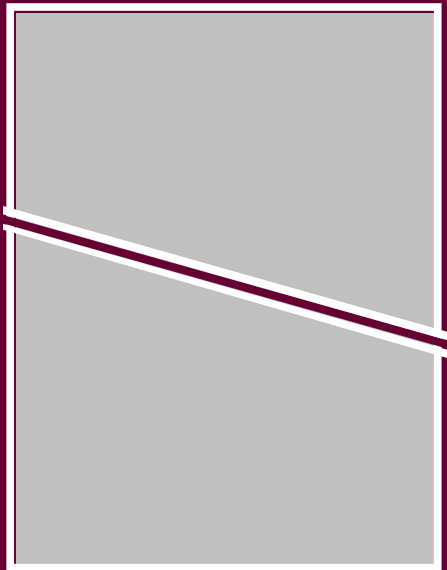


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## ***In the Classroom***

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### ***The Language of Music: Working with Children on the Autism Spectrum***

**Autism impairs the capacity for interaction and communication, to greater or lesser degrees. But where mere words prove unavailing or insufficient, music can still succeed.**

STEPHEN M. SHORE

STEPHEN M. SHORE is the author of *Beyond the Wall: Personal Experiences with Autism and Asperger Syndrome*. He holds a master's degree in music education and is completing a doctorate in special education, with a focus on autism. Diagnosed as severely autistic and beyond the reach of professional interventions, he was the beneficiary of intensive music-based and other therapies by his parent; he brings those personal experiences, as well as his academic training, to his work with individuals on the autism spectrum around the world. He also teaches special education at Lesley University.

### **ZACK**

Zack was five-and-a-half when I first met him. His diagnosis was Pervasive Development Disorder—Not Otherwise Specified (PDD-NOS), along with apraxia<sup>1</sup> of speech. Many professionals consider autism to be a spectrum disorder ranging from severe to light. At the severe end is what we generally think of as autism: a withdrawn, nonverbal child sitting in a corner, rocking, hand-flapping and possibly exhibiting self-abusive behaviors. A lack of awareness of the relationship of the body to the environment makes it difficult to perceive distant objects or discern where their body ends and the environment begins (Miller & Eller-Miller, 1989, 2000). This is why many children with autism may not respond to a verbal request but suddenly become aware of your existence if you touch them. Children diagnosed with PDD-NOS are slightly less affected by these problems, may have more understanding of language (receptive language ability) and perhaps a few words they can speak (expressive language ability).

Speech will probably never be Zack's primary mode of expressive communication. He is nonverbal, except for about five words. Individuals with autism have difficulty with expressive verbal communication due to the neural setup (or perhaps mis-setup) in their brain, and for Zack, the pathways from the brain to the muscles for speech are also miswired. His father, I believe, is also somewhere on the autistic spectrum. Initially resistant to this possibility, Zack's father now recognizes his own autistic tendencies and believes that he was on the autism spectrum as a child, if not still on it at the lighter end.

My first meeting with Zack was uneventful. I chose a set of tomtoms and a cymbal, while deciding against a snare drum because it creates too many complex high-pitched sounds. (I was wary about the cymbal for the same reason but took the risk.) I played the piano while his mother attempted to get him to beat time on a drum using drum sticks. While on task, which was about 10 percent of the time, Zack beat the

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<sup>1</sup> Apraxia refers to the loss or impairment of the ability to execute complex coordinated movements without impairment of the muscles or senses. In other words, the mechanics of speaking are present but the neural connections needed to do so are not.

drums in a musically sensitive way. What he did with the cymbals was fascinating: instead of bashing them with the sticks and making a horrendous sound, Zack gently scraped the drum stick across the cymbal to make a soft sound. When I played the piano, Zack would remove my hands from the keys and play the first three white keys on the left over and over. “OK Zack” I thought, “you play the piano and I’ll play the drums.” When I played the drums, he would also remove my hands from it. Zack’s mother explained that he did not like anyone else to play an instrument, not just me. Frequent requests by Zack to go to the bathroom appeared to be an escape mechanism.

