

## ABSTRACT

Title of Thesis: THE RESPONSES AND REFLECTIONS OF TWO STUDENTS WITH AUTISM BASED ON THEIR EXPERIENCES CREATING, PERFORMING, AND RESPONDING TO MUSIC: A MULTIPLE CASE STUDY

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The purpose of this study was to describe the responses and reflections of two middle school students with autism as they created, performed, and responded to music during a series of six lessons. A multiple case study methodology was employed. The data collected included audio and video recordings of interviews and lessons, field notes, and work samples. Within-case analyses revealed that one participant communicated primarily through the use of musical and non-verbal modes, with varied levels of communication through words, while the second participant communicated largely through written and spoken language. Four cross-case themes emerged: voluntary cooperative learning style, awareness of popular music culture, sanguine affects, and unique, but functioning responsive and reflective capacities. The findings indicated that both students' were descriptive, reflective, associative, creative, emotive and empathetic in their own way, and this provided insight into their learning style. Implications for music education and suggestions for future research are provided.

THE RESPONSES AND REFLECTIONS OF TWO STUDENTS WITH AUTISM  
BASED ON THEIR EXPERIENCES CREATING, PERFORMING AND  
RESPONDING TO MUSIC: A MULTIPLE CASE STUDY

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“The multiple perspectives and responses which inevitably emerge reflect the messiness  
of the realities of learning in and through the arts.”

Sarah Hennessy, *Reflective Practice in Arts Education*.



For Kimberly

Some good comes out of everything.

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## CHAPTER I

### INTRODUCTION

#### Meeting Harper and Callie

In the fall of the 2012 school year, I had my first annual piano lesson with “Harper.” Harper is a 6th grade boy with autism who loves music. In our lessons, Harper and I love to improvise together at the piano. Our improvisations range in emotional content, and also in how we interact. There are some days when I beg of Harper to respond to the chords I am playing with a melody, but he cannot remove himself from his own thoughts long enough to even humor me for a moment. Conversely, there are many days when we play with each other, laughing, lyricizing and creating. These moments reveal beautiful little snapshots of the musical and emotional world that lives inside Harper’s mind. During this first lesson Harper and I wrote a piece we called, “Harper Street, Harper Avenue.” We wrote this because earlier that day Harper had asked to write a song about how he was funny, smart, and talented. When I asked him why he wanted to do this, he replied, “because I am, and people need to know that about me.” At that moment, I became aware of the struggle Harper endures to be accepted by his community. I was reminded that he was not oblivious to the world, as his wandering eyes seem to indicate, but a feeling, observing, and reflective child wanting to be noticed and valued. As we improvised lines and lyrics, Harper often got up and danced around the room. While I suggested ideas for the piece, he was the true creator--determining each note and syllable we selected. This piece was not a formulaic lesson exercise, but rather a form of expression.



More recently, a 6th grade girl named “Callie” approached me to create her own website with videos of herself singing. She has a beautiful singing voice and, believes in her own talents. She envisions herself becoming a famous singer in the future, and is begging for coaching and assistance. Callie craves advanced instruction, and begs to be pushed and challenged, but in the meantime, she is her own teacher, and a relentless self-critic. She listens for all the details in each piece of music and practices until she feels her interpretation of the piece is everything she hoped it would be. Perhaps the most interesting thing about Callie’s singing and listening choices is that she is drawn to pieces that focus on world issues--poverty, war, human rights, and hope for the future. Callie loves to share her life long goals with anyone who will listen. “Ms. Weishaar, I have been working on a list of things I want to do in my life, can I show it to you?” While the list is much too long to share, some examples include, “owning an animal shelter, joining the Peace Corps, and becoming a famous singer.” Despite the fact that she has autism, Callie is an extremely reflective individual.

### **Statement of the Problem**

The stories of Harper and Callie are no longer those of a small minority. While autism used to be classified as a low incidence disorder, the number of individuals diagnosed with autism and autism spectrum disorders is increasing at a rate of 10-17% each year (Baio, 2012). Currently, 1 in every 68 children born in the United States has some form of this disorder (Centers for Disease Control and Prevention, 2014). While it is currently known that many individuals with autism have exceptional music abilities (Darrow & Armstrong, 1999; Heaton, 2003), much of the research around this phenomenon is empirical, and displayed in terms of averages and trends. What has yet to

be adequately explored is how individuals with autism naturally interact with music, the content of their unique interpretations, and their reflections of their music learning experiences.

The *National Standards of Music Education* outline what students in the United States “should know and be able to do” as a result of participating in a K-12 music program (Music Educators National Conference, 1994). Participating in such a program would involve students in a variety of music behaviors such as performing, composing, improvising, reading, listening to, and relating music to other cultures and disciplines (MENC, 1994). The goal of this design is to offer significant musical experiences that nurture each individual’s potential to perceive and respond to the expressive qualities of music (Reimer, 1989).

These standards are meant to benefit all students, however music educators’ ability to do so is often compromised because of their insufficient understanding of the autistic music learner (Hahn, 2010; de l’Etoile, 2005). In a later review of the literature, it will be presented that there is a great need of guidance for music educators regarding how to devise, structure, engage and assess students with an autism spectrum disorder. Enriching music teachers’ collective knowledge about how these students create, perform, and respond to music can be achieved by facilitating research that explores the thought processes of these students as they experience music in an educational setting. Having access to such research may provide music education professionals with insights into how to best approach the task of teaching these exceptional individuals. In this study, my key concern will be to understand how Harper and Callie express their musical knowledge, ideas, reflections and feelings. By doing so, I intend to provide a rich

representation of these student's outward interactions and expressive styles in an effort to shed light on their inner realities. Ultimately, I hope to further music educators' understandings of students with autism so that they can make better sense of their teaching experiences, while simultaneously helping this unique and growing population of students make better sense of their music experiences.

### **The Purpose of this Study**

The purpose of this study was to explore the verbal and non-verbal responses and reflections of two students with autism in the context of six music lessons based on the National Standards of Music Education. The first five of these lessons were taught privately, while the last was designed for both students to meet and perform for each other. The questions that guided this exploration include: How do students respond to the musical material presented? What is the nature of their reflections and interpretations regarding the lesson activities? What is the intellectual and emotional nature of these reflections? And, what do the students' responses and reflections reveal about their learning processes?

### **Conceptual Foundations**

#### **The Responsibilities of Music Educators in Special Education**

Over the last 40 years, public awareness of the educational issues confronting individuals with disabilities has increased. One major catalyst in this process was the passage of Public law 94-142, the Education for All Handicapped Children Act (EAHCA) in 1975 (Federal Register, 1977b) which brought about dramatic changes in educational policy (Office of Special Education and Rehabilitative Services, 2010). This

act required all public schools receiving federal funds to provide equal access to education for all children with physical and mental disabilities. Public schools were required to evaluate children who were diagnosed with a disability and create an educational plan with parent input that would match as closely as possible to the educational experience of a non-disabled student (OSERS, 2010).

Although the EAHCA was amended several times (1975; 1990; 2004), six underlying principles remain consistent. Based on this law: (a) no child can be denied a free, appropriate public education (FAPE), (b) services must be individualized to meet the needs of the student (which is organized and facilitated through the creation of an Individualized Education Plan or IEP), (c) educational services must be provided in the least restrictive environment (LRE), (d) nondiscriminatory evaluations must be used to determine eligibility, (e) parents have the right to be involved, and (f) procedural legal protections or “due process” are required to ensure that the terms of these laws and agreements are met (Adamek & Darrow, 2010; OSERS, 2010).

As part of the amendment of 1990, Congress renamed the law the Individuals with Disabilities Education Act (IDEA) and, among other provisions, secured the rights of students with autism spectrum disorder (ASD) to be served within the public education system. This new amendment, as well as other entitlements and anti-discrimination laws, provides students with ASD equal access to an inclusive education. The term “inclusive” implies a shared responsibility among all the members of the education system to provide students with ASD, to the greatest extent possible, with the full range of possible educational opportunities, including both curricular and extracurricular music programs, that are provide to non-disabled students (Adamek & Darrow, 2010, p.40-43).

Music educators are becoming increasingly familiar with this law as the number of students with ASD has grown dramatically over the past decade. In 2011, over 7.8% of all students served under IDEA were diagnosed with an ASD (Data Accountability Center, 2011). This percentage represents 509,806 students, which is more than three times the number of students served only five years earlier. At this point in time, nearly 1 in every 68 children born in the United States is diagnosed with an ASD (CDC, 2014). With that number increasing at a rate of 10-17% each year (Autism Society for America, 2010), it is likely that many music teachers currently work with, and will continue to work with, students with ASD everyday.

While inclusive practices and IEPs can be difficult to implement in the music classroom, it is critically important for music educators to participate as active members of Individualized Education Teams.<sup>1</sup> For this to happen, music teachers need to know about research-based music education interventions, modifications and adaptations to ensure the possibility of success for students with special needs, such as autism. While several recourses and guides have been designed to help teach music to students with special needs (Adamek & Darrow, 2010; Ockelford, 2008; 2013; Wehman & Kregel, 1997), music therapists and educators are still encouraged to develop functional music curricula, accommodations and program modifications to meet the needs of their individual students (Adamek & Darrow, 2010; Atterbury, 1990; Jellison & Flowers, 1991). In order to do this effectively, each teacher needs to be able to (a) identify the various barriers to students such as classroom structure, environment, and curriculum,

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<sup>1</sup> Referring to the team of highly qualified professionals and parents that meet to develop, implement and maintain a child's IEP. (Adamek & Darrow, 2010)

and then (b) be able to utilize researched strategies and techniques to help that child overcome each barrier (Adamek & Darrow, 2010).

