The Effects of Interprofessional Therapy on Children with Autism

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Honors Independent Thesis Study

Autism Spectrum Disorder

Autism spectrum disorder (ASD) is a developmental disorder that affects communication and behavior. Often, the symptoms of ASD will emerge within the first two years of life (National Institute of Mental Health, [NIH], n.d.). The causes of ASD are still unknown. However, researchers have found evidence associated with several factors that may have a causal relationship. One of these being genetics, “more than 100 genes on different chromosomes may be involved in causing ASD, to different degrees” (National Institute of Child Health and Human Development, [NICDH], n.d., para. 2). Changes in an individual’s genes, known as mutations, may have a link to autism. However, individuals presenting with ASD do not all have the same mutation. Researchers suggest that genetic differences can be influenced by environmental factors, “an infection or contact with chemicals in the environment could cause autism in someone who is susceptible because of genetic mutations” (NICDH, n.d., para. 3). In addition, other biological factors are being researched in relation to the brain, metabolic functions, and the immune system (NICDH, n.d.).

Although a direct cause is unknown, the Diagnostic and Statistical Manual of Mental Disorders (DSM–5) outlines the criteria of ASD that need to be met in order to reach a diagnosis. The diagnostic criteria can be broken down into several categories. DSM-5 emphasizes that symptoms emerge during the early developmental period. They must also place a limitation across multiple areas of functioning, such as social or occupational (Centers for Disease Control and Prevention, [CDC], n.d.b.).

An individual with ASD may present with behavior that is characterized by “persistent deficits in social communication and social interaction across multiple contexts” (CDC, n.d.b.,

para. 1). Individuals with ASD may have difficulties interacting in social situations, maintaining conversations with others, and sharing their thoughts or emotions, otherwise known as social-emotional reciprocity. In addition, nonverbal behavior is a key component in communication. Individuals with ASD may have difficulty with eye contact and body gestures, as well as understanding the nonverbal communicative behaviors of others. These pragmatic deficits will present differently in each individual, however, these are crucial elements in diagnosis.

DSM-5 outlines "restricted, repetitive patterns of behavior, interests, or activities" (CDC, n.d.b., para. 2) as a second category for the diagnostic criteria of ASD. An individual with ASD may become distressed due to a change in normal patterns. This is described by "insistence on sameness, inflexible adherence to routines, or ritualized patterns of verbal or nonverbal behavior" (CDC, n.d.b., para. 2). It may also be difficult for an individual with ASD to refrain from repetitive behaviors. This can be evident in their speech, motor movements, or fixations on a particular object (CDC, n.d.b.). Interests may also manifest themselves into an obsession which may become "abnormal in intensity or focus" (CDC, n.d.b., para. 2). Lastly, an individual with ASD may be hypo- or hyper-sensitive to environmental factors such as light, smell, touch, etc. These restricted, repetitive behaviors and interests cause distress amongst individuals with autism, and must be considered in their diagnosis.

The prevalence of ASD has skyrocketed over the years, a visual depiction of this trend is offered in Figure 1 (https://www.ncbi.nlm.nih.gov/books/NBK332896/#ref_000443). In 2020, the CDC reported that one in 59 children were likely to be diagnosed with ASD, of those diagnosed, ASD is four times more likely to present in boys than girls. Prevalence is universal amongst different socioeconomic, racial, and ethnic groups (CDC, n.d.a.). Medical costs for ASD

are far more expensive than caring for an individual without ASD. On average, $10,709 is spent on medical care for an individual with ASD. In addition, providing services, such as behavioral intervention, costs an average of $40,000 - $60,000 per year (CDC, n.d.a.). There is a dire need to provide services to those diagnosed with ASD.