The three following meetings went similarly, with little meaningful communication between Zack and me. We each did our own things, side by side, in the same room. Such parallel actions are a common trait of autistic play. Zack seemed to have no idea of what I wanted him to do.

Frustrated, I talked with his mother. The parents of a child spend more time with him or her than any therapist or doctor can. They know their child’s preferences, dislikes, strengths, and weaknesses. Zack’s mother came up with the idea of using an activity board and a time board. An activity board contains a Velcro strip, to which one can attach pictures of various activities; an additional square with the words “do this” is placed below the picture of the initial task. A time board is fashioned in a similar way, but with the numbers 1, 2, and 3, and a sign for “all done.”

The tasks were broken down into tiny steps: picking up the stick, tapping the drum four times, stopping, and putting the stick down. Suddenly Zack demonstrated his ability to understand and do as I had asked. Mirroring what I did, he picked up the stick, tapped the drum four times, and put the stick down. I communicated with Zack! The activity and time boards visually communicated to him exactly what was expected, and the tasks were broken down into discrete portions that he could understand.

Zack was very happy during that session, giving me hugs and generally showing great pleasure. There were many fewer trips to the bathroom. Like all of us, when Zack understood what was expected and was able to do it, he overflowed with infectious happiness.

## SAM

Sam is a 12-year old boy with Asperger Syndrome. People with High Functioning Autism (HFA) and Asperger Syndrome (AS) are considered to be at the lighter end of the autism spectrum, are often very verbal, and commonly average to above average IQs. For example, instead of being nonverbal, the communication challenge may present itself in carrying on monologues about their favorite interests and not perceiving the nonverbal cues, such as the listener looking at the watch, that it is time to stop. However, no matter where the individual with autism lies, there are still challenges in communication and social interaction, restricted interests, and repetitive motions (APA, 2000) as well as a degree of sensory integration dysfunction (Smith-Myles, Cook, Miller, Rinner, & Robbins, 2000; Huebner & Dunn, 2001).

Sam had recently been rejected from a private school specializing in Asperger Syndrome for being “too low functioning.” His mother, a professional musician, knew Sam had much musical talent but had yet to find anyone who could teach him how to read music. At our first meeting, she also expressed concerns about the difficulties Sam would begin to face as he entered adolescence.

As with all the children I work with, I requested that a parent (or significant caretaker) join in the lessons. Not only are parents the experts on their child. The lessons give them another way to relate to their child, and they can do additional work with the child between lessons. Occasionally, though, the presence of the parent distracts the child from learning. In these cases I start by working only with the child and then gradually involve the parent.

In my first lesson with Sam I made gridlines on a notebook-sized piece of paper, resulting in a 7-row by 10-column matrix.


After placing a few A's on the first line, B's on the second, down to G on the last line, I asked Sam if he would like to continue. Eager to do so, he quickly took the paper and started filling in the blank spaces with letters. Many people on the autism spectrum have a strong need for order and completion. A piece of paper that looked like this...

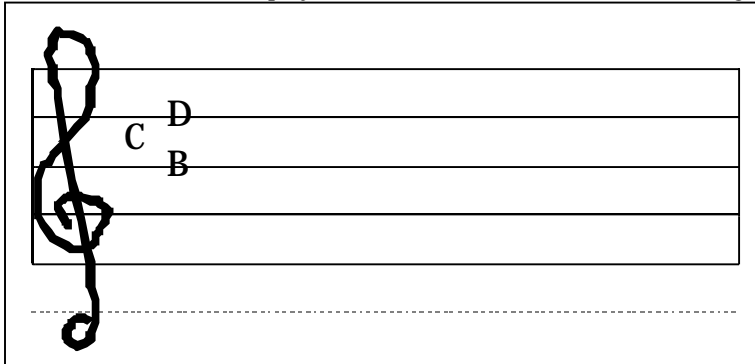
A	A								
	B		B						
C					C				
				D					
	F								
		G							

... soon looked like...