While teachers are expected to accommodate students diagnosed with ASD, many studies report that music teachers do not feel able to do this effectively (Hahn, 2010; de l'Etoile, 2005). To assist with this task there is a growing body of research of the musical behaviors of students with ASD, their musical intelligence, and their unique talents; however, more work has yet to be done. One great limitation is the amount of research available that describes how these students respond to and reflect on their music experiences. It would seem that if students with ASD could be provided with the opportunity to respond and reflect on their learning experiences in a research setting, then more details about their communicative and cognitive abilities would be available to help music educators develop better teaching strategies.

### **The Extraordinary Relationship Between Music and Autism**

One of the most common and curious aspects of autism is the occurrence of widely uneven skills sets. Students with ASD have certain, and sometimes severe, handicaps, but they also, very often, have extraordinary innate, even prodigious abilities (Baron-Cohen, E. Ashwin, C. Ashwin, Tavassoli, & Chakrabari, 1999; Bennet & Heaton, 2012; Bolte, 2004; Happe, 1999; Heaton, 2003; Heaton, Hermelin, & Pring, 1998; Heavey, Pring, & Hermelin, 1999; Heaton & Wallace, 2004). Howlin, Goode, Hutton and Rutter (2009) conjecture that extraordinary talents may be found in up to one third of all individuals with ASD. Even more relevant to music educators is the finding that music is one of the most common talents among students with ASD (Bennett & Heaton, 2012; Heaton, 2003; Heaton et al., 1998; Mottron, Belleville, & Menard, 2000). In addition, Okelford (2000,

2002, 2007, 2012; Ockelford & Pring, 2005; Welch, Ockelford, Carter, Zimmerman, & Himonides, 2009) has provided a series of quantitative studies that provide evidence that individuals with autism are capable of social interaction through the medium of music.

Despite numerous experimental studies, very few studies have described how individuals with autism communicate their musical experiences. Of the available studies, one study uses the descriptions of adult participants (Allen, Hill, & Heaton, 2009), two studies use the words of children briefly but rely predominantly on the accounts of teachers, caregivers and parents (Beteta, 2009; Brace, 2009) and two dissertations study the account of children (Fang, 2009; Halliday, 2012). The two dissertations will be briefly described at this time, while the other studies will be explained in Chapter 2.

Fang (2009) carefully examined the communication of children with autism in regard to their music experiences at home, in school and in extracurricular activities, such as piano lessons. She found that music functioned to draw the children out of “their world” and into “our world,” by aiding in communication and providing regular positive human interaction. Music also helped with routine, memory, mood regulation, and motor skills. Fang also suggested that learning music helped the children gain self-esteem, by enabling them to develop an area of strength. Music, being a socially approved hobby, brought the children acknowledgement and praise by their communities. Fang also conjectured that structured music activities provided her participants with an experience of normal living.

In another study, Halliday (2012) found that the students consistently had a proficient awareness of what happened in their music classes, that they were able to draw connections between music class and experiences, and furthermore, they were able to

make independent musical choices based on their own preferences and knowledge. It was also noted that they were able to self-correct, anticipate and evaluate their own performances. She concluded by saying that “Parents, clinical workers, and medical professionals have a far different perception of the child’s responses than the classroom and music teachers, and may provide valuable insight into the words and actions gleaned over by interviews and observations,” (p. 177) and then encourages “future endeavors in phenomenological research with special learners in order that their lived experiences may inform best practices in educational settings” (p. 178).

These studies provided insight into what various music experiences meant to each child, and yielded information about their music understandings and learning processes. The findings suggest that the communicative interactions of children with autism could play an important role in their musical development. Further qualitative research could help develop a better understanding of how to children with autism communicate, and how to facilitate such communication effectively.

### **Theoretical Framework**

Prior to commencing my research, I studied theories that would ground, justify, guide and clarify my observations, data collection and analysis. Two theorists in particular helped me describe the nature of response and reflection, and its function in education. First, John Dewey’s theories of *experience* and *reflective thinking* provided a great deal of insight into how and why responses and reflections are essential to the learning process. Second, Bennett Reimer’s philosophy of music education described how individuals outwardly respond to music through linguistic and musical modes, and



that those responses yield information about what each individual conceives music to *mean*.

### **John Dewey and Experience**

Dewey conjectured that experience was something beyond sensory perception or organic interaction with the world, but rather a “transaction” with the environment that was imbued with meaning (Dewey, 1934/1980). These transactions convey meaning to the individual, and are responded to through various modes of expression and communication (Dewey, 1934/1980, p.25).

Dewey believed that experience was both intentional and responsive. He postulated that people participate in the world in ways that are based on previous experience, and this, in turn, shapes how they respond to new experiences at hand. Furthermore, Dewey also theorized that the process of reflective thinking also characterized experience. Many activities do not necessitate reflection, they are effortless, and allow individuals to glide along smoothly, entertaining thoughts at will (Dewey, 1933, p. 13). Reflective thinking “begins in what may fairly enough be called a *forked road* situation, a situation that is ambiguous, that presents a dilemma, that proposes alternatives” (Dewey, p. 14); Dewey referred to these situations as dissonances. Dissonances can bring an individual to demand a solution, and this demand becomes the guiding factor in the entire thought process of reflection. The reflective response “involves responding to an experienced dissonance by examining and re-examining held assumptions, identifying relevant facts, formulas, and theories, and generating solutions to bring closure to situations that are uncertain, are controversial, and involve doubt” (Yunker, 2006, p.159). Learning, therefore, involves more than just discovering new

things; rather, it is a process of meaningful organization or explanation of new experiences based on the specific features of the new interaction (Wheatley, 1991). This active, persistent and mindful inquiry uses what is understood and guides the individual in constructing new meanings (Dewey, 1933). Thus, “experience is the result, the sign, and the reward of that interaction of organism and environment which, when it is carried out in full, is a transformation of interaction into participation and communication” (Dewey, p. 22).

Children’s musical experiences, as well as the experiences of all humans, are therefore a construct of reality from responsive and reflective communications and transactions with their environment and others. Consequently, investigating the musical experiences of children must pose questions that connect children’s musical experiences with their responses and reflections. In this light, it can be hypothesized that these observations may assist music educators in better understanding of how children (disabled or not disabled) process their learning, and how they form meaning from their personal experiences.

### **Bennett Reimer and the Meaning Dimension of Musical Experience**

Bennett Reimer is known around the world as a leading philosopher in the field of music education. He held the position of John W. Beattie Professor of Music Emeritus at Northwestern University, as well as numerous awards and honors. While Reimer wrote over 150 publications, his most acclaimed book is arguably, *A Philosophy of Music Education* (1970, 1989, 2003). The central concept of this text is that the values of music are gained through direct experiences of creating, performing, and responding to its meaningful sounds. As individuals interact with the music, they may transform their

gathered thoughts and feelings into “outer symbolic systems,” (Reimer, 2003, p. 90).

These outer symbolic systems can be observed through two communicative modes: (1) *language-think* or *language response*, and (2) *sound-think* or *musical response*.

Language responses are shared through words (reading, writing, speaking), noises, gestures, and other signals (Reimer, 2003, p. 136-138). These responses help an individual internalize, broaden, deepen, organize, concentrate, refine, and discipline their reasoning or conceptualization of a particular phenomenon (Reimer, p.92). Reasoning and conceptualization utilize an individual’s knowledge, interpretations, associations, and emotions.

Musical responses are shared through the artistic musical creation of meaningful sounds. These responses explore, symbolize, and express *feelings*. Feelings can be defined as the interrelation of the music with the sum and total of the perceptions felt and permeated through the mind, body, soul in conjunction with the selfhood of the person engaged, in all its ineffable specificity and exactitude. Reimer postulated that, “creating music as musicians, and listening to music creatively, do precisely and exactly for feeling what writing and reading do for reasoning” (Reimer, 2003, p. 93). Customized musical responses concentrate on the inherent qualities of the music itself, and have a unique way of extending, refining and enhancing the emotional and felt life of those creating or listening to it. Musical response can communicate the literalness, the specificity, and the exactitude of a musical thought in a way that language and other symbol systems cannot. Both language responses and musical responses may reveal what a person *knows about* that piece of music (culture, history, and references), what they *know within* themselves as a result (feelings), and what they *know of how* the sounds are chosen and created.

According to Reimer *knowing about* a piece of music involves the study and understanding of *how* and *why* a piece of music exists -- its culture, its history and the specific references it is tied to within those parameters (Reimer, 2003, p. 161-162).

Reimer (2003) posited that when the sounds of music (gained through listening, creating or performing) are brought together with information *about* those sounds, the individual has an opportunity to derive certain meanings from that musical experience.

