a higher rate than before the study. The results also indicated that the children were less distracted, showed a more playful mood, were much more aware of their social environments and had they had an increase meaningful verbal interactions within the sessions with live dog. Nevertheless, they found that hand flapping did indeed increased which was consequently due to their excitement. This may suggested that dogs can elicit an increase in certain mannerisms that are linked to children with autism being in a higher state of arousal (Stevenson et al. 2015). Moreover, when integrating the dog into occupational therapy sessions for children with autism an increase in social interactions, communication and motivation participate occurred among these children. With the dog present there was an increase in engagement such as a smile, visual contacts and affectionate behaviors, all while decreasing the negative behavior patterns, such as physical and verbal aggression and self-absorption. Therefore, sessions with a dog and a member of the school staff may initiate a way in for increased social interactions and engagement, this could transpond to other situations in which a relationship occurs within the educational setting.

Emotional Regulation Intervention

Comorbidity is commonly present within children with autism spectrum disorder including problems with emotional regulation. Common difficulties that children with autism spectrum disorder face is deficits with social communication and restricted or repetitive behaviors or interest and often significant emotional difficulties. An estimated 40 to 50 percent of children with autism meet the criteria for two or more psychiatric disorders (Thomson, Riosa, & Weiss, 2015). Most often a combination of externalizing problems and internalizing problems, such as Attention Deficit Hyperactivity Disorder (ADHD), a chronic condition which includes difficulties with attention, hyperactivity, and impulsiveness and anxiety disorder, a mental health disorder identified by feelings of worry, anxiety, or fear that can impede with an individual's daily activities. These difficulties can lead to emotional problems involving underlying challenges with emotional regulation. The emotional problems that children with autism face such as, anxiety, depression, and anger can be directly related to their poor emotional regulation. Cognitive behavior therapy is an intervention for children with autism that can address emotional regulation and has been shown to improve a wide variety of emotional problems.

Thomson et al. (2015), investigated the improvement of emotional regulation with children with autism using a multicomponent cognitive behavior therapy treatment program. The participants included 14 male children diagnosed with autism spectrum disorder, with average intellectual functioning, ranging in ages from 8-12 years of age. For personal reasons, one of the originally 14 children who were enrolled in the trial dropped out after the first session. The children were assessed during the pre-intervention phase 1 to 2 weeks before the 10 week interventions took place, and 1 to 2 weeks after during the post intervention phase following the treatment.

High satisfaction was reported from all of the participates from the intervention in regards to the activities and overall program. The children's emotional regulation overall indicated improvements. 12 of the participants who answered the post intervention summary questions indicated the following results, 92 percent recorded an improvement in both emotional regulation and the ability to deal with anger, 75 percent recorded an improvement in the ability to deal with anxiety, and 58 percent reported an improvement in the ability to deal with sadness. The parents of the children reported less lability and negativity on the Emotional Regulation Checklist (ERC), an parent scale of emotional regulation, less internalizing and behavioral symptoms, and more adaptive behaviors on the Behavior Assessment System for Children-2nd Edition (BASC-2), a standardized measure of clinical concerns and adaptive skills used to help identify typically occurring childhood and adolescent clinical diagnoses (Thomson et al. 2015). An overall decrease in dysregulation and an increase in the number of appropriate strategies was reported by the children. The parent also reported fewer anxiety diagnosis and the Anxiety Disorders Interview Schedule (ADIS-P-IV), a semi-structured diagnostic parent interview examining the severity of children with emotional disorders, depicted less severity post intervention. Furthermore, a blind clinician reading on the Clinical Global Impression Scale (CGI-I and CGI-S), a rating of illness severity used to assess global severity of psychopathology on a 7-point scale, showed an overall decrease in psychopathology. Improvements were also reported by parents on their child's emotional lability internalizing symptoms, behavior dysfunction, and adaptive behavior. Additionally, clinicians also found improvements based on their overall ratings of severity and the number of diagnosis on the ADIS-P-IV (Thomson et al. 2015). Of the 12 children who completed the Children's Emotional Management Scale (CEM) a

children's self-report which appraises inhibition of expression of Anger, Sadness, and Worry. The results indicated less overall dysregulation across all three of those emotions.