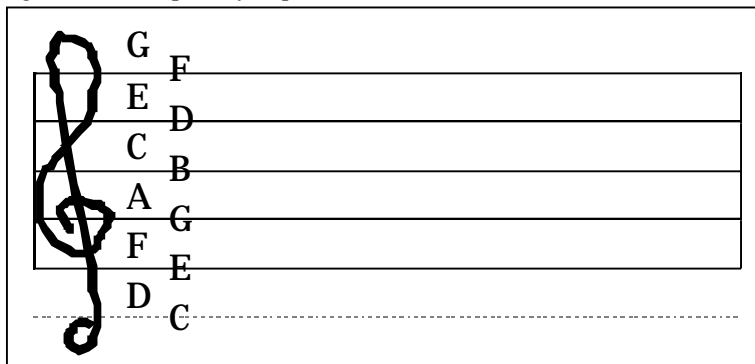
A	A	A	A	A	A	A	A	A	A
B	B	B	B	B	B	B	B	B	B
C	C	C	C	C	C	C	C	C	C
D	D	D	D	D	D	D	D	D	D
E	E	E	E	E	E	E	E	E	E
F	F	F	F	F	F	F	F	F	F
G	G	G	G	G	G	G	G	G	G

Sam's need for order and completion enabled him to complete an assigned task, and in the process work on fine-motor control and penmanship. Arranging his environment to take advantage of this characteristic worked much better than treating this need for order and completion as aberrant behavior.

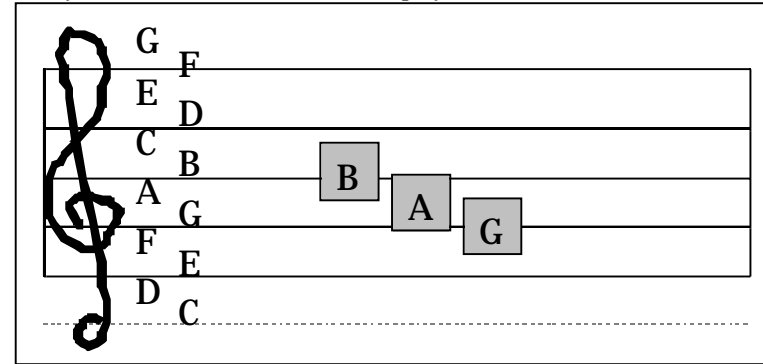
Later on during the lesson, I started cutting the individual squares from the piece of paper and then passed the job over to an eager Sam. While he worked on this project, I drew a treble clef and staff on a larger



piece of paper along with a lighter dashed line for middle C. Then I drew a B on the middle line and asked Sam if he knew where C went. He responded with an anxiety-filled no! I drew the letter in the space above the B. A query about where D belonged elicited the same response. I now asked if Sam could just guess where the letter D might go. Now he answered correctly, and I had him writing the letters in the right places on the staff. With the letters placements marked out Sam was now able to place those lettered squares he previously cut out onto the staff in the right locations upon my request.



Soon we were spelling words such as “bag, dad, eat, and ace,” followed by simple songs such as “Twinkle, twinkle little star,” and “Mary had a little lamb” which I then played on a musical recorder.



Shortly thereafter we ran out of space on that sheet of paper and it was time to make another sheet of staff paper. Sam’s anxiety rose dramatically at my request that he draw the staff lines and the treble clef this time. However, his reluctance melted away just as quickly when I offered him assistance in drawing.

During the second lesson we progressed to writing the note letters on yellow Post-It notes and sticking them on both the staff paper and the piano keyboard. As Sam began to play “Hot Cross Buns,” at first with the yellow stickies bearing note names and then without, his mother was so overwhelmed with emotions that she broke down in tears. Sam looked over at her and with just a bit of nudging from me gave his mother a big hug. Who said that those with Asperger syndrome are emotionless?