Furthermore, Reimer emphasized that the meanings that are shaped through this facet of the music experience is often conveyed through language and discourse (Reimer, p. 161-162). Reimer clarified this aspect when he wrote:

First, musical meaning is always historically and contextually grounded. Every instance of music exists situationally and reflects its setting in its meanings. Second, every instance of music has within it a great number of possible interrelations among its sounds, as determined by history, culture, the individual(s) involved in its creation, associated ideas, references, and so forth. Musical meaning is always complex. Third, music's history, cultural setting, structure and organization of sounds, and incorporated material is capable of being delineated by language. (Reimer, 2003, p. 161-2)

*Knowing within* is a process that occurs as new learning is cultivated within the learner, and it interacts with the individual's personality, mood, physical condition, and so forth, which make the experience particular to them in some way. This specific and idiosyncratic aspect of the music experience is what Reimer called *feeling* (this is described in relation to the more universal and communal experience of musical *emotion*).

"Feeling a melody"...is an amalgam of one's subjective interaction with the qualities of the melody itself, undergoing what that interaction does to one's body, and sensing the changes in thought processing (in this case musical) {that} the experience of the melody entails -- that is, thinking/feeling musically along with the melody. Feeling, body, and mind are combined in such an act. (Reimer, 2003, p. 77-78)

Reimer based much of his conception of *knowing within* and *feeling* on the research and explanations of neurologist Antonio R. Damasio. Reimer likened knowing within and feeling to two dimensions of Damasio's theory of human consciousness: the core consciousness, and the autobiographical self. The core consciousness is "concerned with the here and now, the existent present...allowing the self to interact in an immediate way with the environment" (Reimer, 2003, p. 79). It is the awareness of the body, and of the body undergoing its life (Reimer, p. 78). It arises from moment-to-moment awareness of outside objects, events, feelings, and memories (Damasio, 1998, p. 168).

The autobiographical self is *knowing within* and *feeling* in their deepest sense. The autobiographical self is an extension of the consciousness that surveys one's present mental and emotional state in juxtaposition with the sum and total of their past memories and experiences and imagined futures (Damasio, 1999). As our lived experiences are remembered, replayed and reconstructed during a current experience, the self is rearranged, revised, and modified, either minimally or very much, in terms of new factual and emotional undergoings (Damasio, 1999).

According to Reimer, musical meaning is a concoction of the sum and total, depth and breadth, conscious and subconscious, connections and interpretations of all the internal and external transactions that occur as a result of a musical experience. His philosophy elucidates how musical experiences are made rich by history, society and culture, as well as by the entire factual and emotional past, present, and future of an individual. While certain aspects of knowing within a piece of music may be communicated through reflective language, Reimer posits that much of the felt experience is ineffable and can only be truly shared through music.

*Knowing how* combining one's knowledge within and about music, and using those facets to determine what is needed to meet the demands of a particular piece of music. To do this, the individual will have to ask "how to" questions. They will need to know if they have the intellectual and technical competence to know how to listen to or perform a work conscientiously. Each piece should be performed with a sense of respect for the music at hand. They will need to have the courage to thoroughly *explore*, *imagine*, and *discover* all the musical possibilities available in a particular piece, realize their own limitations, discriminate what is needed for improvement, and be willing to establish goals that work toward producing a worthy and meaningful music creation. An individual's knowledge of *how* to interact with a piece of music may be displayed through a combination of language reasoning, and musical response. One may have to verbally consider and inquire *about* a piece of music, as well as musically explore and discover *within the music* before they are able to reach the fullest potential and deepest satisfaction available to them through a musical experience.

Reimer's philosophy of how individuals share the profundity of their musical experiences helped me conceptualize (a) how responses and reflections might be observable through different modes of communication, (b) that the mode of communication used is dependent on nature of the message the individual wishes to share, and (c) that numerous types of intellectual and emotional information might be available through these transactions. Consequently, an investigation of *how* two students respond to and reflect on their musical experiences must observe and analyze both types of communication – musical response and language response, as well as explore and describe what types of knowing or knowledge are expressed. Through the use of these

steps, it is plausible that this examination will reveal multiple aspects of each student's cognitive and felt experiences and provide indications of what each student conceives each experience to mean.

### **The National Standards of Music Education**

Bennett Reimer also made landmark contributions to the National Standards of Music Education (1994). His multifaceted construction of musical meaning supported the Music Educators National Conference (now the National Association for Music Education) in developing a music program that involved children in a wide variety of musical activities and creativities (Reimer, 2003, p. 282). This connection supports the use of the National Standards as the basis for the lesson plans used in this study. The National Standards of Music Education list nine fundamental processes “every young American should now and be able to do” to successfully and comprehensively create, perform and respond to music. The lesson plans designed for this study incorporated each of these nine standards, and are provided in Appendices A and B. These standards describe that young individuals should participate in and practice:

1. Singing, alone and with others, a varied repertoire of music.
2. Performing on instruments, alone and with others, a varied repertoire of music.
3. Improvising melodies, variations, and accompaniments.
4. Composing and arranging music within specified guidelines.
5. Reading and notating music.
6. Listening to, analyzing, and describing music.
7. Evaluating music and music performances.
8. Understanding relationships between music, the other arts, and disciplines outside the arts.
9. Understanding music in relation to history and culture. (NAfME, 2014)

## **Learning Environments that Utilize Student Responses and Reflections**

In education, responsive and reflective thinking and practices are often found and even encouraged in particular learning environments. Most commonly, these environments are referred to by different names: brain-based (Hardiman, 2012; Jensen, 2000), experience-based (Bruner, 1996; Schön, 1987; Vygotsky, 1978; Wiggins, 2001; Younker, 2006), inquiry-based (NRC, 2000), child-centered (Smith, 2001, 2005), diagnostic (Bell, 1986, 1993), and learner-centered (Duckworth, 1987; Ladson-Billings, 1995; NRC, 2000, p. 133), though several other variations exist. These models often involve engaging students in cognitive conflict based on their prior knowledge and interests, and use that conflict as the basis for building connections to new understandings. Often these types of programs involve Socratic discussions<sup>2</sup> with the teacher as a means to find out more about the students' understandings, and reveal crucial information about misconceptions, inconsistencies and insights in order to guide subsequent lesson planning (Copeland, 2005; Saran & Neisser, 2004). This high level of collaborative teacher involvement and program individualization has been shown to affect the intrinsic value of the curricular material for students (Hennessey, 2006, p. 191) and for this reason, the use of response and reflection can affect a student's dedication, motivation and engagement in class, and can ultimately alter the effectiveness of a student's learning (Burnard & Hennessey, 2006).

In music education research, responsive and reflective processes have been explored through numerous studies involving neuro-typical participants (e.g., Campbell,

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<sup>2</sup> A teaching methodology named after the Greek philosopher Socrates that involves intense systematic questioning and inductive reasoning to develop critical thinking skills in both the student and the teacher, and is used to jointly derive of a universal definition (Copeland, 2005; Saran & Neisser, 2004).



Connell, & Beegle, 2007; Countryman, 2008; Davidson & Scripp, 1988, 1992; Eppink, 2002; Hair, 1977, 1987b, 1993/1994, 1995/1996, 2000/2001; Krauss, 1995; Thornton, Ferris, Johnson, Kidwai, & Ching, 2011; Williamson, 2005) however, very little music education research has been completed involving neurologically atypical participants (e.g., Allen et al., 2009; Halliday, 2012). One neurologically atypical group that has been neglected is the group of students with an autism spectrum disorder. Further research may help to answer several questions: Can, and if so, how do children with autism communicate their meanings, understandings and reflections of their musical experiences? And, how will their communications, or lack there of, prove to be insightful to music educators?

### **The Operational Definition of Communication**

Each field has its own set of terminology and meanings. Operational definitions are working interpretations of terminology used in specific fields of study. These constructs show the relationship between the meaning of a term and the process by which it will be made observable, distinguishable, and measurable (Babbie, 2012). The word *operational* suggests that the term is in some way incomplete or imperfect, or that the definition may only be valid in a particular context. In the context of this study the meaning of *communication* was chosen to be common to literature pertaining to children's communication, special education, and music education.

For the purposes of this research it was necessary to define communication expansively, because the goal was to openly explore and describe *how* two students communicated, rather than to look for pre-determined types of communication. This

study focused on all the types of expressive communication<sup>3</sup> used by students.

Expressive communication was chosen because it is less subjective in interpretation and more easily observable than receptive language<sup>4</sup>. Categories used in the coding process included the verbal and non-verbal acts and processes of using sound, word, gesture, bodily or facial expression, music, and sign to express information, ideas, thoughts or feelings. This pushes the definition of language further, and considers it broadly, as a “complex of signs and texts that make children’s thinking visible” (Gallas, 1994, p. xiii). According to Nelson (1993), “communication may be defined as the sharing of needs, experiences, ideas, thoughts, and feelings with other persons. It can occur in a variety of modalities. It is possible to communicate without using speech or language” (p.29). These modes of expression provided a structure for creating initial coding categories for data collection and analysis.