Interest-Based Token Economy

A study was conducted with a seven-year-old boy with autism to see the effects of a token economy intervention that either did or did not include perseverative interest. Examining the effects of this manipulation on the child's challenging and off task behavior during an early literacy activity in a public school special education classroom and an inclusion classroom. This student had mild to moderate autistic symptoms, and spent a majority of his school day in the special education life skills classroom with 4 to 8 other students with developmental disabilities. This student only spent one hour of his school day within the inclusion classroom according to his individualized education plan IEP. This was due to challenging behaviors that happened too frequently for him to be a part of the general education setting. These behaviors included screaming, falling and/or laying on the floor. The student was the perfect candidate for this study because he had experience in using a traditional model of the token economy system. Therefore, he did not need additional training when implementing the system (Carnett et al. 2014).

A token economy is an interventions involving the distribution of tangible (e.g. tokens) with the presence or absence of a target behavior. The student would then exchange an agreed upon number of the tokens for backup reinforcers. Behaviors can be established, decreased, and/or maintained while using token economy systems. Several variations of this intervention exist such as losing tokens for inappropriate behavior, pairing tokens with praise, and distributing tokens on a reinforcement schedule. However, very little research has been conducted on the token itself, as the tokens are usually considered to be a neutral stimuli (e.g.

tickets) in which become reinforcing when paired with a backup reinforcer. Carnett et al. (2014) believed that the tokens themself can increase and reinforce the power of the token itself.

Small edibles such as bite-size candies are crackers were used as a backup reinforcer during this study. The student picked out M&M's, fruit snacks and chips as his small edible items. Carnett et al. (2014) reviewed using visual supports on task behaviors which included sitting down, staying quiet, and looking at the teacher prior to all of their sessions. The token economy without perseverative interest included a penny token system. Carnett et al. (2014) reviewed using visual supports on task behaviors which included sitting down, staying quiet, and looking at the teacher prior to all of their sessions. The token economy without perseverative interest included a penny token system. Carnett et al. (2014) would sit next to the student and hand out tokens for 20 seconds of consecutive on task behaviors. The student was allowed a maximum of 30 tokens per 10 minute session to be around. The back of reinforcers could be obtained for every 10 tokens the student earned. The exchange would occur at the moment the student reached 10 tokens to ensure positive reinforcement.The token economy with perseverative interest included the same layout however the tokens were not to pennies. They were in the shape of puzzle pieces and the 10 tokens formed a puzzle. Puzzles were a preferred interest of the student. The token economy with perseverative interest included the same layout however the tokens were not pennies. They were in the shape of puzzle pieces and the 10 tokens formed a puzzle, as puzzles were a perseverative interest of the student (Carnett et al. 2014).

The results of the study indicated that the challenging behaviors decreased with the use of both token economy system. However, on-task behaviors happened more frequently during the perseverative interest token economy then in the token economy without the perseverative interest. The use of a train as the token, reflecting the child's perseverative interests (e.g. using a

small picture of a train as a token for a child who had a perseverative interest in trains) improved intervention outcomes (Carnett et al. 2014). The evidence concluded that the interest based token was more effective increasing on task behaviors while decreasing challenging behaviors than a token based intervention without perseverative interests. The favorable effects of these interventions were also replicated and generalized to the inclusion (child's classroom) as well. Suggesting that in terms of an economy token based intervention, perseverative interests based tokens may enhance this intervention and improve the efficiency and effectiveness of intervention within the classroom (Carnett et al. 2014).

Comprehensive Peer Network Intervention

Deficits in social skills are main characteristics of autism spectrum disorder. These deficits impact the communication development and social development throughout the person's life. Children with autism have a limited range of social communication skills such as difficulties initiating interactions, maintaining reciprocity, giving and receiving social bids, and responding to others engaging. Due to the impact of these deficits, it is important to find an effective approach that can enhance social communication within a natural setting.