It appeared that Sam was very anxious about failing at tasks. When he understood that he was in a safe environment without penalties for making mistakes, he did very well. I suspect that Sam’s behavioral challenges in school were a result of not feeling safe academically. During my first lesson with Sam much of the conversation centered on his concern for what an F grade meant and that it was not good to get such a grade. But the next time I saw Sam, there was no mention of grades.

Sometimes Sam would immediately reject a request with “no!” only to commence the task a few seconds later. Perhaps his “no!” was in

reality a bid for more processing time. Other than easily being overwhelmed with anxiety over failing, Sam seems to enjoy the continuing sessions and is a pleasure to work with.

By placing the notes on this staff in this manner Sam learned how to read music and apply it to a piano keyboard. The difference between this approach and traditional music education is that the primary goal of decoding musical notation was incidental to the activity from Sam's point of view. In other words, a more traditional way to teach music would involve spending a lot of time sitting in a chair, explaining and showing Sam the names for the lines of the staff, notes, and their relationships. Using a kinesthetic approach engaged Sam in the creation of his own learning materials, which served to reinforce the physical activities of putting the notes in the right place on the staff, followed by placing them on the piano keyboard. For people on the autism spectrum, it seems important for the physical aspect of the body to be in order before attending to the emotional and cognitive aspects. Additionally, by assisting in the creation of his own resources Sam probably felt ownership of the learning materials and the activity. I was able to work with him not only on music, but on communication, taking turns, and fine-motor control.

When the time comes for Sam to get his first piano book, he will have a good background in the musical concepts presented in the text, having already ascended the initial learning curve involved in reading, understanding, and converting notation to music on the piano keyboard. He also now has a skill that will help him to interact with others. Perhaps the school that rejected Sam was too low functioning for him.

## OTHER CASES

For some children music is *the* means of communication and developing a relationship. For others, less severely affected, music can be the medium for enhancing verbal communication. One child I worked with, while having no functional communication, had a storehouse of holiday and children's songs in her head, as I found out one day when I didn't play the last note of a song. Not only did she say the correct word, she sang it at the right pitch. With limited verbal children of this nature,

it is often possible to get them to supply the missing words to a song they know by suddenly stopping the song and accompaniment at points of maximal tension. These places of "maximal tension"<sup>2</sup> (Miller & Eller-Miller, 1989, p. 65, 93) occur during the last few notes of a cadence. An example would be to sing "twinkle, twinkle, little..." and wait for the child to fill in the missing word "star."

Another person I worked with used facilitated communication (FC). FC depends on another person providing arm or wrist support to someone typing on a keyboard or touching pictures on a communication board. This does raise difficulties in separating the intentions of the person being helped from those of the helper. But be that as it may, when I supported this person's arm to play a piano keyboard, he was able to sing, indeed sing well, old songs he must have heard as a child. This seemed to be the only way that he could sing these songs.

With one particular child with Asperger syndrome, all of my communications are sung. If I mistakenly lapse into a typical conversational tone, he loses focus, engages in self-stimulatory activities, and drifts away. The music helps to organize verbal communication skills that already exist. And by holding the child's interest, I can turn the sessions into fairly typical music lessons.

During the first session with this child, I created a system<sup>3</sup> where the child asked me for pieces of paper that had the letter names of the notes. Once this series of events was internalized, I expanded the routine by having him place the notes on the appropriate place on the music staff. This system was expanded further by having him draw a circle on the staff where the note belonged and write in the letter of the note. Then he would give the note to his mother. Fine motor problems were present,

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<sup>2</sup> The concept of "maximal tension" comes from Kurt Lewin's *A Dynamic Theory of Personality; Selected Papers*. Translated by Donald K. Adams, McGraw Hill: New York, 1935. This concept has been integrated in Miller's Cognitive-Developmental Systems Theory.