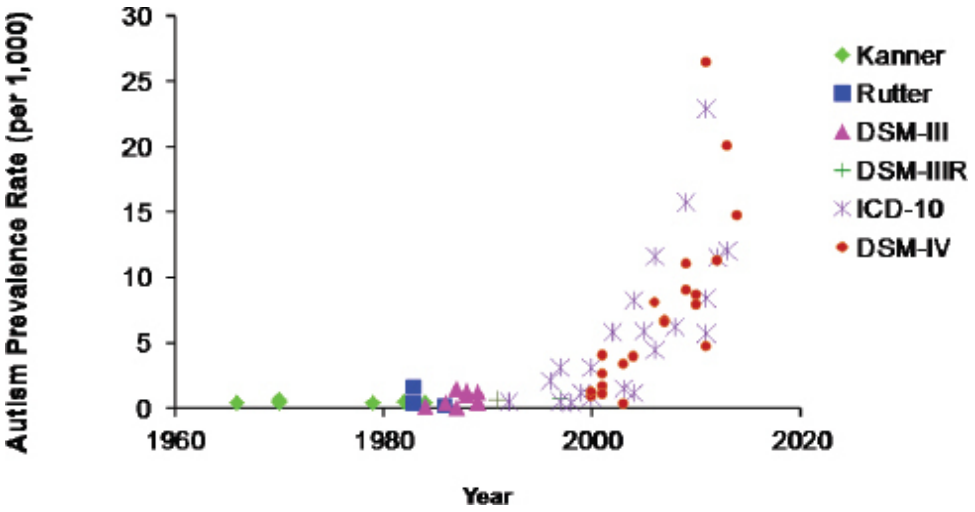

Figure 1

There are a variety of treatment options for individuals with autism. Early intervention is an option that will aid in the development of pragmatic and motor skills. By reaching a diagnosis between zero and 36 months, a child can have access to these services. Speech therapy, occupational therapy, and physical therapy are among the services that can be implemented during early intervention. As a child grows older, there are a variety of services and therapeutic techniques that can be used. One such service is Applied Behavioral Analysis (ABA). This is a therapeutic technique that promote positive behaviors and discourages negative behaviors (CDC, n.d.c). There are several approaches to ABA therapy. Discrete Trial Training is when a task is repeated in a series of trials. Positive reinforcements are used to acknowledge correct answers and positive behavior while wrong answers are ignored (CDC, n.d.c). Early Intensive Behavioral Intervention (EIBI) is for younger children with autism. This

approach is highly structured and used to promote positive behaviors and reduce unwanted behaviors (CDC, n.d.c).

Music Therapy and Autism

Another therapeutic technique that has emerged to treat ASD is music therapy. Music therapy is defined as, "clinical and evidence-based use of music interventions to accomplish individualized goals within a therapeutic relationship by a credentialed professional who has completed an approved music therapy program" (American Music Therapy Association, n.d.a., para. 1). Music therapy facilitates "social, communicative, motor/sensory, emotional, and academic/cognitive functioning" (American Music Therapy Association, n.d.b., p. 1) for individuals with ASD. In a music therapy setting, there is an integration of strategies that are commonly used in other therapeutic approaches to treat ASD. This makes music therapy a proactive therapeutic approach by using a variety of strategies to target individualistic goals (CDC, n.d.d.).

The literature advocates for the use of music therapy for children with autism. In 2018 a study was completed to assess the neurobehavioral outcomes of music therapy. In this study, 26 school age children were randomly selected to receive music therapy while 21 other children received non-music therapy. Before receiving treatment, children were assessed to measure their social communication and fronto-temporal brain connectivity. An improvisational approach was used in music therapy to target social communication, which was matched in the non-music therapy group through behavioral intervention. Results found that social communication and resting brain connectivity was greater for the music therapy group (Sharda, Tuerk, Chowdhury, Jamey, Foster, Custo-Blanch, 2018). This study is one of the first completed

which builds a foundation for the use of music therapy as a therapeutic approach for children with ASD.