Students with autism need direct instruction and specific social behaviors and to specifically focus on the use of social pragmatic language to interact with others. It was sought to find the outcome of combining two interventions, direct instruction and peer-mediation approaches (Kamp et al. 2015). Additionally, delivering social communication skills intervention with not only children with autism, but also with their peers without disabilities, provides opportunities for natural feedback and social reinforcement. Given the student an opportunity to

practice these skills, may increase the chance of generalization of the use for the skills (Kamp et al. 2015).

This randomized controlled trial sought to determine the efficiency of a comprehensive peer network intervention that includes pure training as well as direct instruction on social communication, language performance, adaptive communication skills and teacher ratings of children with moderate to high functioning autism spectrum disorder over a two-year period. The peer network interventions occurred three times per week and were set up as social skills group. During these sessions the children were taught social and communication skills using age-appropriate games and activities, such as card games and board games. The sessions were set up to provide students with autism interactions with their typical peers using games and toys which in turn allow them to practice reciprocal social communication. There were five specific skills that were taught during this time. These skills included, ask and share, tell about my toys, tell about my friends toys, nice talk, ways to play. Key components of this intervention include a scripted lesson for the teachers to teach the specific communication skills needed, written text cues for the participants with and without autism, peer training, and feedback and reinforcement to all children from the teacher (Kamp et al. 2015).

The outcome of the 2 year comprehensive peer network intervention was that, the intervention groups had an increased amount of initiations, including verbal communication rather than just joined attention and/or social engagement (Kamp et al. 2015). These initiations not only occurred outside of the intervention session, but also outside of these sessions. This generalization confirms the importance of social communication skills taught in a more natural social setting. Additionally, students in the intervention sessions showed more total

communications, displayed growth within their language skills as well as their adaptive communication skills.

Self-Monitoring

Watchminder

Self-Monitoring private self-assessment and self-recording process that allows an individual to become increasingly aware of their performance of a particular task. The development of these skills are important for many daily life tasks, such as, time management, acquiring and comprehending new information, meeting deadlines and due dates, and performing multi-step tasks (Finn, Ramasamy, Dukes, & Scott 2015). The use of self-monitor training is a proactive intervention that can be used and applied across a variety of settings and it has been proven an effective strategy in the educational setting. Positive effects of self-monitoring on a variety of target behaviors for individuals with ASD across a range of age groups. This research looks at the use the self-monitoring intervention, WatchMinder. WatchMinder is a vibrating prompt, self-graphing watch that tracks on-task behaviors of students with ASD in an elementary setting (Finn et al. 2015).

There were four students with ASD that participated in the study. They all received special education services and participated in an autism cluster program for a portion of their school day. All of the students were very distracted when working on academic tasks and required many verbal prompts. The results of this intervention showed that participants increased their on-task behaviors when the intervention was introduced and maintained high levels of on-task behaviors during the follow-up phase (Finn et al. 2015).

All four participants increased their on-task behaviors and work productivity while working independently at their seats. This provided students the ability to become an active

participant in their education and more accountable. Providing less pressure on teachers who were able to give up some of the responsibility of the intervention (Finn et al. 2015). Furthermore, with the vibrating feature of WatchMinder, other students in the classroom were unaware of the watch going off allowing multiple students to wear the watch and not standing out amongst their peers. WatchMinder and the use of self-monitoring fosters an increase in motivation, responsibility, self-resilience, and independence upon students with ASD. Finn et al (2015) stated that it is possible for students to increase the amount of time the spend in the general education classroom with the development of the self-monitoring skills.

Social interactions

A primary feature of autism are dysfunctions socially, which may indeed be its most defining characteristic. Despite the level of intellectual functioning of individuals with autism, social deficits persist throughout their life. One of the most important challenges that professionals working with children with autism face is improving their social functioning. One of the characteristics of social deficits is initiating social interactions. Student with these difficulties may display repetitive motor behavior, such as, body rocking, hand flapping, and finger tapping. When children fail to make invitations they often lack learning opportunities and the independence of seeking out information from the environment (Loftin et al. 2018). Repetitive motor behaviors can hinder children with autism in many ways. Due to the odd and, for some individuals, noisy nature, repetitive motor behavior can therefore produce social stigmas, further reduce opportunities for interactions with their peers, prevent some students from being included in general education settings, and interfere with the students' ability to attend to and engage within academic instruction.