### **Framing the Research Question**

To summarize: (a) there is a legal requirement to teach music to students with ASD with the goal of normalization in mind, (b) there is a known relationship between autism and focused skill sets, with a wide occurrence of innate and extraordinary musical abilities among diagnosed individuals, (c) there is a well-founded theoretical underpinning that describes how and why responses and reflections are crucial to the teaching and learning process, and how such responses and reflections are observable, and (d) there is a known deficit of research that explains how students with autism

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<sup>3</sup> Expressive language or communication encompasses many ways for an individual to convey a message. (Paul & Cascella, 2007; Volkmar, Paul, Klin, & Cohen, 2005)

<sup>4</sup> Receptive language or communication refers to the ability to take in a message from another person, and understand what is being conveyed. (Paul & Cascella, 2007; Volkmar et al., 2005)

respond to and reflect on their music experiences. From this evidence, I argue that the goal of normalization, as mandated by the statutes of IDEA, cannot be completed without further knowledge of how individuals with autism communicate their understandings and interpretations of their musical experiences. Insights into these unique perspectives could expand how teaching professionals holistically describe students' abilities and disabilities, and help them prudently make decisions about what type of education would be most appropriate for each individual child.

Therefore, the purpose of this study was to explore the verbal and non-verbal responses and reflections of two students with autism spectrum disorder based on their experiences in a series of six general music lessons designed to align with the National Standards of Music Education. During this study, I will attempt to answer the following question:

How do two students with autism respond and reflect on their experiences during a series of six lessons that require creating, performing and responding to music?

### **Choice of Methodology: Multiple Case Study**

Based on the purpose of this study, theoretical framework, and the research question, I realized that an exploratory and inductive approach was needed. A case study is a type of qualitative research employed to gain an "in-depth understanding of the situation and meaning for those involved. The interest is in process rather than outcomes, in context rather than a specific variable, in discovery rather than confirmation" (Merriam, 1998, p.19). A case study yields an intensive, holistic description and analysis of a single instance from a particular vantage point -- in this case, the vantage point is that of an educator describing her observations of and interactions with two children. This

style of research has the potential to develop the presence of the first-person autistic voice within the music education literature. Over time, if this voice were developed into an entire mode of discourse, the subjective lives of autistic students might become better known, bringing them to be seen as *thick* rather than *thin* people, with multiple facets and rich characteristics (terms used by Ian Hacking, 2009) in music education settings.

I selected the case study methodology based on a specific set of considerations. First, I considered the nature of my research question and realized that I needed a format that would allow me to explore the unique ways each child expressed their thoughts. As Merriam (1998) asserted,

The key philosophical assumption...upon which all types of qualitative research are based is the view that reality is constructed by individuals interacting with their social worlds. Qualitative researchers *are interested in understanding the meanings people have constructed*, that is, how they make sense of their world, and the experiences they have in the world. (p. 6) (emphasis in original)

This notion helped me determine that a smaller sample size would be needed so that I could focus on the distinctive and even subtle details of each student's communications. I also determined it would be necessary to purposefully sample students from the same school and grade level so that the results could focus on the uniqueness of the individuals rather than any distinctions created by attending a particular school, or being of a particular level of development. Both students were also chosen for apparent and innate musical strengths and love of music, which kept my challenge as a practitioner focused on their unique ways of expressing their perspectives, with the hopes of uncovering a deeper meaning within each child's experience as a participant, rather than on motivation or remediation. The children were also diagnosed with an autism

spectrum disorder; however, the disorder had not impaired their ability to communicate intelligibly or orally. Also, neither student was classified as a savant. I believed these moderate cases would be in some way similar to those music teachers might encounter in their course of their career, and that they might provide useful and relevant insights into the complexion of teaching students with autism. Together, these criteria led me to select a qualitative case study methodology.

This decision was taken one step further. After making this selection, I additionally decided that a multiple, rather than single, case study would be advantageous. By completing a multiple case study, I could interpret the data through both within-case and cross-case analysis. The within-case analysis would allow me to comprehensively learn as much about the idiosyncratic details and contextual variables of each case, while the completion of a cross-case analysis would allow me to inductively seek abstractions and patterns across cases. By searching for commonalities or general explanations that suited both cases, I hoped to be able to determine if any of the findings applied beyond one specific case (Miles, Huberman & Saldaña, 2014, p. 101). This study had the potential to yield an insightful cross-case analysis because the students are chosen based on similarities.

### **Limitations of this Study**

#### **Nature and Size of the Sample**

By definition, autism spectrum disorder includes a variety of intellectual levels, communicative abilities, and behavioral symptoms. This means that each child with autism displays unique characteristics. Therefore, the sample of this study can by no means fully represent this diverse population. Each of my participants can only be said to

have created, performed and responded to music in accordance to their own individual needs, abilities, and place on the autism spectrum.

### **Setting**

This study was completed at an urban, mid-Atlantic progressive<sup>5</sup> school for children with learning disabilities and autism where they receive a multi-sensory, arts-based educational program. The class sizes are small, and the programming is highly individualized so each student can learn despite a variety of developmental, cognitive, social, and behavioral challenges. The students are enrolled in this school because their public school placement did not and could not meet their needs effectively. The opportunity for a child with special needs to receive this kind of intensive care may make this sample somewhat unique.

### **Definitions of Terms**

*Autism Spectrum Disorders* - Autism spectrum disorders (ASD) are a component of a larger group of disorders named Pervasive Developmental Disorders (PDD). ASD includes: (a) Classic Autism, (b) Asperger's Syndrome (AS) or Asperger's Disorder (AD), (c) Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS), (d) Childhood Disintegrative Disorder (CDD), and (e) Rett's Syndrome. Autistic spectrum disorders are pervasive and chronic neurobiological disorders characterized by a pattern of adaptive functioning impairments in three core domains, social reciprocity, communication, and flexibility with behavior or activities, that permeates adaptive functioning such as independent daily living skills at school, home, and with peers (American Psychiatric Association, 2000). For purposes of this paper, the term ASD and the word autism are used synonymously or as used by researchers describing their findings.

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<sup>5</sup> The word progressive refers to the type of pedagogy that is rooted in experience, as described by John Dewey and utilized at his Laboratory School at the University of Chicago. This instruction involved with this type of education is characterized by thematic units, integrated content, cooperative learning projects, hands-on or learning-by-doing, a high level of individualization and personalization, and a de-emphasis of textbooks in favor of using varied learning resources.

*Communication* – Communication is defined as the imparting or exchanging of information. For the purposes of this paper communication will be defined expansively, to include a complex of signs, language, and text. Communication will not be confined to the spoken or written word, but includes signs such as dramatizations, gesture, bodily or facial expression, and song (Gallas, 1994, p. xv).

*Composition* – The act of composition involves creatively imagining the possibilities of sound coming into being, and by capturing them in some way (i.e., notation, computer memory, in the brain's working memory) so they can be worked on, reimagined, revised and tested. This way the composer can bring forth meanings reflecting the influences he or she lives within or is responding to through the created music (Reimer, 2005, p. 111-112).

*Improvisation* – In improvisation the performer makes substantive decisions about what the musical sounds might be and become in the very act of performing them. The combination of the original generation of musical ideas, and the simultaneity of doing so within the act of playing or singing, separates improvisation from both composition and the performance of composed music (Reimer, 2005, p. 115).

*Inclusion* - Strategies and processes that educators, therapists, principals, families, and students use to include students/classmates with disabilities in general education classes and activities and in society as a whole. (Adamek & Darrow, 2010)

*Individualized Education Plan (IEP)* - Each student identified with special needs in the United States public school system has his or her own IEP. This plan is a written statement, developed by the assessment team or "IEP team" which is comprised of a school's administrator, the child's special education teacher, the child's general education teacher(s), his or her parent(s), relevant district professional(s), and the child. These individuals work together to translate the child's evaluation and information into a practical plan for instruction and delivery of services. This document also contains goals and objectives to be learned by the child within specified periods of time (Adamek & Darrow, 2010).

*Performance* – Performance of music is the process of bringing previously composed music into actual sonic or sound being. This process is guided by the performers' discrimination and interpretation of the notation/instructions the composer supplied, their experience and insight about the appropriate ways to construe them, as well as their physical ability to make the sounds indicated (Reimer, 2003, p. 222-223).

*Responding* – Responding is when an individual describes, explains, evaluates, analyzes, or interprets a musical selection that she has either listened to or performed by continuously and consciously engaging with and absorbing musical stimuli and then discriminating and connecting the auditory material with her own feelings, experiences, understandings and assumptions. This process can occur through inward reflection and outward communication (Reimer, 2003).

### **Overview of Chapters**

Chapter 2 will be a review of the literature. The literature will be organized around three major topics that form the foundation of this study: 1) the nature of autism spectrum Disorders, 2) the relationship between music and autism spectrum disorders, and 3) existing qualitative research on the responses and reflections of children with and without an autism spectrum disorder pertaining to music experiences. The methodology of this study is described in Chapter 3. This chapter includes a description of case study research, my role and perspective as a researcher, participant selection, the research site and gaining entry, and the educational program implemented. Furthermore, I address data types, collection methods, gathering, management and preparation. Lastly, an overview of the coding process and analysis is offered, which includes methods of member checking, triangulation, and maintaining trustworthiness. Chapter 4 and 5 provide a narrative account of each child and provide the reader with a comprehensive view of each participant. Chapter 6 provides a detailed description of the coding process and how each theme was determined, and then provides a within-case and cross-case analysis of the participants. Chapter 7 summarizes and concludes the study as well as presents implications for additional research and practice.



