Including Siblings of Autism in Music:

Combined Music Groups and Sibling Support Groups

An inclusive classroom takes into consideration the needs of everyone involved. Students with special education needs, their typically developing peers, the parents, the special education team, specials teachers, and general education teachers all have their say as to how each of the students' needs are met. But there is a group of students in the classroom whose relationship to the special education process and what it means to them is typically not a consideration for teachers. Siblings of individuals with disabilities are in every classroom and they are likely to be quite aware of the differences between themselves, their siblings, and their peers. The emotions that run through a family with a disabled child apply just as much to if not more to the siblings. While parents certainly are invested in the life of their child with a disability, the sibling relationship is the longest relationship in life. The sibling relationship can have an intense dynamic when one or more of the children is disabled.

Autism is a disability that affects communication, therefore, the relationship between siblings might be strained as a result. As music teachers, we may interact with one or more siblings within the family of an autistic individual. Therefore, we can act as a support structure by providing opportunities either in school or as an extracurricular program that support the needs of the whole family.

The goal of the following research and recommendations is to help improve sibling relationship outcomes. The sibling relationship is life long, but the allistic siblings also might end up as caretakers for their autistic siblings; it is vital that educators help to support these relationships. The program recommendation described in this document is a group music

program that functions both as a sibling support group and a music intervention for the autistic sibling. Research suggests that music is a beneficial intervention for communication and emotional regulation which can be good for both siblings. The inclusion setting also works to help allistic siblings develop empathy and communication skills that will help improve the sibling relationship. The following article is a literature review regarding the need for support for allistic siblings, the benefits of music for autistic individuals, the benefits of group instruction in music, and a detailed recommendation for a sibling music program.

Typically Developing Siblings of Autism: Research, Perspectives, and Life Outcomes

While the diagnosis of autism spectrum disorder (ASD) has a great impact on the individual diagnosed, the behaviors presented affect the people and environment around the individual with ASD. Parents and siblings often are the people most invested in the life of a person with autism. As a result, they may struggle to cope with the diagnosis and their own mental health. These issues are especially true of siblings, who may struggle to understand their sibling and the significance of the diagnosis. Additionally, typically developing siblings may have concerns regarding their sibling with autism but are left out of decisions regarding therapies and caretaking. And yet, parents rely on typically developing children for peer interaction and childcare in their teen years and beyond. Eventually, siblings might transition to full time providers, depending on the needs of their sibling, as when their parents age or pass away. While parents might believe their typically developing children are indifferent, typically developing siblings often are more aware of the situation than they are given credit for. However, many of these feelings go unaddressed and may lead the family to have negative relationships with one another. Allistic siblings also may feel depression, anxiety, or grief regarding their sibling with autism. This review of literature seeks to consider research of perspectives and life outcomes for

siblings of individuals with autism. After taking into consideration the information presented, further research recommendations and implications for educators will be discussed.

Perspectives

Before getting into the main content of this article, it is important to recognize the issue of ableism regarding the topic of siblings of individuals with autism. Recently, discussion in the social media realm suggests that studying and supporting siblings of autism is ableist, due to the fact they are not the individual with the disability. While the impact of autism is greatest on the individual diagnosed, it is a disservice to ignore the people surrounding and supporting individuals with autism. Addressing the family and getting services for the entire group is essential to having the needs of the individual with autism met. Relationships of any kind require those involved to adjust to one another as they are affected by one another. It is reasonable to assume that people with and surrounding the individual with autism need additional support due to several characteristics that autism presents, including communication differences, maladaptive behaviors, and other needs. The point of this research is not to ignore or devalue the individuals with autism, but instead to increase the value placed on the family unit, particularly the siblings.

For the purposes of this article, it is fitting to define terms that will be used throughout. It is worthwhile to acknowledge the voices of the autistic community, who agree that identity first language is most appropriate when referring to individuals with autism, hereby referred to as *autistic* individuals. Therefore, the article below will be written in identity first language to honor the community at the heart of this research. There are some phrases to refer to the autistic individual and their sibling that are used in research which is quoted below that are no longer

socially permissible. Though the vocabulary of said research is outdated, the content of the research is relevant, hence its inclusion in the present article.

Additionally, there are several terms used to describe the sibling of an autistic person. In this article the term *allistic* meaning *person without autism*, will be used interchangeably with the phrase, *sibling without autism* or *sibling of autism.* The phrase, "typically developing" as seen in Zucker et al. (2021) and Jones et al. (2020) is used when referencing those specific articles. In both articles, TD [typically developing] refers to the sibling who does not have an autism diagnosis. Families were not excluded from the studies if the TD sibling had another disability. Without the context of either article, typically developing implies that the sibling had no challenges, which is virtually unheard of in allistic siblings, especially considering mental health disorders and the many diagnoses that fall under the broad autism spectrum phenotype (Pisula and Ziegart-Sadowska, 2015). Allistic siblings of autistic individuals may present with less pronounced, yet noticeable, social, cognitive, and personality characteristics associated with ASD. Current research suggests that it is not autism that is inherited but rather, "pervasive cognitive deficits present both in individuals with autism and their immediate family" (Pisula and Ziegart-Sadowska, 2015, p 13219) which also can be referred to as the *Broad Autism Phenotype* or BAP. Essentially, traits are passed down from parents to children and sometimes the traits cause enough deficits in several areas which qualifies individuals for an autism diagnosis. Allistic siblings who are not diagnosed with autism might meet the diagnostic requirements for other developmental or mental health conditions such as anxiety, depression, obsessive-compulsive disorder, ADHD, ADD, auditory processing disorder, dyslexia, dyscalculia, sensory processing disorder, and many other related conditions. Siblings diagnosed with one or more related disorders does not devalue the sibling relationship, especially regarding

the autistic sibling. Therefore, the term *typically developing* does not seem fitting, as that is not always the case of allistic siblings.