This study sought to examine an intervention that included peer training, explicit instruction and initiating social interactions, along with a self-monitoring component to promote and maintain the new skills well after the end of the teaching phase. The interventions should increase their social initiation and social interactions of the children with autism and their typical peers. Loftin et al. (2008) believed that increasing these social interaction by teaching new skills could lead to the reductions in problem behaviors, such as these motor behaviors. Furthermore, teaching self-monitoring strategies may increase the maintenance of these skills. Self-monitoring increases student independence and it encourages self-control. These are important qualities that the researchers believe are often overlooked within other interventions. In order to self-monitor, students need to diligently track their own behavior conditions and acknowledge outcomes that are produced. When individuals self-monitor, they are forced to attend to certain aspects of their own behavior, which they may ordinarily never focus on. The relationship between engagement, social interactions and repetitive motor behavior was also examined. Interventions including peer training, direct social initiation training, and self-monitoring leads to increased social initiations and ensuring interactions (Loftin et al. 2008).

Three children with autism were taught direct instructions in initiating social interactions with peers in a one-to-one setting. Soon after, the children were taught how to self-monitor and keep track of those interactions using a golf wrist counter. Having the students self-monitor changed their focus of attention which allowed them to attend to their social behavior. Before the intervention, peer interactions may have been ignored by the children. When the children were no longer self-monitoring, their social behaviors remained.

The interventions were observed as having a successful increase the children's social initiations, and social interactions increased, subsequently there was a reduction in repetitive

motor behaviors. The researchers found that multi-component social skills intervention, including peer training, social initiation instruction, and self-monitoring, led to a decrease in repetitive motor behaviors. There was an increase in social initiations for all participants when they were taught to initiate. Moreover, social interactions continued when self-monitoring was introduced. The direct instructions in social skills lead to the students increasing their social initiations. Teaching these explicit instruction of social skills, the children with autism were able to quickly learn how to initiate conversations with their peers. This may have occurred because the children were provided with a clear framework for how to conduct themselves during an unstructured and previously ambiguous period. The peer training aspect, also played a key role with the success of the interventions, fostering a safe and supportive environment.

When the children were engaging in social interactions during the study, they may have received stimulation, hence causing them to engage and display less repetitive behavior. Even when reinforcers were faded, social behavior continued, suggesting that interactions become a natural reinforcement. These social interaction themselves may have become reinforcing, due to the stimulation they provided. The changes in social behaviors and repetitive motor behaviors were maintained more than one month after interventions ended and the positive effects were still observed. This study may be less successful for children with autism whos communication skills are less developed or who have lower cognitive abilities. Children with severe communication and social deficits may need a more intensive and a much longer instruction phase.

I-connect

In addition to impairments with communication and social interactions, restrictive and repeated behaviors are contributing factors in identifying children with autism spectrum disorder.

Restricted in repetitive behaviors can include a wide variety of behaviors, which may include sameness and routine, narrowed interests, stereotypic behavior, and self-injurious behavior. There is an assortment of stereotypic behaviors that can be linked to people without isms spectrum disorder (Crutchfield et al. 2015). Stereotypic behaviors are more commonly found in individuals with autism. These behaviors include both motor and vocal components and can include, "brisk arm movement, rapid or odd walking pastor, toe-walking, body rocking, non-communicative vocal repetitions, and headshaking" (Crutchfield et al. 2015, p. 1146). These complex stereotypic behaviors impact a variety of students with autism. Such as difficulties with task completion and difficulties with social opportunities.

A strategy that is known to help decrease these types of behavior is self monitoring. Self-monitoring is said to increase behavioral repertoires and decrease behaviors. This study examined the relationship between I-Connect and levels of stereotypy for two students with autism. I-Connect is a self monitoring technology system that is able to be delivered without direct supervision and instructor implementation. Furthermore, I-Connect is able to be adapted and adjusted to meet the needs of each individual student and their environment. Self-monitoring includes performance assessments and records target behaviors (Crutchfield et al. 2015).