## **CHAPTER II**

### **LITERATURE REVIEW**

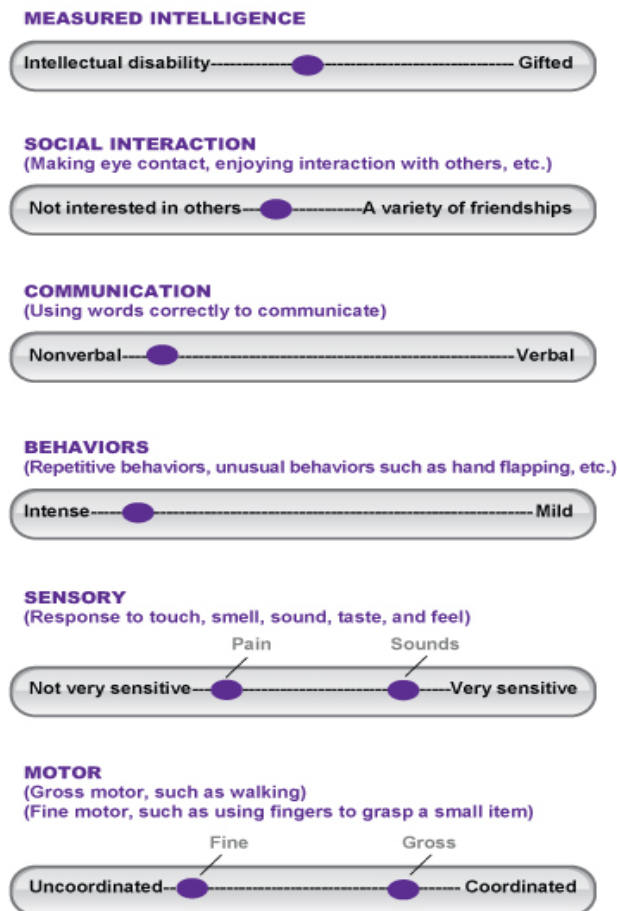
#### **Introduction**

The literature review is presented in three major sections. Each section supports the concept that children with autism respond to and reflect on their music experiences, and that these responses and reflections are qualitatively observable. First, I focus on the nature of autism spectrum disorder, giving attention to associated behaviors, cognition, social skills and communication. A special emphasis is given to findings related to alexithymia and the Zygonic Theory of communication. Next, I address research that examines the unique relationship between musical ability and autism, with an emphasis on studies that focus on responses. Lastly, I review literature that qualitatively explores the responses and reflections of children both with and without autism. I conclude by restating how this literature supports the need for further exploration of the responses and reflections of individuals with autism in regards to their music learning experiences.

#### **The Nature of Autism Spectrum Disorder**

Autism Spectrum Disorder (ASD) is a group of developmental disabilities that cause significant social, communicational and behavioral challenges (CDC, 2012). This group of disabilities includes autism as well as other diagnoses, such as autistic disorder, Asperger's disorder, childhood disintegrative disorder, and pervasive developmental disorder not otherwise specified (PDD-NOS) (American Psychological Association, 2000). While these disorders share similar symptoms, they are referred to as a spectrum because they affect each person differently, and each symptom can each range from mild to severe (See Figure 2.1). For example, children with Asperger's disorder (commonly

referred to as Asperger's syndrome) have challenges with social behavior, but do not have the language or intellectual deficits that are typical of a child with autism.



*Figure 2.1.* Example of the unique range of symptoms individuals with ASD can display (CDC, 2012).

## Behavior

Behavior is one of the most widely discussed topics by parents and teaching professionals in the autism community. These behaviors do not occur in a vacuum, but are a result of how each individual interacts with their environment (Grandin, 2011). Many people with an autism spectrum disorder demand routine, order, and rituals; likewise, they have difficulty with change. They may also have rigid thinking and

singular obsessions. This adherence to rules and routine may also explain why people on the autism spectrum have trouble telling lies and understanding deception (Baron-Cohen, Spitz, & Cross, 1993; Happé, 1999). Individuals with autism may rock, spin, sway, twirl fingers, walk on their toes, or flap their hands, and they may have an unusual use of their vision or gaze (i.e., look at objects from unusual angles) (CDC, 2012).

Certain behaviors are a direct response to an individual being hypersensitive (overly sensitive), or hyposensitive (lacking or without sensitivity) to environmental stimuli. These sensory experiences can cause a person to scream, tantrum, or sleep at inappropriate times. These sensory experiences are variable both among individuals and within an individual. For example, a person can be both hypersensitive in one area (i.e., hearing) while being hyposensitive in another (i.e., touch). To complicate matters further, sensory sensitivities can change, even from day to day, and especially when a person is fatigued or stressed (CDC, 2012; Grandin, 2011). Because of these challenges, many individuals need to learn calming strategies and techniques that help them regulate their bodies and minds in various social situations, and may need to work with therapists to adapt to certain environments (CDC, 2012).

### **Cognition**

Individuals with autism spectrum disorder tend to have uneven cognitive skills. In many individuals, the regions of the brain that are responsible for the rules of socialization, may not have strong connections, while other localized regions, like art, math, or music may be extremely strong (Grandin & Panek, 2012; Happé, 1999; Heaton, et al., 1998; Jarrold & Russel, 1997). As a result, these children may have one dominant thinking style. Some diagnosed individuals may be visual thinkers, who think in pictures

instead of words and get immersed in hands-on, tangible, and kinesthetic activities.

Others may be math or music thinkers whose minds are dominated by patterns, numbers, or notes. There are also verbal thinkers who love lists, timetables, and history (Grandin, 2011).

Many neuro-typical individuals are *top-down* thinkers; they think of the world in *general-to-specific* terms; they form a concept first and then add details to it. For example, once a neurologically typical child has seen one dog, they will recognize the overall characteristics of the animal, and be able to generalize the traits in order to identify other dogs. The details of the dog (e.g., spots, height, weight, length of ears, shape of nose) will likely be understood to identify each dog uniquely. However, children with autism are often *bottom-up* thinkers; they have trouble generalizing, but conversely, have a knack for details. To use the same example, a child with autism may not be able to generalize what dogs look like based on one encounter. The child may mistake cats, dogs, sheep and rabbits for each other not realizing which trait is the identifier. The child will need several examples to draw such conclusions (i.e., it is not the fur, rather it is the nose). Yet, bottom-up learning may have allowed the child to realize details about teeth, whiskers, eyelashes, or other details that others did not notice. (Bhatt, Rovee-Collier & Shyi, 1994; Coren & Enns, 1993; Frith, 1989; Grandin, 2011; Happé, 1999; Hermelin, 1967; Kanner, 1943; Kramer, 1996; Marendaz, 1985; Plaisted et al., 2003) This type of thinking can be a great nuisance to students on the autism spectrum as they try to learn about their world, but can be an asset if they find an academic or professional arena in which to use their detail oriented thinking productively (for example, editors focus a great deal of specialized attention on grammatical details).

## **Social Skills and Communication**

People with ASD do not have a social-thinking system that is fully functional (Baron-Cohen et al., 1999; Grandin, 2011; Grandin & Panek, 2012, p. 167). Some may miss verbal nuance or non-verbal body messages. This impairment can be pervasive, even among those with higher intelligence. Some social symptoms of autism include avoiding eye-contact, having flat or inappropriate facial expressions, poor judgment of personal space boundaries, the inability to be comforted by others when in distress, the inability to share interests and feelings with others, minimal use of meaningful gestures (i.e., waving goodbye) and avoiding or resisting physical contact (CDC, 2012; Molnar-Szakacs & Heaton, 2012).

Communication can also be expressed very differently in individuals with an autism spectrum disorder. Some individuals have echolalia, which causes them to repeat what others are saying without necessarily understanding the meaning. They may not respond to their own name and mix-up pronouns (i.e. referring to oneself as ‘you,’ and to others as ‘I’). People with autism may not want to communicate often; they may rarely start a conversation and have trouble continuing one; they may even neglect to share their needs with others. Individuals with an autism spectrum disorder may use vocal qualities that are unusual, ranging from a flat, robot-like voice to a sing-song voice. Some children on the autism spectrum lack the skills necessary for imaginative play and may not be able to use other toys or objects to represent people or real life. Lastly, attending to multiple stimuli, or giving joint attention, can be difficult (Prizant, Wetherby, Rubin, Laurent, & Rydell, 2005). Conversely, rote memory, especially for numbers, letters, and songs may be exceptionally strong (Rosenblatt & Carbone, 2014).

The research on the social and communicative difficulties associated with autism spectrum disorder has generated several cognitive theories to explain such behavior. One example is the Theory of Mind or ToM. ToM refers to an individual's ability to infer, and even intuitively understand, what other people may be thinking (Baron-Cohen, Leslie, Frith, 1985). In its most elementary sense, it is the ability to understand that different people have different thoughts. At a higher level, this process also involves perspective taking. While this ability develops naturally in neurotypical individuals starting at a very early age, often without instruction, it does not always develop fully, or at all, in individuals with autism (Baron-Cohen et al., 1996; Baron-Cohen et al., 1999). This often leads to a lack of socio-emotional reciprocity with others, and a failure to develop peer relationships (American Psychiatric Association, Task Force on DSM-IV, 2000).