A final note regarding the sibling relationship. This article does not assume that relationships amongst siblings when one has autism is automatically negative. It might be quite the opposite where siblings are close knit. This is the case for our primary author and her younger brother who is autistic. The point is to highlight that this special relationship doesn't always get acknowledged by schools, and certainly students with autism do not always get the same opportunity to participate in music programs. It is even less likely that sibling groups get the change to partake in a school sponsored group or social event together when one of them is either too young to attend the same school or attends a special day school instead of the local public schools. Therefore, the authors recommend a combined peer group to give siblings the opportunity to do something creative together.

Sibling's Mental Health and Coping Strategies

Allistic siblings experience the grief cycle regarding the diagnosis just like their parents do. Allistic siblings may show changes in demeanor because of their grief process. Changes in demeanor for any child can be identified as anxiety, depression, or even academic struggles. The difference between a parent and a sibling going through the grief cycle is that siblings may begin the grief cycle only when they mature and can recognize differences between themselves and their autistic sibling. The grief cycle is not a linear process. Siblings and their parents could be feeling any mixture of feelings including denial, anger, bargaining, depression, or acceptance.

There are several ways that an allistic sibling might cope with diagnosis. These coping mechanisms may present themselves at any time. Coping mechanisms, just like the grief cycle,

may or may not dissipate over time. Additionally, an allistic sibling might fit into more than one category of coping style. There are many types, but we are going to focus on three typical coping mechanisms.

The first is the "parentified child" (Burak et al., 2001, chapter 4, p.56) which is a sibling who has taken on a role as an additional parent. These siblings often feel as though they have lost out on their childhood. The next coping type is the "withdrawn child" (p. 56) who puts up a wall between themselves and their autistic sibling. That wall also might be between themselves and parents or any authority. Another coping style is the "superachiever" (p.56). This allistic sibling attempts to compensate for the loss of a neurotypical existence for their autistic sibling. Allistic siblings have above average expectations for themselves. They also might seek esteem within school by participating in honors societies and being a leader.

These various coping strategies are not inherently good or bad. There are negative and positive effects that these styles of coping have on the life and mental health of an allistic sibling. For example, the superachiever could have a superb grade point average, however, they may be sacrificing their mental and physical wellbeing to fulfill the demands of their high expectations. A withdrawn child might seem well adjusted or indifferent to the situation, but their disposition of silence makes it hard for others to read their mood and in turn can cause more tension in their relationships. A parentified child might be helpful to their family and their sibling but perhaps loses the childlike part of themselves, which overall can be harmful to their development. Coping styles may be a contributing factor to increased reports of mental illness amongst allistic siblings. Additional research suggests that behavior problems in the sibling with ASD, "negatively impacts TD sibling adjustment, including self-reported depression and anxiety" (Jones et al., 2020, p. 1469). Ultimately, the effect of having an autistic sibling can be vast. The

allistic siblings' ability to cope and adjust is, "important to the lifelong sibling's relationship and affects the entire family system" (Jones et al., 2020, p.1469).

Neurotypical and Neurodiverse Sibling Relationships

Studies by Zucker et al. (2021), Lee et al. (2019), Shivers et al (2019), Sibeoni et al. (2019), reinforce prior studies by Orsmond et al. (2009) as well as Rao and Beidel, (2009) on quality of relationships between an autistic sibling and an allistic sibling has suggested that the nature of the relationship may serve as a risk factor for both individuals. According to Zucker et al., "Often, the TD [typically-developing] – ASD sibling relationship is described as poorer than that for TD siblings of a child with another disability or no disability, and characterized by decreased warmth and affection, less involvement, and more avoidance" (2021, p. 1138). Risk factors for a negative relationship can include both siblings' genders and their age differences, as well as the severity of autism symptoms and availability of support and services. These risk factors are reported across available literature which extends throughout all age ranges and across international borders.

Having an autistic sibling, "presents challenges and needs for TD siblings that are distinct from the challenges of having a sibling with a different disability" (Zucker et al. 2021, p.1138). This is not to disregard the experiences of allistic individuals who have siblings with other disabilities. Rather, it is to highlight that autism is a specific challenge as it affects the entire person and their ability to interact with the world around them. It is so all consuming that autistic individuals prefer to be called autistic, as opposed to *a person with autism*, since they cannot remove autism from their identity. Autism is not just a characteristic, like having brown eyes, blonde hair, or how tall an individual is. It is a hue that contributes to the final color of an

individual's personality. Autism is inseparable from the individual. Thereby it also plays a part in all an autistic individual's relationships. With individuals who have more intense symptoms, such as maladaptive behaviors such as self-injury, or limited communication skills, family function may be impaired. Such behavior might be attributed to the "increased levels of stress ... in families with children with autism" (Rao & Beidel, 2009, p. 446).