This study looked at two middle school students in the eighth grade, who were receiving special education services under the disability category of autism spectrum disorder. Additionally, these students had stereotypic behaviors that were impacting their ability to independently complete tasks and were given parental consent. The self monitoring program I-Connect showed immediate signs of decreased levels of stereotypic behaviors in both students. Their teachers saw that the completion and productivity of assignments had improved as well when using the I-Connect system. It was also reported that all participants enjoyed using the

intervention over other interventions and it was to be said more likely to you then other intervention. The teacher also stated that it was less bulky than the typical paper pencil self-monitoring checklists. Moreover, the students required less adult support while using this program (Crutchfield et al. 2015).

It was concluded that the use of I-Connect can decrease negative target behaviors across time and increase positive behaviors. The system alleviated the need for multiple materials such as a timer, paper/pencil and checkless all that was needed with the devices when appropriate. When withdrawing the system there were no immediate returns to the students baseline. This shows that there is short term maintenance of the intervention. One item to note is that both students were able to read. Students with lower cognitive functioning abilities may need modifications such as the use of pictures or symbols rather than words (Crutchfield et al. 2015).

Social Skills Groups

It has been reported in children with autism spectrum disorder to have less friends, fewer friendship reciprocity and a small social network compared to their typical peers. The social difficulties may lead to having adjustment problems within school despite the academic strengths that many children with autism spectrum disorder have (Kasari et al. 2016).

This study looked at the differences between two different social skills groups. One group consists of all students with autism spectrum disorder, the other consist of a mix of children with autism spectrum disorder and their typical peers. Kasari et al. (2016) conducted interventions that occurred in the morning lunchtime or recess during school hours two times a week for eight weeks for a total of 16 sessions. The sessions were 30 to 45 minutes long. Prior to the treatment and post treatment, assessments were collected, as well as eight weeks following the completion of the interventions (Kasari et al.2016) .

The study looked at peer engagement on the playground as well as peers nominating children with ASD as friends and vice versa.The two interventions were named SKILLS intervention and ENGAGE intervention. The SKILLS intervention consisted of a set of social skills interventions that were delivered with the use of, being a social detective, greetings and goodbyes, body talk (nonverbals), humor, conversation, dealing with teasing, perspective taking, do you hang with emotions, and friendship test. Weekly homework assignments where are given to reinforce topics that were discussed within the group session. During every session group rapport was facilitated by the leaders. Along with praise when good behavior occurred. The youth of a punch card and rewards from the treasure box was also part of the intervention (Kasari et al. 2016).

The ENGAGE intervention includes typically developing peers along with children with autism spectrum disorder. This intervention included a greater number of typical peers to help foster friendships and model positive social behaviors resulting in a 2 to 3 ratio of typical classmates to children with autism spectrum disorder. The typically developing peers were viewed as positive role model's, nominated by their teachers, and were selected based on results from a friendship survey. The group established a daily schedule to encourage consistency among the members of the group. Conversational exercise, structured games, free play, improvised storytelling, and music were activities conducted during this intervention group (Kasari et al. 2016).

The ADOS and the Social Communication questionnaire and the Stanford-Binet Intelligence Scale were are used during this study. The ADOS is a semi structured, standardized assessment of communication. The Social Communication Questionnaire is 40 questions parents questionnaire assessment used for screening symptoms of the presences of ASD. The Stanford-

Binet Intelligence Scale, Fifth Edition is a standardized assessments that measured the intelligence and cognitive abilities of children and adults.

It was found that for elementary age children with autism spectrum disorder social skills interventions with SKILLS based social groups that consist of all children with social challenges showed more consistency then the mixed groups with typical peers and students with autism spectrum disorder. In the SKILLS group, social networks had improved significantly. Furthermore, the children within the SKILLS group demonstrated much more engagement amongst peers and found that they played secluded less compared to the children in the ENGAGE group (Kasari et al. 2016). Contrary to their belief, evidence shows that a mix of children from different grades and classes had much more effective peer acceptance and engagement on the school playground, than an activities based intervention for children from the same classroom with and without autism.

A few reasons why the SKILLS group may have been more effective than the ENGAGE group. First, the SKILLS group taught direct instruction on social skills which would then immediately reinforced by practice and modeling. Second, the children within the SKILLS group were similar. These similarities may have contributed to the children to get to know each other (Kasari et al. 2016).