<sup>3</sup> According to Arnold Miller, a system is defined as a person's behavior stemming from their relationship to a person, object or event. Furthermore, this behavior tends to be repetitive in nature and continues without external support from another person. Finally, upon disruption, there is an increased need to for completion or resolution of intent.

and drawing a circle first helped confine where the note should go. Asking him on which space or line the note should go on (as opposed to a generic "Where does the note go?") also helped. The system was expanded yet again by having the child guess which note I had in my hand. After guessing correctly he then had to write the note on the staff before receiving the piece of paper. We then took turns with his holding the notes, with either his mother or me having to guess which note he had in his hand. When it came time for me to write the note in the staff I would ask him in a singing voice on which line or space it went.

Other parts of the session were spent in imitative drumming, and later, work on the recorder. I made certain that we took turns in leading the imitation. This was a good activity to do when he seemed to be fading away and losing focus. His mother quickly caught on to our activities; she participated very well in the session, and we all had a pleasurable experience. The child has a lot of musical ability and using the Miller Method (Miller & Eller-Miller, 1989; Miller, 2000), he was taught to play the recorder and later the piano, which he now plays well.

With the child that already plays an instrument, I will introduce myself into his world by sharing the instrument via turn taking. When I play the instrument the child accompanies me on percussion. Then we will switch roles. The turns start out short and gradually lengthen to where I work on other issues such as verbal skills, writing, and motor control as needed. To establish equality between us, I must also take my turns doing anything I require of him or her. I too, for example, need to ask for permission to use the keyboard if the child is already using it.

Music can also be used to organize behavior when working with a group of children, by having them walk or otherwise move to the rhythm of the music. Often I will have them march in a circle as I play music on a keyboard. With the help of aides, I will have the students stop when I stop playing and continue when I resume. When the children understand when to stop and start, I will turn this into a game similar to "musical chairs" where the person who stops last is "out" and has to sit down. Realizing that it is unreasonable to expect these children to sit still with their hands folded while the game plays itself out, I give them a shaker -- but not before they ask for it and identify the piece of fruit the shaker represents, if appropriate.

The worst possible thing, which I have too often seen, is children sitting in a circle around a large instrument with nothing to do while they wait to take a turn on the instrument. Typically, the children fall into a disorganized mass of self-stimulatory and challenging behaviors. This situation, caused by failing to engage all the children in a classroom, is entirely preventable.

For the child at the high-functioning end of the autism spectrum, the school band may or provide an important avenue for development. The trombone requires a good kinesthetic sense of where one's arm is in order to place the trombone slide in the right place for a note to be in tune. Other instruments, except for the stringed ones, require less ear-to-arm coordination as the pitches are obtained with the assistance of keys or valves. The French horn, however, demands much coordination of the embouchure.<sup>4</sup> Percussion may be another avenue. If complex rhythms present a challenge, the bass drum may be a good choice as the musical patterns are relatively simple. Additionally, the bass drum with its low and relatively simple sound waves is often easier for a person with sound sensitivities to handle. Finally, being at the rear of a potentially cacophonous musical ensemble may be of help, as it is less noisy there.

Location in the ensemble may have to take sensory sensitivities into account. If a student with autism insists on playing a certain instrument and it is clear that there will be problems with sound sensitivities, allowing the child to sit in a different location may be easier than rearranging the ensemble in a non-standard manner. I skipped many jazz band rehearsals in high school because the director was unwilling to let me sit elsewhere than right in front of the blaring trumpets. In addition to the purely musical benefits, playing in an ensemble is good for working on cooperation with others, coordination, and a sense of accomplishment.

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4. Embouchure is French, meaning flow into mouth. The word refers to the position and use of the lips, tongue, and teeth in playing a wind instrument. Sometimes it refers to the mouthpiece of a musical instrument.

## CONCLUSION

Music has many benefits in working with learners on the autism spectrum. Music provides an alternate means of communication for those who are nonverbal, and for others it can help to organize verbal communication. Music can improve self-esteem, as the child is given an activity he or she can potentially excel in. Finally, playing a musical instrument gives persons with autism a typical means for engaging in social interaction in school and in the community, centered on their strength.

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