The relationship between neurodiverse siblings is a concern for educators and social workers for several reasons. The home life, safety, and support of students can inform behavior in the classroom. Sibling relationships can affect home-life. For instance, autistic individuals who require, "greater caregiving demands" (Lee et al., 2019, p.232) may, by nature of such caregiving, receive more attention at home. Especially at a younger age, this needed attention may come off as favoritism to the allistic sibling(s). Such experiences may result in negative feelings towards their sibling. In adulthood, siblings often become the caretaker of their sibling with autism. To foster a positive outcome in adult life, as well as help the children to adjust to one another, it is in the best interest of educators and social workers to encourage more positive interaction. Presumably, "the more positive feelings siblings have towards one another, the more likely they are to engage in reciprocal interactions; the more negative feelings, the less likely" (Zucker et al. 2022, p 1139). Therefore, improvement of the relationship between siblings is imperative to improving the family relationships and the mental health of all involved.

Intervention Strategies

Standard practice for supporting a sibling of autism is the support group. Formats of said support group can differ in many ways including size, age range, the provider or host, and the prescribed curriculum. Jones et al. (2020) and Zucker et al. (2022) conducted their research simultaneously with the same control and experiment groups. Research by Jones et al. suggested

that participation support groups designed to engage typically developing siblings in, “discussing feelings, coping strategies, and problem-solving skills” (Jones et al., 2020, p.1469) and developing personal and behavior related supports for allistic siblings provided better mental health outcomes than an “attention-only” support group. “Attention-only” referred to a group in which allistic siblings are gathered but are not prompted to discuss anything regarding autism.

The directed support group showed, “improvements in their perception of support, but not behavior problems, self-concept, or knowledge about special needs” (Jones et al., 2020. p. 1469). They suggest that siblings need additional directed interaction with people who have different needs, as well as assistance in creating a positive self-concept, and behavior interventions where necessary. The findings also imply that the severity of autism symptoms presented by the autistic sibling affected the mental health of the allistic sibling.

The Zucker et al. 2022 study focused on the relationship outcomes from participation in a support group. Findings suggested that by learning about autism and how to help their sibling through difficult behavior or sensory experiences improved the quality of the sibling’s relationship. Allistic siblings also learned to manage their own feelings and coping skills associated with the stressors of having an autistic sibling. Learning these management skills can help to improve the relationship they have with their sibling. Since this is a lifelong relationship, it is important that both the autistic and allistic siblings build respect, trust, and friendship, which participation in a sibling group can support.

Recommendations and Implications

The incidence of autism is at an all-time high of 1 in 44 children, according to the CDC (citation needed); so, it is reasonable that those with autism are likely to have siblings who are

affected by the diagnosis. Therefore, it is relevant to consider ways schools can help in terms of adjustment. One way for districts to create school wide peer support groups. This way, students can find peers who deal with similar situations in their own lives. As discussed earlier, there are certain coping mechanisms and guilt associated with having a sibling with autism. Expressing those feelings to a friend or school psychologist might help, but those feelings simply cannot be fully understood by someone who is not experiencing them personally. Having a support group of peers who either are the same age or have siblings with similar needs could be life changing. Schools could create programs that focus on family units, including both the sibling with autism and the allistic sibling, by developing communication and bonding activities to improve their relationship or self-image regarding their relationship. Additionally, researchers could focus on the family unit and the effect of interventions. There could be benefits or resulting issues due to the skills that interventionists work on that either translate positively or negatively to the household.

Autism, Music, and Communication: A Review of Literature

Why Have Music Education for Individuals With ASD

Autism is a spectrum disorder characterized by, “difficulties in social interaction and nonverbal communication, along with restricted and sometimes repetitive patterns of behavior and interests” (Polischuk, 2022, p. 15). Autism presents itself in many ways. Some students have verbal communication abilities. The other end of that spectrum are students who are nonverbal or non-conversational. Some use communication devices or picture boards. Others use sign language to communicate. All these students can benefit from music education. In fact, researchers Clements-Crotes & Yip suggests that to some degree there is “innate musical ability

in children with ASD" (Clements-Crotes & Yip, 2017. p. 34). Teachers and therapists can use this innate affinity for music to reach autistic students. The value of music can be proven to parents and administrators due to its, "general appeal, intrinsic value, and ability to modify behavior" (Sharda et al., 2018, p.7).