Music therapy can also be applied in a group setting. The effects of music therapy in a group setting on social skills and joint attention have further supported this therapeutic approach. In a study completed by LaGasse (2014), seventeen children were randomly assigned to a music therapy group and a non-music social skills group. Over the course of five weeks, children received therapy for 50 minutes. Each group targeted social skills including eye gaze, joint attention, and communication. The *Social Responsiveness Scale* and *Autism Treatment Evaluation Checklist* were used to measure pre and post intervention scores of social behavior. Results found that the music therapy group demonstrated greater engagement with their peers. However, there was not a significant difference between groups in regard to initiation or response to communication. This study advocates for further research to build evidence and study the effects of music therapy being used in a group setting.

Speech Therapy and Autism

It is likely that an individual presenting with ASD will receive speech services. Speech therapy targets communication deficits. This includes, but is not limited to, “speech, language, social communication, cognitive-communication, and swallowing disorders” (ASHA, n.d.b., para. 1). A speech-language pathologist (SLP) will work with their client and other service providers to reach a diagnosis and treat an individual presenting with a communication disorder. Speech therapy can help improve an individual with ASD’s communicative abilities. Including, but not limited to, their spoken language, nonverbal behaviors, language, etc.

To measure the efficiency of speech therapy, a study was conducted by Tamanaha, Chiari and Perissinoto which measured the outcomes of young children presenting with ASD. In this study, the therapy group received direct and indirect therapeutic interventions provided by the SLP. While the control group received indirect intervention provided by the family with guidance from the SLP. Therapy focused on social interaction skills, verbal and nonverbal communication, and engagement in activities (Tamanaha et.al, 2015). Data analysis found that the therapy group performed better than the control group. However, researchers also advocate for the collaboration between the therapist and family to promote development, "involvement of the family in the treatment guarantees the objectives of therapy are amplified to the context of the home, providing greater synchronicity and possibilities of a communicational and social nature between the child and his or her interlocutors" (Tamanaha et.al, 2015, p. 556).

If an individual with ASD is nonverbal, a SLP can implement the use of alternative or augmentative communication systems(AAC). AAC "uses a variety of techniques and tools, including picture communication boards, line drawings, speech-generating devices (SGDs), tangible objects, manual signs, gestures, and finger spelling, to help the individual express thoughts, wants and needs, feelings, and ideas" (ASHA n.d.a., para. 2). When AAC is being implemented to supplement natural speech, it is augmentative. When AAC is introduced in replacement of speech, it is considered an alternative form of communication.

AAC can be aided or unaided. Unaided AAC does not require an external device for communication. Facial expressions, body gestures, and sign language can be used as an unaided alternative or augmentative form of communication. Aided AAC is when an external device or

tool is introduced for communication. Low tech aided AAC devices "are often very simple aids created by placing letters, words, phrases, pictures and/or symbols on a board or in a book, which may be accessed" (USSAAC, n.d., para. 4). High tech aided AAC, also known as speech-generating devices (SGDs), are electronic devices that allow for speech output (USSAAC, n.d.). The selection of AAC is based upon the communication needs of an individual.

A systematic review analyzed the efficiency of AAC intervention to improve speech production in children with ASD. After careful selection of the literature, nine single-subject experimental design and two group studies were analyzed (Schlosser & Wendt, 2008). Researchers found that in all studies, AAC facilitated an increase in speech production for individuals with ASD. Although participants demonstrated an increase in speech production, researchers argue that the improvements were modest (Schlosser & Wendt, 2008). To gain a greater understanding of the degree of improvement in speech production, further research is needed to measure speech imitation and object exploration skills (Schlosser & Wendt, 2008).

Interprofessionalism

Providing care for an individual can be approached in a variety of ways. Interprofessionalism is when "individuals from two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes, rather than working in silos" (Nester, 2016, p. 128). This approach to patient care instils a codependent relationship between service providers to effectively manage and treat the problem of the patient (Nester, 2016, p. 128). Interprofessionalism is also found in an educational setting where educators and service providers work together to meet the needs of their students. One model used for service delivery is co-teaching. This collaborative approach is when the general

education teacher and special education teacher and/or speech language pathologist (SLP) collaborate and deliver instruction in the same classroom for a group of students. In essence, the classroom teacher and SLP are responsible for co-planning, co-instructing, and co-assessing their students. In a school setting, inclusion support teams plan for, implement, and track the progress of inclusive programs (Sileo, 2019b).