PEERS Intervention

PEERS intervention stands for the Program for the Education and Enrichment of Relational Skills. The PEERS intervention looks at increasing friendship quality and social skills amongst adolescents with high functioning autism spectrum disorder. Due to social deficits that adolescents with autism face they are more likely to have strong feelings of loneliness and less friendships then their typically developing peers. This can increase the risk for depression and

anxiety as well as isolation, rejection, teasing, bowling, low self-esteem, school dropout, and unemployment in there later life (Schohl, et al. 2014).

58 participants between the ages of 11 and 16 years old were assigned to either an immediate treatment group or a wait list group. The treatment group improved significantly in the areas of the knowledge of concepts and friendship skills related to PEERS which helped in increasing their social skills. An increased amount of get-togethers and invitations of get-togethers were displayed by the children in the treatment group. Additionally, there levels of social anxiety were decreased and core autistic symptoms, such as behavior problems were also decreased (Schohl et al. 2014).

Positive Behavior Supports

Children with ASD are at risk for developing challenging behaviors that can hinder their learning and development. Positive behavior supports (PBS) is a prevention and intervention approach used with children and youth with a variety of disabilities who exhibit challenging behaviors, including individuals with ASD (Neitzel 2010). The intent of PBS is to enhance the quality of life for these children by increasing their appropriate behaviors and adjusting the learning environment to prevent interfering behavior from occurring in the first place or reoccurring. Interfering behaviors refer to two types of behaviors that children with ASD may display; repetitive and stereotypical behaviors and disruptive behaviors. This approach uses a tiered intervention model to increase positive behaviors by steadily administering more focused and individualized support and interventions at each stage of the hierarchy (Neitzel 2010).

Tier 1 involves preventing these interfering behaviors from occurring. This is done with the use of specific prevention practices that are developed to address the core characteristics of ASD by making changes to and adapting the environments, activities, and other interactions that

could create interfering behaviors to escalate (Neitzel 2010). Examples of this may include organizing a strong learning environment, arranging the environment to support positive student behavior, and developing specific communication and social skills as parent of their core curriculum.

The development of targeted support is provided in Tier 2 for student who continues to display interfering behaviors despite implementing the preventive strategies in Tier 1. Behaviors that are continuing to display in Tier 2 are not dangerous, however, they require additional support. The additional support provided in Tier 2 includes, the use of a Functional Behavior Assessment (FBA), an assessment used to identify possible causes of interfering behaviors and strategies to implement, to create a comprehensive behavior plan that guides interventions, implementing evidence-based practices (EBP) during ongoing routines and activities to decrease the interfering behaviors, and continuing to further the develop of communication and social skills (Neitzel 2010).

Tier 3 looks to provide intensive, individualized instruction to student with ASD whos interfering behaviors sustain even after the use of the preventative strategies and interventions exhibited in Tier 1 and 2. During Tier 3, variables that might be influencing the behaviors are evaluated and identified, additional assessment information such as interviews, rating scales, and observations are gathered, student behavior patterns during the previous interventions are evaluated, and the development of a detailed hypothesis regarding the function of the student's behavior is addressed (Neitzel 2010).

PBS continues to gain attention as an effective practice for reducing challenging behaviors such as repetitive or disruptive behaviors. PBS has effectively reduced interfering behaviors for children who display at-risk behaviors. Knowing how to address and respond to

interfering behaviors can be problematic and is a great challenge for parents, teachers and practitioners who work and live with children and youth with ASD. However, this intervention emphasizing on prevention and reduction by providing increasingly intensive interventions based on results of a high quality functional behavior assessment, the positive behaviors of students with ASD are supported and interfering behaviors are addressed more effectively (Neitzel 2010).

While there are many more interventions to be researched, there is a lot to learn about the reduction of stereotypic behaviors in children with ASD. Specifically, how parents and professionals can best support these children, at home, out in the community and within a school setting. There is a continuous need for further research and awareness in this area and to build upon the current research that is already provided. It is crucial for school professionals to continue to educate themselves on how to best work and provide services for student who have autism, to better equip these students with tools that will better their future.