Music Teacher Preparedness and Teaching Students with Disabilities

There is research regarding music teachers' perceived preparedness and their teaching of teaching autistic students. In a literature review published in 2007, Jellison and Taylor reviewed research concerning teacher attitudes towards students with disabilities. Interestingly, they found that none of the studies measured, "attitudes of parents, siblings; professionals other than teachers, or adults with disabilities" (Jellison & Taylor, 2007, p. 11), indicating that available research does not consider the context in which people with disabilities exist. Researchers were concerned only with the feelings of teachers or peers, not with the experiences people with disabilities or their families. In general, Jellison and Taylor findings indicated that music teachers want to be inclusive but felt unequipped to teach those with disabilities. There may have been other broad issues with inclusive music education that were completely missed by not asking the students, parents, or other professionals for input. The review also showed that neurotypical peers preferred inclusive teaching and their education was not hindered by having students with disabilities in class with them (Jellison & Taylor, 2007).

A more recent study by VanWeelden and Whipple looked at research concerning music educators' perceived effectiveness of inclusion. Their 2014 study found that music educators felt more prepared to be inclusive in the music classroom than music educators who were surveyed 20 years prior (VanWeelden & Whipple, 2014). Meaning these teachers received training and

had expertise as to *how* to diversify their lessons so that students with disabilities can access them. However, they are not given the opportunity to practically apply their knowledge. This may be due to scheduling conflicts, parents or special education teachers not wanting their children to take certain specials, or perhaps because students are not made aware of music as a curricular option.

Students with disabilities are not always afforded the opportunity to take music classes, especially in the secondary setting. It is possible that students, parents, or special educators are not made aware of music as a curricular option or that they prefer students with disabilities only focus on required academics. Therefore, the goal of this portion of the review of literature is to provide advocacy material for inclusion of people with autism in music. Perhaps by presenting the benefits of music education, the choice of music as a therapy or curricular course will be embraced by administrators, child study teams, special education teachers, parents, or even students with autism. This review of literature also identifies benefits music participation can have on communication skills of those on the autism spectrum.

Music Enhances Verbal Communication Skills

In research to improve social communication and auditory- motor connection in autistic children, Sharda et al. (2018) compared two groups of children with autism. One group received a music therapy intervention, and the other group received a typical communication intervention. Several baseline tests were done, including brain scans and pre-intervention evaluations, to determine any changes within the children. The research suggested that 8 to 12 weeks of musical interventions altered intrinsic brain connectivity which additionally correlated to parent-reported outcomes regarding social communication.

In another study Salomon-Gimmon and Elefant (2019) explored the connection between improvisational music therapy and development of vocal communication in autistic children. Their findings concluded that, “the quality of vocal communication was seen, in most cases, to develop with the progression of the [music] therapy course” (Saloman-Gimmon & Elefant, 2019, p. 184). They also saw a decrease in vocalizations that had little to no communicative value, such as self-stimulatory vocalizations in the students who received music-based intervention. This indicated that music intervention influences the number of communication attempts and the quality of the communication.

Music Enhances Non-Verbal Communication Skills

Music therapy can reach students who do not vocally communicate and present them with a way to connect with those around them. A 1994 study completed by Cindy Lu Edgerton of Michigan State University investigated the broad effects of music therapy on communication behaviors of autistic children. This study found that for autistic children, “both the mute and the verbal children were the same as far as meaningful communication was concerned” (Edgerton, 1994, p. 57) and that the level of communication between the two groups was similar post intervention. This suggested that therapists can use music to assist both groups. Both verbal and nonverbal communication can be improved. Edgerton’s study suggested that as “musical vocal behavior gains so does nonmusical speech production” (Edgerton, 1994, p. 57).

These findings were supported by researchers Salomon-Gimmon and Elefant (2019), as mentioned above. In this study and in many others (Edgerton, 1999; Bakan et al., 2008), music served as initial communication. Participation in music also provided self-regulatory skills that allow people with autism to think clearly and communicate effectively. Baken and colleagues

suggested that this regulation is due to heartbeats, breathing, and other regulatory systems aligning with the rhythm of the music (Baken et al., 2008).

Music Enhances Emotional Regulation and Communication

Communication of emotion and regulation of emotions can be challenging for autistic individuals. Self-regulation requires individuals to identify what they feel, the cause, and to communicate a solution to remedy the issue. Therefore, it is important to discuss emotional identification as part of communication, which can be taught with music. In a study by Kopec, Hiller, and Frye (2014) findings suggested that people with autism generally rate positive valence of music the same as neurotypical peers yet, "showed significantly lower ratings of negative emotions in both the felt and perceived categories" (Kopec et al.et, 2014, p. 440). Their study provides insight into the processing of music and emotion within the mind of someone who is autistic. Since autistic individuals identified positive emotions to the same degree of accuracy as allistic peers, educators can focus therapeutic efforts on negative emotion identification. Teachers and therapists can use this information to structure emotion learning through music and thereby help students identify negative feelings by association with musical aspects. Music teachers could spend time identifying structures within music that indicate negative emotions and equate them to feelings. Once students can perceive those musical differences, it may be easier for them to understand emotional differences.