Other researchers have stressed the importance of intersubjectivity, proposing that social and communication problems are derived from a disturbance in the ability to form emotional bonds (Hobson, 1986). To help explain this theory, Dawson et al. (2002) created the social motivation theory, which posits that the social impairments associated with ASD are only secondary to a primary deficit in social motivation (Dawson et al., 2002; Dawson et al., 2005). More recently, others have supported the "broken mirrors" hypothesis of autism. According to this theory, the ability to understand the intentions and actions of others depends on an intact mirror neuron system, which is compromised in individuals with autism (Dapretto et al., 2006; Iacoboni & Dapretto, 2006; Ramachandram & Oberman, 2006). Certain studies have also reported imitation deficits in autism including areas such as gestures, body movements, and body sequences (Perra

et al.; 2008; Rogers & Pennington, 1991; Vanvuchelen, Roeyers, & De Weerd, 2007; Williams, Whiten, Suddendorf, & Perrett, 2001). Individuals with ASD are also less interested in faces than neurotypical individuals. They have difficulties interpreting emotions and understanding how to act in situations based on observing the facial expressions of others (Baird et al., 2000; Baron-Cohen et al., 1996; Cohen & Volkmar, 1997; Osterling & Sawson, 1994).

This research shows that the variety of behavioral, social, and emotional traits associated with autism can make processing and understanding the world very difficult. It can also make expressing thoughts and feelings challenging. However, these difficulties shift on the spectrum of symptoms (as seen in Figure 2.1). Many recent studies have examined why and how emotional processing can remain largely uninhibited for certain individuals and not for others. It is now widely hypothesized that it is not autism, but rather an individual's unique level of alexithymia that allows them to empathetically communicate. This phenomenon is discussed in the next section.

### **Communication of Emotion and Alexithymia**

A number of recent studies have focused on the emotional processing deficits of certain individuals with autism in correlation with the occurrence of alexithymia. Alexithymia is a disorder characterized by a reduced or absent affective response and difficulties ascribing or assigning affective labels to one's own physiological states of arousal (Szakacs & Heaton, 2012). The results of several tests show a high occurrence of alexithymia among people with autism, but arrive at the conclusion that diagnosis of alexithymia is not contingent on the diagnosis of autism; rather alexithymia is a separate issue having to do with the degree of empathetic brain activation near the anterior insula

(Bird, 2010; Hill, Berthoz & Frith, 2004; Houtveen, Bermond & Elton, 1997; Shalom et al., 2006). These results suggest that the empathy deficit observed in individuals with autism is not universal to the disorder, but is rather a result of the common occurrence of alexithymia within that population (Molnar-Szakacs & Heaton, 2012). This draws out two questions: are certain individuals on the autism spectrum capable of emotively reflecting on their life experiences? And, if so, how?

### **Communication and the Zygonic Theory**

The zygonic theory was first developed by Adam Ockelford in 1983 through an effort to describe the techniques of serialist music to general listeners. The zygonic theory “holds that one sound or group of sounds may be deemed to derive from another when one salient feature or more of the second event is thought to exist in imitation of the first,” (Ockelford, 2012, p. 292). He realized that this could apply to the way two or more individuals communicated when they created or improvised music together. When a sound is derived in the context of improvisation, a musical interaction may occur. “If one performer (‘A’) introduces material into a musical dialogue...and the second performer (‘B’) imitates it...then there may be a transfer of thinking over and above the purely auditory information that is conveyed” (Ockelford, 2012, p. 295). Through this type of interaction, Ockelford claimed that there are observable and definable instances of each player influencing the sounds, sharing control, and mutually and multidimensionally creating the musical material produced. He explained that the “groups of sounds appear to be connected via a mental bridge,” each sound is in some way, is connected cognitively with the next, creating a musical and interpersonal union.



Throughout his career Ockelford has worked to develop his theory through a variety of research projects, and with a variety of participants; however, in the last 15 years, his focus has turned toward individuals with learning differences, especially those with autism.

In the next section, I will explore research regarding the perceptual, cognitive and emotional capabilities of individuals on the autism spectrum when performing, creating or responding to music. The research includes controlled responses to and reflections of music, responses and reflections in comparison to individuals' unique level of alexithymia, and descriptions of individuals communicatively interacting through music as interpreted through the zygonic theory.

### **The Extraordinary Relationship Between Music and Autism**

While the literature has shown that interpreting social situations and understanding emotions can be difficult for individuals on the autism spectrum, there is an equally abundant number of studies that detail how these individuals can have superior performance in other areas, not the least of which, is music. Parents of individuals who display superior localized specialties and thinking processes often refer to these skill sets as assets, not weaknesses (Baron-Cohen & Hammer, 1997; Happé, 1999). These remarkable assets lead to the argument that a different, rather than deficient, mind lies at the center of autism (Happé, 1999). Due to these different localized thought processes, there is a rapidly expanding body of research that examines individuals on the autism spectrum who have a strong and early preference for music and who are able to understand emotions that are presented through music. This research provides the opportunity to consider the nature of musical processing in individuals with autism and

provides a firm basis for further questions about their emotional and cognitive processes and abilities.

The unique relationship many individuals on the autism spectrum have with music is theorized to begin with their tendency to have different auditory perception than neurologically typical (NT) individuals. A diagnostic questionnaire developed by the Autism Research Institute of San Diego found that 40% of the 17,000 parents who participated had indicated that their child exhibited some form of sound sensitivity (Rimland & Edelson, 1995). Current neurological studies imply that there may be a physiological basis for the differences in auditory perception as many individuals have developed unique neuropathways and correspondingly different patterns of brain activity in response to sound (e.g., Boddaert et al., 2004; Gage, Siegel, Callen, & Roberts, 2003; Gomot, Giard, Adrien, Barthelemy, & Bruneau, 2002; Siegal & Blades, 2003).

One common trait among musically talented individuals on the autism spectrum is that they also exhibit better pitch discrimination than NT persons (Bonnell et al., 2003). Many individuals also have a better long-term memory for pitch (Heaton et al., 1998) even sustained over the period of a week (Heaton et al., 1998), and superior short-term memory used in discriminating differences in pitch (Bonell et al., 2003). In a study by Heaton (2003), high-functioning children on the autism spectrum demonstrated better pitch memory than NT controls when asked to identify individual tones within a chord. Melodic memory has also been found to be stronger in children with autism (Brace, 2009; Heaton, 2005). Adolescents and young adults on the autism spectrum also identified pitches less than a semitone apart more accurately than their NT counterparts (Bonnell et al., 2003). This heightened pitch discrimination is perhaps related to a higher

prevalence of absolute pitch among students with autism (Brown et al., 2003; Miller, 1989). Appelbaum, Egal, Koegal and Imhoff (1979) found that children with autism had an enhanced capacity for reproducing musical stimuli, and reflected that this phenomenon might be a form of sophisticated musical echolalia. These abilities are all seen as possible precursors to the musical savant abilities that are found within the general autistic population (Bennett & Heaton, 2012). Many studies hypothesize that these musical skills can be attributed to (a) bottom-up and localized thinking processes (Frith 1989; Grandin & Panek, 2012; Happé, 1999; Happé & Frith, 2006), (b) the excellent ability to focus (Dawson & Soulières, 2009; Mottron & Burack, 2001; Mottron, Dawson, Soulières, Hubert, & Burack, 2006), and (c) the ability detect the rules of systemizable domains (i.e., math, calendars, music) (Baron-Cohen, 2006, 2008; Baron-Cohen, Ashwin, Ashwin, Tavassoli, & Chakrabarti, 2009).

### **Alexithymia and the Recognition of Musical Emotions**

As mentioned earlier the apparent socio-emotional difficulties and empathetic deficits observed in the autism population may be the result of a corresponding level of alexithymia, not the diagnosis of autism. These results indicate that music may be an understood form of social stimuli. This section describes the current research of the perceptions and interpretations of children on the autism spectrum in response to their musical experiences. Together, these studies indicate that many individuals with autism may perceive social and emotional information delivered through music typically, and that some perceive it superbly.

Several recent experimental studies have directly tested higher-order musical thinking skills in the autism population. For example, Heaton, Hermelin and Pring

(1999) showed that children with autism understood the affective connotations of musical mode sufficiently well in order to pair schematic representations of happy and sad faces with excerpts of music in major and minor keys. Heaton, Allen, Williams, Cummins, & Happé (2008) found that typically developing children with autism matched their typically developing peers in their ability to match musical excerpts with pictures, denoting a range of affective and non-affective scenarios. This developmental normalcy was contingent on their verbal mental age, not on their diagnosis of autism. Bhatara (2008) and Bhatara, Quintin, Heaton, Fombonne, and Levitin (2009) found that students who had autism spectrum disorder perceived and integrated musical soundtracks with visual displays in ways equivalent to neurotypical controls. These studies failed to reveal group differences and suggest that difficulties in recognizing emotions in social stimuli may not extend to music.

A study by Allen (2010) specifically investigated the impact of alexithymic traits on music perception by asking groups of intellectually able adults, some with and some without autism, to select words that described their personal responses to music. In addition, galvanic skin response measures were taken while the participants listened to the musical excerpts. The analysis failed to show any significant between-group differences, and indicated that the physiological level of arousal was preserved in the participants with autism, and that the emotional component of their understanding of music was functioning normally. One area of difference was that those with autism selected fewer emotion words than the neurotypical controls; the data showed that the severity of the participants' alexithymic traits, rather than their diagnosis of autism, explained the results.