CHAPTER III: DISCUSSION AND CONCLUSION

During my undergraduate career at the University of Wisconsin, River Fall I was offered an opportunity to work in a Group Home. Working in the Group Home with three women with varying disabilities sparked my passion in working with individuals with disabilities, specifically ASD. One of the women who lived in the home had low functioning ASD along with epilepsy. This was the most contact I had with someone with low functioning ASD. My prior experience was with a cousin who has high functioning ASD, known as asperger's prior to the changes in the DSM-5 (Barton et al. 2013). I was so intrigued on how different my cousin and this women were, although they both had ASD. My cousin did not seem to be very different to me at that time. She was just a little "quirky." Now as an educated adult I know that she lacked some social skills and had restrictive interested that she liked to discuss a lot. My client on the other hand was extremely different, her restrictive interests were extreme. She had difficulties communicating what she wanted and would display self-injurious behaviors. My cousin was extremely intelligent and did very well in school. My client, although she was very bright, had lower cognitive abilities. Moreover, my client had extreme sensory sensitivity. She did not like the feel of clothing and would often time change her clothes multiple times a day. She also liked to wear hats and to be wrapped up tight in blankets. She was also very sensitive to foods and would only eat certain foods. After seeing the differences between these two women with ASD, I wanted to know more about this neurological disability to not only strengthen myself but also to strengthen my career.

Summary of Literature

Individuals with autism are extremely individual. What motivates the engagement of one child may not be interesting to others. Children with ASD are likely to have comorbidity, or co-occurring non-ASD disorders along with their ASD (Stadnick et al. 2012). Roughly 40-50 percent of children with ASD, also have two or more psychiatric disorders. These may include ADHD, anxiety, depression, and obsessive-compulsive disorder to name a few (Thomas et al. 2015). This adds to the challenges that teachers face when finding and providing intervention for children with ASD. Moreover, there are varying ranges of autism ranging from low to high functioning. Gaining an understanding of the muli-dimensions of ASD can led to a further understanding of the relationship between ASD and other comorbid conditions or symptoms (Liew, Thevaraja, Hong, & Magiati, 2015). Finding further measures to engage students with autism with their social interactions and education environments is increasingly important. Many of the interventions help children with autism in one or more of the core areas of need; social skills, communication skills, and behavior supports. The intervention strategies that I found to be the most efficient and beneficial were the ones that could be tailored to the specific individual. I believe that this is extremely important because of how unique each individual with autism is.

What I found that makes antecedent interventions so impactful is that the antecedent itself can vary, making them more individual for a specific child. Examples of antecedents include, highly preferred activities, changing routines, pre-activities, offering choices, providing verbal or modeling prompts, altering the presentation of instruction, and altering the environments (Stichter et al. 2009 and Kuo & Placnick, 2015). While teaching, I have found that if I can predict the cause of a problem behavior, and I provide an antecedent intervention to counteract this behavior, I am more successful. For example, I have a student who is set off by the word test. Knowing that this word causes extreme meltdowns, I can alter the delivery of my

instruction and call assessments something other than the word test. Another example of antecedent interventions that I have used personally is adapting my classroom to meet the needs of my students. I have students with various sensory issues. Knowing what triggers their sensory overload, I am able to alter my classroom to fit the needs of each student. Some examples are turning off the lights, providing a student with headphones, playing music, and moving or removing furniture. It is important for teachers to individualize and tailor antecedent interventions to their specific students.

Antecedent based intervention can take the form of a child's highly prefered activities. Appealing to a child's individual interests and prefered activity is another intervention that I found to be most successful. When a child's prefered interest is used during an intervention, the student is more likely to "buy in" and participate in the intervention (Carnett et al. 2014). The token economy system had indeed decreased challenging behaviors, with the addition of preferred interest, they found that on-task behaviors were more frequent than before. I believe this was due to the fact that they appealed to his interest making him engaged in the intervention.