Music Enhances Receptive Communication Skills

Maintained attention also is a difficult task for autistic individuals. Attention has much to do with communication, especially considering that communication skills such as body

language, receptive and expressive communication, and eye contact are associated with attention. Researchers Kim, Wigram, and Gold (2008) studied the effects of improvisational music therapy on the joint attention behaviors of those who are autistic. This research team suggested that therapists and educators can use improvisation to sustain the attention of autistic students because with improvisation students are allowed to explore activities, sounds, or instruments that they prefer, rather than having to participate in a prescribed music intervention. Participants worked on turn taking and eye contact through the music therapy intervention. The overall results were, "in favor of music therapy over the play condition with toys in improving joint attention behaviors of the participants" (Kim, et al, 2008, p. 1763). Their findings suggested that basic communication skills and behaviors associated with attentiveness can be influenced by music interactions due to the communicative nature of improvision.

Practical Application

The literature mentioned above provides several reasons to use music as an intervention on communication skills of autistic individuals. Teachers and therapists could use research findings as advocacy material for inclusion of those who are autistic in music. As indicated by Clements-Crotes and Yip (2017), people with autism tend to have some innate musical ability, which therapists and educators can use to their advantage. Leaning into this musical trait can bridge the gap in communication by starting with musical tasks where the students are immediately successful and then building into additional communicative skills. Music can be used as the initial form of communication and then used concurrently with verbal and nonverbal communication. Those skills then can be applied into non-musical environments. This works

because music participation helps develop neuropathways and strengthen already existing communicative connections, as suggested by Sharda et al. (2008).

Saloman-Gimmon and Elefant's 2019 study suggested that music intervention can influence the number of communication attempts and the quality of the communication of those on the autism spectrum. In consideration of their research, music educators can employ musical instruments and rhythmic tasks teachers can practice skills needed for communication. Teachers and therapists can use whistles to prompt proper breath support for speaking. Additionally, they can use drums as a kinesthetic aid to break up words to the syllabic level. By practicing in this way autistic students can learn words and phrases that can then be transferred into their daily life. Giving autistic individuals the confidence to make communication attempts is the gateway to further meaningful communication and socialization.

By bridging the gap in communication skills, music teachers and therapists can work on other social-emotional needs with people who are autistic. Music participation can become a therapeutic outlet as well as emotional support. As suggested by Kopec et al. (2014) music interventionists can help autistic individuals to better identify and comprehend emotions. By teaching emotional understanding through music, teachers and therapists are giving autistic people the tools to help navigate difficult emotions and providing the opportunity of emotional independence. Once an individual is confident in their ability to self-regulate and advocate for their emotional or sensory needs, they will have the cognitive space to focus on other things such as school, work, speech, recreation or other broader goals like independence, life-skills, friendships, or relationships. Essentially, participation in music education has the potential to provide autistic individuals with the regulatory skills that will open them up to other life opportunities.

Music participation, especially musical improvisation, gives those who are autistic an opportunity to express and communicate, which they might not be able to do otherwise. Music itself can become a communication tool. Interventionists can form a connection by following the lead of autistic individuals and their musical desires. Once they establish foundational communication, teachers or therapists can model verbalizations, eye contact, or body language that the students can mimic and bring into other social opportunities. Music is a way to create that base level connectedness between the student, peers, and teacher.

Bakan et al. suggested a few ways to begin musical interaction with those on the spectrum. Among the most important interactions are, "recognizing each child as inherently good and whole…let the children direct the course and flow of play, without judgement of its musical value or quality… accept and nurture the children's expression and creativity" (Baken et al., 2008, p. 10). Their goal is to give autistic students the freedom to "say something" by providing a communal music experience; speech is not needed to have a musical experience. Baken et al. concluded their report by suggesting there is always a connection to be made. At times educators or therapists must investigate the sound and silence of these children to, "hear what is being said and strike up a conversation" (2008, p.24). These students can communicate; educators and therapists must decode the child's attempts to communicate to initiate music and communication learning. Then, build off that communication into verbal and nonverbal communication skills

Recommendations for Autism & Music Research

Further research might consider performance-based music classes, inclusivity, and the effect of music education in those settings on autistic students. There is very little research concerning secondary music and autism, and certainly less regarding performance-oriented

classes. Additionally, research could focus on the social-emotional impact of music education on autistic individuals and their peers. Research could extend into the peer's perception and feelings regarding inclusion in the arts or core subjects. Other research might focus on allistic siblings of autistic individuals, their likelihood to use the arts as a creative outlet, and their perceptions of inclusion.

Recommended Music Program:

The above research provides support for the creation of sibling support groups and the benefits of music for autistic individuals. Music educators can combine the needs of both groups and provide an opportunity for support and music education by creating music ensembles for autistic individuals and their siblings. Of course, individuals with autism who do not have siblings could be included, as music education can still be beneficial. Allistic music students who do not have siblings with autism can participate as peer leaders to help the autistic individuals or to help allistic siblings who do not have any prior music experience. This opportunity can be used as volunteer hours, or they can be recruited through honors societies like Tri-M or the National Honor Society.

So that there is some maturity amongst all involved, it might be best to start participation in the group at the age of 11+. This way any instruments used are less likely to be damaged, though when working with a disabled population behaviors can sometimes be unpredictable. Expect the instruments to need replacing a little more frequently than one would anticipate for a typical general music course. It might be beneficial to not use instruments for the first class. Instead, introductions or ice-breaker music games can be played. Then, the teacher might have

the students dance or learn greeting songs, typical dance tunes, circle games, partner dances, or line dances. The first class should be inviting and fun.