Collaboration in a school setting can also be between service providers. A child with autism can reap these benefits in a variety of combinations:

> Music therapists' work in multi-disciplinary treatment may often include work with Speech-Language Pathologists (SLPs). Potentially the working relationship is mutually beneficial. Music therapists are trained to recognize communication goals already created by an SLP that would be appropriate for music therapy interventions and would lend themselves to adding musical elements to support (McCarthy, Geist, Zojwala, & Schock, 2008).

Music therapy and speech therapy, when used in isolation, promote the development of the areas of deficit outlined by DSM-5. When used in conjunction, these areas can be targeted in a naturalistic way, bringing out the strengths in clients.

One might ask how frequently do music therapists and speech therapists work collaboratively. In 2008, a questionnaire was sent out to Board Certified Music Therapists to survey their collaborative relationship with speech therapists. Results found that 73.6% of music therapists worked with a speech therapist in a variety of contexts and environments (McCarthy, Geist, Zojwala, & Schock, 2008). Music therapists also reported that reported 50.1% of their clients used a form of alternative augmentative communication (McCarthy, et al., 2008). Of those clients, 67.5% were diagnosed with ASD (McCarthy, et al., 2008). In that same study, using a scale of 1-10, music therapists ranked their understanding of AAC by a mean average of 3.9. The results of this research demonstrates a need for collaboration amongst

music therapists and speech language pathologists. It is the authors premise, that a mutually beneficial relationship can be established by placing a SLP on an interdisciplinary team with a music therapist.

Buday (1995) conducted a study to measure the effects of music to improve memory for children with autism who use simultaneous communication. Simultaneous communication occurs when sign language and speech are used simultaneously. In this study, ten children were taught 14 signs under two conditions. One group was taught with music and speech, (e.g., the experimenter sang along while practicing the signs taught) while the other was taught with rhythm and speech (e.g., the experimenter did not sing, she spoke the signed words while the song played). When comparing the memory of children in each condition, results found that correct imitation favored the music condition over the rhythm condition (Buday, 1995). The results of this study advocate for the music of music to promote memory when introducing a new form of communication, specifically, sign language.

Hayoung (2010) conducted a study to compare the effects of music and speech therapy when used in conjunction versus in isolation. In this study, the goal of treatment focused on the development of speech and language for children with ASD. Participants included 50 children with ASD ages three to five who were randomly assigned to either a music training group or a speech training group. Results indicate those who received music and speech training demonstrated an increase in verbal production (Hayoung, 2010). Participants who received either music or speech therapy also showed an increase in speech production (Hayoung, 2010). This study demonstrates the effect music can have on speech development by claiming, “Children with ASD perceive important linguistic information embedded in music stimuli

organized by principles of pattern perception, and produce the functional speech" (Hayoung, 2010, p. 2).

When making clinical decisions, it is important to use "best practice". Evidence-based practice (EBP), as defined by ASHA, is "an approach in which current, high-quality research evidence is integrated with practitioner expertise and client preferences and values into the process of making clinical decisions" (ASHA, n.d.c., para. 3). While music therapy and speech therapy are EBP's on their own, the effects of music and speech therapy used collaboratively continue to be studied.

Personal Implications

There is a shift in the perspective of working in a profession when a student takes their knowledge from the classroom and applies it in the field. When I started working at the Children's Readiness Center, I started this shift. This is one of ten schools included in Nassau BOCES that specializes in delivering special education services. The Children's Readiness Center (CRC) uses a collaborative team approach to provide services for their students. Applied behavioral analysis is one of the services used to teach and reinforce skills (Nassau BOCES, n.d.).

At CRC, each student has an individualized education program (IEP). An IEP team consists of the student's teachers, social workers, psychologists, occupational therapists, physical therapists, speech therapists, and administrative personnel. Throughout my experience, I was able to see the strengths and weaknesses of collaboration. Most importantly, I was able to see how collaboration directly impacted the education of the students.