In a recent observational pilot study, Molnar-Szakacs and Heaton (2012) tested patterns of attention in response to auditory and musical stimuli in 20 autistic and typically developing children who were engaged in a play activity at school. The stimuli were either short sentences, environmental noises (doors opening and closing), or short excerpts of classical music. The children's responses were video recorded and coded for significant responses. The results showed that children with autism were more responsive to all stimuli than the typically developing children. Also, typically developing children showed a similar pattern of responses for all three stimuli, while the students with ASD showed a statistically significant increase in their responses to music compared with environmental noise and speech. The authors stated that these results strongly suggest that music elicits a special attention from children with autism, and that music may be an understood form of social stimuli for these individuals.

### **Social Interaction through Zygonic Relationships**

The zygonic theory was developed by Adam Ockelford (2002, 2004, 2007, 2009, 2010, 2013a). It examines interaction through music. This theory holds that the derivation of a musical idea can lead a listener or co-creator to a general sense of what may occur, yielding a wide range of reasonably predicted future outcomes. This general sense stems musical-structural understandings, and holds that musical imitation can “occur in all domains of perceived sound and at all levels” and “is the ultimate organizing force in music” (Ockelford, 2009, p. 91). Ockelford (2007, 2008, 2010, 2013a) has done extensive research to test this theory in special music education settings.

Ockelford (2007) investigated the musical responses of a girl with septo-optic dysplasia<sup>6</sup> while improvising with her teacher. The musical relationships identified, particularly those relating to her harmonic and melodic derivations, revealed insight into her musicality, so much so that Ockelford suggested that music might be able to be developed into a proxy measure of social interaction for her. In 2008 and 2012 Ockelford published accounts of his extraordinary interactions with Derek Paravicini. Derek had severe learning disabilities, autism, and was classified as a savant. Ockelford, Derek's teacher, discovered that music was a powerful outlet for expression and communication for Derek. When the zygonic theory was applied to their musical relationship, Ockelford discovered evidence of musical-cognitive processing, creativity and imagination in he and Derek's construction of new music from remembered fragments.

Ockelford (2010) studied the cases of five children with autism, revealing that Derek's case might not necessarily be exceptional among other children on the autism spectrum. The findings revealed that all five children had the capacity to use music as a proxy-language. Ockelford wrote that that music served each child as "a fully-fledged medium of social interaction," (Ockelford, 2010, p. 322). He found that the children were both empathetic and competent musical partners, who were able to influence and follow musical communications with precision and impact (Ockelford, 2010, p. 322). He noted that their interactions ranged from simple to highly sophisticated. Ockelford wrote

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<sup>6</sup> Septo-optic dysplasia "is defined as a combination of optic nerve hypoplasia (absent or small optic nerves), pituitary abnormalities and the absence of the septum pellucidum or corpus callosum or both – without which communication between areas of the mid- brain (such as the transfer of sensory information) is hampered. Among the likely effects of septo-optic dysplasia are visual impairment, hormonal problems, delayed development, behavioral difficulties and obesity. The type and range of symptoms can vary from mild to very severe (Mehta & Dattani, 2004). It is important to note that K is totally blind and does not have delayed development." (Ockelford, 2007, p. 69)

in the conclusion of his study that the musical interactions and communications of individuals with disabilities was largely under-researched, and called for more studies to be undertaken in the fields of music education, therapy and psychology.

### **Responses and Reflections of Children and Adolescents With Autism**

As mentioned in the introduction, research analyzing the self-reports of students with autism is extremely limited. In fact, only two qualitative studies were found detailing the reflective music education experiences of students with autism. The first report by Fang (2010) showed that music education helped children with autism in the areas of routine, memory, mood regulation, and motor skills. Developing musical skills also helped increase the participants self-esteem, and brought them acknowledgement and praise by their communities. In the second report, Halliday (2011) found that students were able to draw connections between their music class and other experiences, as well as make independent musical choices based on their personal preferences and knowledge. During musical tasks students were able to self-correct, anticipate and evaluate their own performances. Because this research is so limited, a broader base of information has been drawn from to provide a theoretical and practical grounding for this study.

To support this study, a collection of research findings in music education in regard to children's reflections has been explored. Authors such as J. R. Barrett (2005), Jorgensen (2003), M. S. Barrett (2002), Reimer (2005), Stauffer (2002), Temmerman (2004), and Younker (2006) have argued that deeply connecting children's in-school music experiences with their out-of-school experiences, emotions, interpretations and reflections has profound benefits and should be seen as an imperative aspect of the music

education curricula. The ability of reflective thinking to help students form meaningful connections between their learning, personal experiences and unique backgrounds makes it a powerful tool in adapting curricula to a heterogeneous population.

### **Responses and Reflections of Neurotypical Children and Adolescents**

The following literature comes from two main research domains: ethnographic-centered research in various environments, and qualitative studies in music education settings. The section of qualitative studies in music education settings is broken down into three categories of (1) improvising, composing and problem solving, (2) performing and performance ensembles, and (3) listening. These organization shows that there is adequate justification for the educational program employed in this study, which sought to observe two students involved in the musical actions of creating, performing and responding to music.

### **Ethnographic Studies**

In an ethnographic study, Crafts, Cavicchi, Keil & the Music in Daily Life Project (1993) asked 41 participants, including six children and six teenagers to reflect upon the distinctive musical worlds in which they live. Their interviews revealed how and why individuals used music, how their cultural background affected their musical choices, and how and why the participants' preferred types of music were enjoyable and important to them. The data revealed that one individual can act as both a creator or receiver, performer or spectator, and active or passive listener depending on their environment, showing that each persons relationship to music is a very complicated construction. Crafts et al., (1993) concluded that musical taste and interest are far more complex, idiosyncratic and self-directed than current music research depicts and postulated that



much research is left to be done before a true understanding of how individuals search, test, experiment with, reflect upon and assign meanings to music is gained (p. xiii).

Patricia Sheehan Campbell's (1998, 1999, 2000a, 2000b, 2002, 2004, 2010) work is central to this topic because she has focused her research on collecting children's thoughts and sentiments. Campbell (1998) aimed "to describe music and its meaning in children's lives, to argue its critical importance to them and to suggest a model for further probing by those whose interest is children and their music" (p. x). Campbell observed children in a variety of locations in order to learn more about their natural musical behaviors in a variety of contexts and interviewed them to gain insight into their musical thoughts and ideas.

Campbell's reports suggested that by listening, watching, and talking with children, teachers can become aware of their musical knowledge and interests, and use this information when designing music curriculum and lessons. Campbell (1999; 2000a; 2002; 2004; 2010) found this to be exceptionally important because the children had become socially enculturated to music through the influences of family, peers, and neighbors before their formal schooling began. This created a high level of diversity in their knowledge, interests, abilities and needs from the first moment they entered the music classroom and created a complex educational challenge for music educators. To meet this challenge, Campbell suggested that music educators find means to observe and interpret the actions and reflections of the unique children they work with, in order to properly tailor the learning process to suit their needs. Campbell concluded that the act of conversing with children could provide the needed information to determine how and what music ought to be taught in particular settings. Campbell postulated that

“Teaching strategies are authentic when they are rooted in children's actual needs and interests. The ways in which children use and value music should serve as the foundation for the instructional plans that we design and deliver to them,” (2000b, p. 36).

Other researchers have found also that children’s response to and reflections on their musical experiences can yield rich information about their out-of-school music experiences, which can be applied to the classroom. Minks (1999) compiled an ethnographic study of children aged 5 through 11 in a culturally diverse public elementary school. She found that her participants had dual musical lives: one was a public life oriented around sharing popular music interests with peers, and the other a private life in which they listened to the ethnic music of their parents.

Taking this study one step farther, Griffin (2009) found that children experienced informal music-making in multiple spaces outside of their music classes, but that there was a lack of interplay between their in- and out-of-school music environments. He also found that music teachers were not knowledgeable about their students’ prior interests and skills, and that students did not apply their music education to out-of-school music activities. Emerging from this finding, Griffin suggested that it would be beneficial for music educators to incorporate children's voices into the school learning process. By incorporating the voice of children on the autism spectrum music educators may be able to make better connections between their private and public musical lives and fashion a more comprehensive and meaningful curriculum.

Susan J. Williamson (2005) completed a study to profile the music-making and listening experiences of middle school students enrolled in school performing arts groups, and to probe how these experiences influenced the student’s musical self-perceptions.

She discovered that in addition to the students' known music making activities at school, they also had private music-making experiences with their families and friends. She also discovered what types of listening activities the students engaged in, and how these choices influenced their personal, social, academic and family life. Lastly, she learned that the school music experiences were the main provider of formal music experiences for these children, and that students' decision to study music was contingent on their regard and relationship with their music teacher. The voices of these students drew awareness to (1) how school programs and curricular considerations can influence student involvement, (2) the role outside programming can play in students lives, and (3) how the music educator involved can influence program enrollment. This leads to the idea that having further knowledge about the responses and reflections of students with autism could help prolong their participation in school music programs, and help music educators provide them with more meaningful instruction.

### **Qualitative Music Education Studies**

Reports of children's responses and reflections specific to their music education experiences have been completed in regards to a variety of musical activities including composing, improvising, listening, and performance. In response to each of these activities, children were able to elicit either verbal or non-verbal reflective responses that aided the teacher-researcher in making informed curricular decisions. It is crucial to note that there was no evidence found to suggest that a child's intellectual level or diagnosis of autism could make their responses of greater or lesser value, and no studies that suggest that children with an autism spectrum disorder are incapable of providing such information. The remainder of this chapter will share research that explores the effects of

observed responses and reflections on the music classroom, what teaching professionals have learned, and finally demonstrate the need for further research on this process with a more diverse number of populations.