The group's structure can be divided to make the most of their time together. It makes the most sense that this group would be an extracurricular group, since autistic individuals may not attend the same school as their sibling, or siblings might be far enough apart in age that they do not attend the same school, or at least the same grade levels. It should be noted that special education professionals also should play a role in the creation and implementation of this support group opportunity.

The structure is based on the research conducted by Zucker et al. and Jones et al., both conducted in 2020, but published at separate times. We have two suggested formats for implementing this type of intervention. The first would be to host the intervention for two hours, once per week. The first hour is a sibling support group for the allistic siblings. At the same time siblings with autism receive therapies and other interventions. If the focus is music, autistic siblings could have their own music class during this time to get the group accustomed to playing instruments and following along. This is where parents or peer volunteers could be involved to guide the autistic individuals through the music instruction. The second hour could then be the combined sibling groups in one music ensemble. Allistic siblings can either partner with their autistic sibling or partner with another individual who is autistic. It seems preferable that allistic participants work with their autistic siblings, however it may prove beneficial to work with someone else so they can learn to identify behaviors of autism. It could help the allistic siblings gain better understanding of how autism affects a person by seeing those behaviors in someone who is not familiar.

The second format would be one hour twice per week. The first day of the week could be just an allistic sibling support group. The second meeting would be the full sibling group music ensemble. The benefit of this structure is that there is opportunity for independent reflection and practice between the support group time and the time for the full sibling music group. Another possible benefit is that the support group could potentially happen during the school day if the program is associated with a certain school or district. This could result in greater participation on the part of allistic siblings since they do not need transportation. This school-day schedule also could be an advantage as more of the child study team is likely to be present during the school day.

The type of ensemble or music group is at the discretion of the music educator. Considering the varying needs that must be met for the program to be successful, a world percussion ensemble is recommended.

World Percussion for Individuals with Autism and Their Siblings.

Having established specific benefits of involvement in music courses for autistic individuals, it is imperative to establish how to effectively teach autistic individuals. This largely depends on the physical and academic needs of these individuals.

Environment. The first suggestion is to structure the environment for success. When deciding on what type of music program to host, an educator should consider the accessibility of the environment and the classroom. In this case, a world percussion group is the most flexible, yet musical, experience for all involved. The book, "World Music Drumming: A Cross – Cultural Curriculum" by Will Schmid is a suitable place to start for anyone who has not taught a world percussion ensemble before.

A world percussion ensemble should have at least a class set of tubanos, a few sets of bongos, a set of congas, and a plethora of shakers, guiros, cabasa or shakere, agogos, cowbells, maracas, tambourines, and rhythm sticks. The tubanos or djembes should be the focus of the group initially, only adding in auxiliary instruments when the group is ready. The benefit of having the large drums is that they make sound with little effort from the performer. The drum is played with close contact, but can be further away if necessary, and the vibrations are easily felt by the individual playing them. Playing these drums is a physical and sensory experience that may make playing them an easy and beneficial experience for autistic individuals. Though, tubanos or djembes might be too loud for individuals who are hypersensitive to sound. The use of ear protection is encouraged for all involved, but especially for those who might struggle with the sound of the drums.

The teacher should set up the classroom without the drums first, so they may provide instructions on how to hold the drums as well as hit the drums. Then, sibling pairs, or groups, can each get an instrument to share. It is possible to still include people with autism who do not have siblings. They can participate with parents or peer leaders. Either way, avoid putting the drums out before students arrive. Otherwise, the instruments can become a distraction, make it difficult to communicate, or may make some individuals uncomfortable if they cannot sit where they prefer due to instrument placement amongst the seating.

Large drums also make it simpler for demonstration and peer involvement. For example, peer modeling can be done on the same drum either side by side, face to face, or in circumstances when it is required, hand over hand, as depicted in figure 1.