Collaboration facilitated the development of each student over the course of the school year. Throughout the year, team meetings were held to discuss the goals and progress of

students. Each member of the team was able to provide others with developmental progress in their area of specialty. At other times, service providers would implement collaborative sessions. In one instance, the student's psychologist attended their occupational and speech therapy sessions to evaluate behaviors being demonstrated. This student's team was then able to come together and create proactive strategies to help work through the issue being encountered.

The students in my classroom were primarily nonverbal. To allow for effective communication, all of the students had a Picture Exchange Communication System (PECS), a system consisting of picture symbols to depict a variety of messages. Some students used high tech PECS, on an iPad, while others used PECS on a Velcro system. This allowed for communication between the staff and students. However, I questioned the ways in which social communication was encouraged.

During different activities, I found that students exhibited greater use of pragmatic skills. One of those being music class. Students attended music every day for 30 minutes. During these 30 minutes, joint attention was demonstrated more frequently than in the classroom. There was also an increase in expressive language as students frequently requested an instrument, or for it to be their turn next. It was during this time that I started to ask myself about the ways in which music could be used to help children with autism.

An individual with autism may demonstrate "insistence on sameness, inflexible adherence to routines, or ritualized patterns of verbal or nonverbal behavior" (CDC, n.d.b., para. 2). Routine was of importance to the students, as a result there was minimal flexibility to change our daily routine. I found that music helped establish routine in the classroom. The

special education teacher used music to indicate when we would transition into the next work station or designated activity. The students in our class acknowledged this and remained calm when it came time to clean up and move onto something else. In speech therapy, the SLP used a song that was in the beginning and end of each session with her students. When asked, she reported that this song helped students become focused, recognizing that it is time for work, and gave them a motive to work towards in therapy.

DSM-5 highlights "persistent deficits in social communication and social interaction across multiple contexts," including, but not limited to, social-emotional reciprocity (CDC, n.d.b., para. 1). One of the students often used music as a form of self-expression. He would go up to the students and classroom staff to interact with his peers. It is unlikely he would do so during other times of the day. During dance-along songs, this student often would take the hand of a girl in our class and dance with her, swinging their arms and hips side to side. Music gave him an outlet to socially interact.

Music Therapy in Schools

The Individuals with Disabilities Education Act (IDEA) is a federal law which mandates "free appropriate public education to eligible children with disabilities throughout the nation and ensures special education and related services to those children" (The United States Department of Education, [ED], n.d.a., para. 1). The process for identifying whether an individual can be considered eligible for services provided by IDEA includes many steps. First, difficulties in the classroom must be expressed by the student, and noticed by the classroom teacher, related service personnel or caregiver. This is known as the pre-referral process. In a school setting, there is a team with whom the classroom teacher consults and who will assist

them in meeting the needs of their student. Over time, if the difficulties are not being addressed by these services, the student will then be considered for services provided under IDEA (Sileo, 2019a).

An Individualized Education Program (IEP) will be developed if the student has a disability which adversely affects their education performance. The purpose of an IEP is to create

> an opportunity for teachers, parents, school administrators, related services personnel, and students (when appropriate) to work together to improve educational results for children with disabilities. The IEP is the cornerstone of a quality education for each child with a disability (ED, n.d.b.).

The devolvement of an IEP requires collaboration amongst service providers. An IEP must include a sum of information. The current performance of the student must be included and then based on their present level of education performance, annual goals will then be created. These annual goals will have related short-term objectives. IEP goals address the individual needs of the student, including, but not limited to, academic, social, behavioral, and physical needs. Additional services (i.e., speech, occupational therapy, physical therapy) being provided will also be included in the IEP. The IEP must also describe and monitor the progress of the goals being set (ED, n.d.b.).