During my research, I found that the earlier the interventions are applied, the better equipped children with ASD are for their future. ASD is typically considered a lifelong disorder. Various reports according to Anderson, Liang, and Lord (2014) suggest that 1-16% of individuals with ASD improve enough by adolescence or adulthood, that they no longer meet the criteria for the diagnostic thresholds. Educational professionals and organizations have found that social development suffers as time moves forward and more professionals are seeking and advocating for early identification and interventions. It is believed that early interventions can serve as a preventive measure by providing the child with core skills that can enables them to access more complex skills and to have less difficulties later on (Vernon, 2014). Early social

interventions can develop joint attention, reciprocity, and mutuality, promoting better socialization and communication later on (Green et al. 2013). The delivery of early interventions can be challenging due to a shortage of services providers, location such as rural areas and families in poverty who have unstable homes and limited access to high-speed internet. Although, some families may have limited access to high-speed internet, the use of internet/technology could help families receive early identification and interventions who might not otherwise have been able to (Meadan et al. 2016). A key component to early intervention treatments are improving attentiveness and socially responsive behaviors. Children who have increased attention and social responses are more likely to have increased gains in vocabulary and/or their language development (Bopp, Mirenda & Zumbo, 2009).

Along with the importance of early identification and interventions, I learned that parents also play a pivotal role in the development of children with ASD. Anderson et al. stresses the importance of early family participation in interventions. Parents' involvement in the rehabilitation program is a crucial factor and contributes greatly to the efficacy of an intervention (D'Elia et al. 2014). It is extremely important for parents with children with ASD to learn about and strategies to help them manage ASD symptoms. Learning to manage their child's escalating behavior, how to track their child's challenging behaviors, and finding a variety of community supports is extremely important according to (Stadnick et al. 2012). It is increasingly important that families have access to interventions, especially families who did not have early identification and interventions or had limited success with early interventions (Meadan et al. 2016). Moreover, Meadan et al (2016) stated that delivery early interventions within the child's natural environment is recommended practice. I have found as a teacher that when I am working with a child's parents and we are providing similar interventions and are consistent in our

delivery the student is more successful. This offers children with more time to practice skills and interventions. Additionally, it gives them the opportunity to see that these skills should be generalized across contexts. I urge teachers to reach out to the families of their students. Keep them up to date and build relationships with them. The more parents and teachers work as a team the better off their children will be.

Limitations of the Research

A common limitation within all of the articles use for this research is that there is a need for a replication and further expansion to the current literature and studies. Many of the researchers found that their study had a small sample size. Additionally, it was expressed that further information is needed to make the results more conclusive. Moving forward within the field of research larger sample sizes are needed to really examine the impact that these strategies have on children with ASD. Another common limitation that I found while conducting my research was that the opinion of the student was rarely taken into consideration. The opinion of students provides teachers with a unique perspective as they are the individuals directly affected by the interventions themselves. Gaining student opinion can help teachers to further modify the intervention as needed.

Implications for Future Research and Professional Application

It is extremely important for further studies to examine strategies that specifically target one specific behavior, rather than, all stereotypic behaviors as a whole. Due to the spectrum of severity in children with ASD and how individualized it is, finding a strategy that works for the specific individual and their unique needs would be more beneficial than all of the strategies as a

whole. When choosing a specific intervention it is recommended that you choose one that will specifically help one of the following difficulties social, communication and behavior skills, which includes impaired social interactions, limited functional and social communication and restricted or repetitive behaviors. Some examples of the target behaviors or specific behaviors that could use further examination are: social skills and communication such as, reciprocal conversations, non-verbal communication, blurting, off-task behaviors, restrictive and repetitive behaviors such as, flapping and vocal mannerisms. “A focused program of research on intervention practices for repetitive behaviors in ASD seem to be lagging behind similar research efforts for other core features of the disorder” (Boyd, McDonough, Bodfish, 2012, p.1236). Identifying interventions that are more specific may make choosing one more impactful for teachers. Moreover, teachers need to consider the ability level of the student they are working with. As ASD varies in the range of severity, it is important that the intervention is appropriate for that students ability level. Some interventions, such as self-monitoring may not be the best intervention for students with lower cognitive abilities because it relays on the student to do a lot of the work. Lastly, I would encourage teachers never to give up. Choosing the right intervention may take time and you might not pick the most impactful or beneficial one on the first try. Be consistent and collect as much data as possible. If one intervention is not working after four to six weeks, implement a different one, but never give up.

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