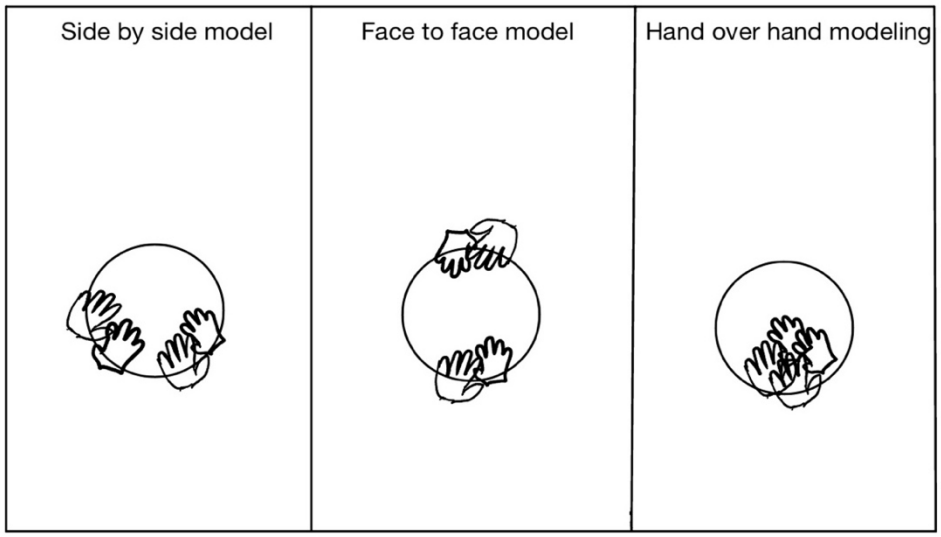


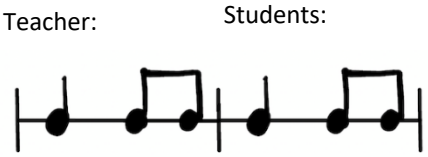
Figure 1.Peer modeling on one drum

It may take a few sessions for the autistic individuals to take to drumming. If they prefer a small instrument or need a softer instrument, try switching them to a maraca or shaker. If there is concern that the small instruments may be thrown or damaged, consider movement like clapping, patting, or stomping and begin with feeling beat. Students may move to instruments when they are comfortable with the sounds or when their peer buddy/sibling feels ready to guide the instrument experience. Some students may be more comfortable using simple props such as bouncing balls, manipulating scarves, or even pointing to or choosing between laminated pictures of instruments instead of playing the actual instrument.

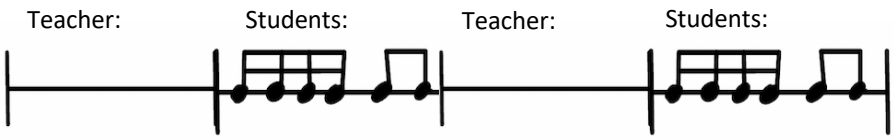
Content. As for content, call and response games are ideal to invite participation. Teacher focused call and response should take most of the first lesson. Keep excepts short so that the students can remember and repeat or respond accordingly. At the start patterns should be no

longer than four beats. The recommended rhythm is two beats. There are several formats of call and response drumming to try that could take the entire first sessions, such as:

1. Teacher and students, all play beat together
    a. Suggestion: try playing the beat along to a familiar pop tune
2. Teacher call / Students repeat.
    a. Teacher plays a rhythm.
    b. Group repeats the same rhythm.



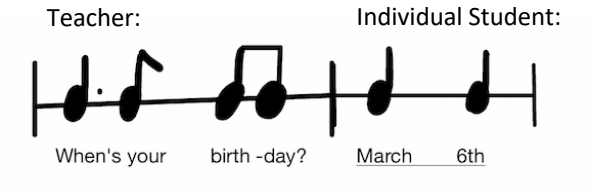
3. Teacher improvises a pattern (call) / Students play a predetermined pattern in response



4. Teacher question / individual*[1]
    a. Teacher plays a "question" by playing the rhythm of their spoken question. Student answers. Teacher goes through the entire group asking each student.
        i. Example questions: When's your birthday?

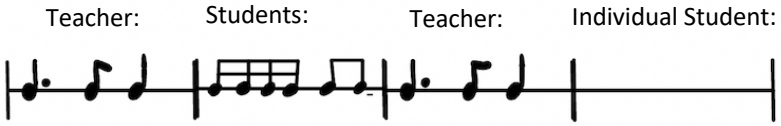
[1] *When the term "individual" followed by an asterisk (*) is used, it may refer to an individual allistic sibling or an individual autistic sibling. However, in the even that an autistic sibling requires more direct modeling, such as side by side, face to face, or hand over have modeling, the "individual" is the pair or group playing on the one instrument.

ii. Example Answer: March 6th



iii. Another question: What's your favorite? (Establish category before playing the exercise. Categories could be anything, animal, food, color, weather, etc. The rhythm should match their verbal answer.)

5. Teacher call/ group answer / teacher call / individual* answer
    a. Teacher Rhythm
    b. Group rhythm
    c. Teacher Rhythm
    d. Individual* improvises a rhythm.

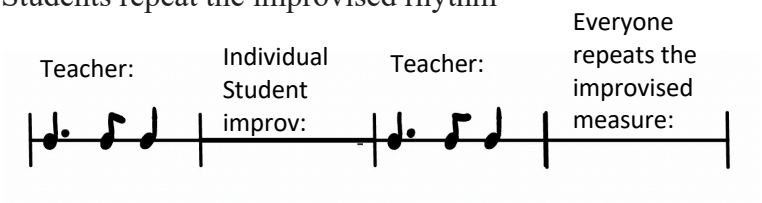


i. To establish the order of this routine, go through the routine with the individuals playing the same thing as the group rhythm. It eliminates the stress of having to improvise the first time.

6. Teacher call / individual* student answer/ teacher call / group answer (repeat individual answer)
    a. Teacher Plays the designated call and chooses a student to respond (with eye contact)
    b. When an individual improvises short response

c. Teacher plays designated call again.

d. Students repeat the improvised rhythm



7. The improvisation can either be planned or chosen as the music is happening. The order can be predetermined by the seating (move in a circle) or volunteering and writing a list for the order. The music interventionist could also verbally or nonverbally cue each performer.