The United States Legislature, the writers of IDEA published a document which answered questions on individualized education programs (IEPS), evaluations, and reevaluations. Music therapy not being amongst the related services explicitly outlined was amongst the questions addressed,

> If a child's IEP Team determines that an artistic or cultural service such as music therapy is an appropriate related service for the child with a disability, that related service must be included in the child's IEP under the statement of special education, related services, and supplementary aids and services to be provided to the child or on behalf of the child (ED, 2010).

With the support of their IEP team students will be considered for music therapy as an additional service provided by IDEA.

Research advocates for the use of music therapy as an approach to intervention for children with autism. Furthermore, it advocates for music therapy to be used in conjunction with speech therapy. The effects of this collaborative approach to intervention has been found to promote the development of the deficits outlined by DSM-5 in children with autism. Through IDEA, music therapists can become a part of the IEP team for a child with autism.

The inclusion of music therapists on an IEP team can be beneficial to different stakeholders. A statistic previously mentioned reported that 67.5% of music therapist's clients are individuals with ASD that use an AAC device. In that same study, music therapists reported they have little understanding of how to use an AAC device. If music therapists were included on the IEP team, this could help build their understanding. It also offers an opportunity for collaboration amongst different service providers.

I believe that students will benefit most by including a music therapist on their IEP team. Through experience, I observed how the sole presence of music in the classroom benefited the students. Through collaboration, children can receive music and speech therapy in conjunction with one another through IDEA. I hope one day I can apply the findings of my research to a student of my own; to introduce a music therapist to their IEP team and use a collaborative approach to therapy.

Works Cited

American Music Therapy Association. (n.d.a). Retrieved from https://www.musictherapy.org/

American Music Therapy Association. (n.d.b). *FACT SHEET: Music Therapy and Autism Spectrum Disorder (ASD)*, Retrieved from https://www.musictherapy.org/assets/1/7/Fact_Sheet_ASD_and_MT__8-26-15.pdf

American Speech-Language Hearing Association. (n.d.a). Augmentative and Alternative Communication (AAC). Retrieved from https://www.asha.org/Practice-Portal/Professional-Issues/Augmentative-and-Alternative-Communication/

American Speech-Language Hearing Association. (n.d.b). Speech-Language Pathologists. Retrieved from https://www.asha.org/Students/Speech-Language-Pathologists/

American Speech-Language Hearing Association. (n.d.c). Evidence-Based Practice in Communication Disorders. Retrieved from https://www.asha.org/policy/PS2005-00221/

Centers for Disease Control and Prevention, (n.d.a). *Data & Statistics on Autism Spectrum Disorder,* Retrieved March 4, 2020 from https://www.cdc.gov/ncbddd/autism/data.html

Centers for Disease Control and Prevention, (n.d.b). *Diagnostic Criteria,* Retrieved March 4, 2020 from https://www.cdc.gov/ncbddd/autism/hcp-dsm.html

Centers for Disease Control and Prevention, (n.d.c). *Treatment for Autism Spectrum Disorder,* Retrieved March 4, 2020 from https://www.cdc.gov/ncbddd/autism/treatment.html

Centers for Disease Control and Prevention, (n.d.d). *Treatment and Intervention Services for Autism Spectrum Disorder,* May 8, 2020 from https://www.cdc.gov/ncbddd/autism/treatment.html

Evelyn M. Buday, M.A., The Effects of Signed and Spoken Words Taught with Music on Sign and Speech Imitation by Children with Autism, *Journal of Music Therapy*, Volume 32, Issue 3, Fall 1995, Pages 189–202, https://doi.org/10.1093/jmt/32.3.189

Hayoung, L. A. (2010, March 1). Effect of "Developmental Speech and Language Training Through Music" on Speech Production in Children with Autism Spectrum Disorders. Retrieved from https://academic.oup.com/jmt/article-abstract/47/1/2/900839

Iacono, T., Trembath, D., & Erickson, S. (2016). The role of augmentative and alternative communication for children with autism: Current status and future trends. *Neuropsychiatric Disease and Treatment*, 12, 2349-2361. doi:http://dx.doi.org.libdatabase.newpaltz.edu/10.2147/NDT.S95967