Students can be challenged by adding in more auxiliary instruments, like shakers, guiros, agogos, or cowbell. If the group advances quickly, try switching roles and having a student play the teacher parts or add in more steps with the call, responses, and improvisatory section. Make up new rhythms that last two beats, four beats, or even longer to make each session interesting while not moving the group too quickly through the information. Spend as much time as possible repeating and reiterating the steps so that students do not get lost.

Mobility accommodations. If there are students who have limited mobility, peer or sibling interaction is essential to their success in the music group. There are several ways to accomplish playing with limited mobility. If the student has hand or arm mobility, the peer could hold a hand drum where the student can easily tap on the head of the drum. The non-disabled peer could even move the disabled sibling's hand or arm to the drum to help them play. If there is more limited mobility, but the student has some grip strength, the individual with a disability could hold the drum and their sibling could play. This could be done in their hands, or by propping the drum or instrument in their lap. If the individual with a disability is entirely immobile, the peer could hold the drum on or near their arms or legs and gently tap on the head of the drum to play. The point

of this is that the individual with a disability is still feeling and hearing the musical interactions. They are as important a member of the ensemble as any other and therefore they should have their participation adapted as needed.

Verbal accommodations. It should also be noted that when a teacher is looking for a verbal response, the students are encouraged to vocalize, but if they don't that is okay! The primary interaction should be the music. The goal is interaction through music, not in addition to music.

The Support Group

The support group for allistic siblings should happen in conjunction with the percussion group. This way, skills and information learned in the support group can be applied within a controlled setting. The sibling support groups should be designed to foster discussions of psychoeducation about autism, amongst other typical discussions regarding personal mental health. Then, these skills can be applied at the combined percussion group and at home. The benefit of having the percussion group immediately after the sibling support group is that the environment will have professionals on hand to guide implementation of communication skills. This is especially important for siblings who have strained relationships. Focused discussions about ASD, emotions, coping strategies, and problem solving while establishing a support network will help allistic siblings gain an understanding of their sibling with autism while they also work through their own emotions (Zucker et al., 2022).

By working with and around people who have autism other than their sibling, allistic siblings can learn to identify behaviors that are typical of autism. They also can learn how other

families interact and cope with negative behavior patterns. New perspectives might help to inform how they view autism and more importantly how they view their autistic sibling.

Conclusion

The sibling relationship is typically the longest relationship that humans experience. Having an autistic sibling can be intense, but it depends on the needs of the autistic individual. Because autism affects behavior of an individual it is fair to focus on family intervention strategies since behavior is one of the key components of building and maintaining relationships. It is on the part of everyone within a family to learn and cooperate to create healthy relationships. It is unfair to ask an autistic person to drastically change behavior. Changing behavior isn't always a possibility and sometimes there will be a lack of understanding as to why certain behaviors are desirable over others. Therefore, the relationship quality between siblings lies heavily on the shoulders of the allistic sibling. It is imperative that educators do what they can to support all individuals in this situation.

It should be a concern of schools to help create positive neurodiverse sibling relationships because allistic siblings might become caretakers of their siblings in the future. It is important that both students leave the school system with a positive support structure in place. These relationships should be one of the most intimate and closest relationships that siblings develop. It is possible to guide the relationship positively with support for individuals and shared support opportunities. It could be of benefit to schools to create a full family support group focusing on bringing together siblings. By organizing shared experiences, siblings can establish communication skills which can improve the mental health of allistic siblings and help the autistic sibling learn skills to advocate for themselves.

Music educators have a unique chance within the education system to truly affect change within sibling relationships. Music teachers often see students through the entirety of a student's time within a school building and may teach many or all siblings within a family. As a result, music teachers should take this opportunity to make positive change amongst sibling relationships.

The neurodiverse sibling relationship is one that can be strained but should be a focus for music educators due to several factors. As our research review indicates, autistic individuals have communication struggles that can be worked on through music education. In addition, allistic siblings are likely to have mental health challenges that can also be aided through music. The sibling relationship is one that music educators can focus on because they have a unique perspective of the individuals involved.

Though there are logistical benefits to the use of music as sibling intervention strategy, music itself can be the part of the therapeutic interventions. Music is a "uniquely effective tool for treating neurological impairment because it recruits nearly every region of the brain" (Thompson & Schlaug, 2015, p. 34). Because of this, music is an effective therapy that is accessible to most everyone. Music is a physical, emotional, and engaging outlet. Music enhances social atmospheres and helps students to synchronize and synthesis new information. Music is persuasive and personal. Everyone can benefit from music training since it can be highly personalized to fit any persons needs and capability. Using music as an educational or therapeutic tool has many possibilities for those who are autistic. Communication benefits are not the only benefits. According to Clements-Cortes and Yip 2017, music practice can benefit the overall scope of an individual, including "physical, emotional, cognitive, and sensory development" (Clements-Cortes & Yip, 2017, p.37). As said by Hansen and Bernstorf (2014),

“Music reaches children at different levels, [and] thus it can promote a range of skills such as social and communicative interactions, motor skills, and self-expression”. In that way, music has the potential to be universally helpful. Through collaboration with school support personnel and families, music educators can provide amazing opportunities for everyone. This is especially true for autistic individuals as well as their siblings.

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