Ketcherside, M., Rhodes, D., Powelson, S., Cox, C., & Parker, J. (2017). Translating interprofessional theory to interprofessional practice. *Journal of Professional Nursing*, 33(5), 370–377. https://doi.org/10.1016/j.profnurs.2017.03.002

LaGasse, A. B. (2014). Effects of a music therapy group intervention on enhancing social skills in children with autism. Journal of Music Therapy, 51(3), 250-75. Retrieved from https://libdatabase.newpaltz.edu/login?url=https://search-proquest-com.libdatabase.newpaltz.edu/docview/1627710689?accountid=12761

McCarthy, J,. Geist, K., Zojwala, R., & Schock, M. (2008). A survey of music therapists' work with speech-language pathologists and experiences with augmentative and alternative communication. *Journal of Music Therapy, 45*(4), 405-26. Retrieved from https://libdatabase.newpaltz.edu/login?url=https://search-proquest-com.libdatabase.newpaltz.edu/docview/223556737?accountid=12761

Nassau BOCES. (n.d.). *Children's Readiness Center.* Retrieved from https://www.nassauboces.org/page/1019

National Institute of Child Health and Human Development, (n.d.). *What causes autism?*, Retrieved March 4, 2020, from https://www.nichd.nih.gov/health/topics/autism/conditioninfo/causes

National Institute of Mental Health, (n.d.). *Autism Spectrum Disorder*, Retrieved March 4, 2020, from https://www.nimh.nih.gov/health/topics/autism-spectrum-disorders-asd/index.shtml

Nester, J. (2016). The Importance of Interprofessional Practice and Education in the Era of Accountable Care. *North Carolina Medical Journal,* 128-132. doi:https://doi.org/10.18043/ncm.77.2.128

Sharda, M., Tuerk, C., Chowdhury, R., Jamey, K., Foster, N., Custo-Blanch, M., . . . Hyde, K. (2018). Music improves social communication and auditory–motor connectivity in children with autism. Translational Psychiatry, 8, 1-13. doi:http://dx.doi.org.libdatabase.newpaltz.edu/10.1038/s41398-018-0287-3

Schlosser, R. W., & Wendt, O. (2008). Effects of augmentative and alternative communication intervention on speech production in children with autism: A systematic review. *American Journal of Speech - Language Pathology, 17*(3), 212-30. Retrieved from https://libdatabase.newpaltz.edu/login?url=https://search-proquest-com.libdatabase.newpaltz.edu/docview/204265745?accountid=12761

Sileo, Jane. (2019a.). *Success for All Learners: Response to Intervention Multi-tiered Systems of*

Support [Lecture Notes]. Retrieved from https://bbnewpaltz.sln.suny.edu/bbcswebdav/pid-2742915-dt-content-rid-9269026_2/xid-9269026_2

Sileo, Jane. (2019b.). *The Three C's of Teaching: Collaboration, Consultation, and Co-teaching* [Lecture Notes]. Retrieved from https://bbnewpaltz.sln.suny.edu/bbcswebdav/pid-2742916-dt-content-rid-9440464_2/xid-9440464_2

Tamanaha, A. C., Chiari, B. M., & Perissinoto, J. (2015). The Efficacy of the Speech and Language Therapy in Autism Spectrum Disorder. *Revista CEFAC*, *17*(2), 552–558.

The United States Department of Education. (n.d.a). *About Idea.* Retrieved from https://sites.ed.gov/idea/about-idea/#IDEA-Purpose

The United States Department of Education. (n.d.b). *A Guide to the Individualized Education Program.* Retrieved from https://www2.ed.gov/parents/needs/speced/iepguide/index.html

The United States Department of Education. (2010). *Questions and Answers On Individualized Education Programs (IEPS), Evaluations, And Reevaluations.* Retrieved from https://www2.ed.gov/policy/speced/guid/idea/iep-qa-2010.pdf

The United States Society for Augmentative and Alternative Communication. (n.d.). *AAC Devices.* Retrieved from https://ussaac.org/aac-info/aac-devices/