### **Improvisation, Composition and Problem Solving**

Margaret Barrett is a significant researcher of children's reflections on their music education experiences (1995, 1996, 1997, 1999, 2000, 2001, 2002, 2003, 2006). Barrett (1996, 1999) inquired into the nature of children's aesthetic decision making processes in response to several musical activities including listening to a song, creating a song, and creating an original instrumental composition. From this, Barrett contended that children can share their musical thought processes when provided the opportunity to do so, and when they believed their thoughts were valued. Barrett learned that because children's understandings, interpretations and modes of sharing are heterogeneous they should be observed throughout the completion of a broad range of tasks and that children should be permitted to share their thoughts through a variety of verbal and non-verbal modes. Under these circumstances, Barrett found that children's musical actions and discourse provided direct access to their musical and aesthetic thinking processes. Important to this study, Barrett also discovered that the ability to form musical discourse is not necessarily linked to age or prior experience, which supported the work of McMahon (1987). This finding indicates that children with autism may be able to share insightful reflections if given a broad range of opportunities, and numerous modes for expressing their thoughts. This supports the research question, theoretical framework, and methodology of this study.

Barrett (1997, 1999, 2001) as well as Christensen (1992), Davidson & Scripp (1988), and Verschaffel, Reybrouck, Janssens & Van Dooren (2009) found that children can use self-created symbols or invented notations to describe their music experiences non-verbally. These original symbol systems naturally matured as the children progressed, showing that they were gaining control over the tools of music and their own musical understandings. These notations were found to have multiple functions like encoding, storing, and retrieving personal and academic musical meanings for the students. These symbol systems also increased the students' abilities to perceive nuances in music and improved their awareness of their own meta-cognitive processes (Christiansen, 1992). These symbols and notation helped the teacher researchers obtain information about the children's musical understandings, their musical thinking, what the music meant to them, and gave insights into the extent of their capacity to reflect on musical experiences.

Pamela Burnard (2000a, 2000b) synthesized many of her research findings and arrived at a model map of how child composers and improvisers meta-cognitively explore and contextualize the meaning-related qualities of their own music and music making. This model was based on her finding that children can talk eloquently about their own musical experience and what she discovered from the analysis of this discourse. Burnard (1999) found that when children were engaged in student-directed improvisation and composition activities they were able to use their past experiences to solve problems, establish continuity and musical interplay with peers, and share helpful and articulate reflections with others both verbally and musically. The reflections they shared gave insight into their complex reflective constructions of their pieces, processes and goals. It

was also discovered that children had a “knowing body,” meaning that when they were freed to experiment they gained access to a previously untapped body of existing ideas and movement patterns encoded in their kinesthetic memory that they could use and enjoy - in other words, the reflective process brought out knowledge that would have otherwise gone unused. If certain students, like those with autism, are not given the opportunity to openly reflect upon their musical understandings it is possible that aspects of their musical understandings and abilities could go unrealized.

Betty Younker (1996, 2000, 2006) has also focused her career on qualitatively researching the critical thought processes of students aged 8 to 21 while composing in search of developmental patterns. Burnard and Younker (2004) expanded this research to also include children from different countries. The wealth of information gathered assisted Younker (2000) in also designing a graphic model of how students chose, formed, critiqued, edited and revised musical material based on skill and age. Younker (2000, 2002) and Burnard and Younker (2004) revealed that there were differences within and across ages and cultures, but also found that there may be a continuum of strategies and processes that are utilized by all students when composing. She called this unified yet distinctive pattern *related diversity*. Furthermore, Younker concluded engaging students in metacognitive activities had increased the depth and scope of their awareness and encouraged them to begin to think like a composer. Younker concluded that student reflection on action revealed their different compositional pathways, so they could be assessed and understood. She then emphasized that teachers and students would mutually benefit from this process.

Biklen (1991) investigated the how seventh and eighth grade students constructed meaning from music. Their self-reports indicated that they used six basic dimensions when drawing meaning from a piece of music: (1) technical dimensions, (2) affect, (3) extra-musical ideas (e.g., creative, imaginative, visualizations), (4) connections to other experiences or knowledge, (5) comparisons to other songs or pieces, and (6) speculation (questions and wonderment about a piece). The ability to articulate these meaning-making dimensions indicated that students were not only able to critically reflect, but could do so in a way that actually helped them become aware of and strengthen the substance and meaning of music in their minds. Biklen (1991) stated that teachers and researchers must know that while instructional discourse has its limits and that acts of thinking and feeling may exceed those limits in certain situations, it is important for educators to stretch these limits, whenever possible, to help each student find a fullness in their musical response.

Kanellopoulos (2007) explored children's talk about musical thinking in response to their own improvised music. He built on the work of others including Bruner (1990), Dewey (1933), Kennedy (1999), Kushner (1995), and Matthews (1980), and postulating that children's discourse on music is the beginning of their philosophizing about music. By analyzing his discussions with eight-year-olds he found that they often began with concrete and particular observations, but then developed to consider more abstract concerns. He concluded that children's reflections have important educational implications because they reveal the meaning-formations at the center of their experience as a musical-artist.

Responsive and reflective processes have also been explored while students attempt to solve musical problems. Freed-Garrod (1999) qualitatively examined dimensions of 8 and 9-year-old children's musical decision-making and problem solving and found that children undoubtedly used their previous experiences, imagination and feelings to produce solutions to compositional problems. There was evidence that the students used both lower (i.e., perception and memory) and higher levels (i.e., evaluation, deduction) of cognition to solve problems. The children were also able to articulate clear goals and ideas about their project, showing that the choices they made were conscious and intuitive. DeLorenzo (1989) had very similar findings in a study of the self-reports of sixth grade students; however, he also found that the students' perceptions of the relevance of the task affected their effort during the task, and quality of their final product. The knowledge that a child will not only use previous experiences, imagination and feelings, but also be motivated by a personally relevant task means that teachers would benefit from allowing their students to share their thoughts and personalize their work.

This is further supported by McGillen (2004), who completed a case study of the reflective responses of two students who were part of a large student-directed ensemble that was responsible for composing its own music. This study provided insights into (1) their process of cooperatively composing, songwriting and performing, (2) their interdependent relationships as ensemble members, (3) their the personal level of investment, and (4) their identification with the original musical product that emerged.



### **Performing and Performance Ensembles**

Reflection has also been found to benefit music education performance ensembles. Davis (2010) studied the reflections and meaning-making processes of fifth grade band students and found that enabling students to discuss their own musical connections allowed students to give birth to their own musical rationality and encouraged their personal investment in their own learning. Adderley, Kennedy, & Berz (2003) interviewed 60 high school students to obtain their reflections of their high school music ensembles and found that students were intellectually, psychologically, emotionally, socially, and musically nurtured by their membership in these ensembles. He also learned information about the degree of importance each of these aspects had on each member, and their motivations for participation. Silverman (2008) found that overt reflection and interpretation helped broaden students' knowledge of a piece beyond technique, provided a context for discussing intramusical, intermusical, and extra-musical subjects central to the piece being explored, and improved the quality of their listening experience.

There are many studies of students' reflections in regards to their choral experiences. Researchers, including Freer (2009), Lucas (2011), and Sweet (2010) have focused on the reflections of middle and high school boys in the choral classroom, and have discovered information about their motivations, fears, needs, goals and interests. Hylton (1981) investigated meanings of choral singing to high school students and revealed several categories of meaning such as: achievement, spiritualistic, artistic, communicative and psychological. From this, Hylton argued that a multi-dimensional conceptualization of meaning was valid. Durrant (2005), Parker (2010), and Turton &

Durrant (2002) also studied the meaning of choral experiences for high school students and found that meaning making involved areas like social growth, expression of emotion, increased self-confidence, development of personal character and identity. Parker (2010) also found that the meaning constructs for students in an urban chorus also included unique categories like shared uncompetitive positive opportunity, singing as a shared experience, pivotal bonding experience, and available safe space.

### **Listening**

Silverman (2013) completed a study to “investigate how music educators can approach the development of students’ music listening abilities democratically in order to deepen students’ musical understandings...and create pathways for student–teacher transactions that are inclusive, educative, ethical and transformative” (p. 7). One finding of this study was that students were most apt to learn music listening effectively and enjoyably when afforded democratic and creative opportunities to express their beliefs about the natures and values of music, and discuss it critically. Another finding was that although this type of democratic teaching involved some conflicts regarding content selection, the participants did learn to manage such conflicts skillfully and constructively. One important implication of these findings is that music classroom experience can be made more powerful through discourse and reflection.

Rodriguez and Webster (1997) completed a study to determine the nature of children’s verbal responses to repeated hearings of a brief musical excerpt when asked systematically designed questions that encouraged interpretive responses. Over the course of the study the researchers were able to identify what children found meaningful in their music listening experiences. They were also able to determine the relationships

the children drew between perceived musical elements, amidst other contrasting forces such as feelings or cultural knowledge, and derive at their basis for making certain musical judgments. This allowed the researchers the ability to adopt the materials and pedagogy to maximize the child's proclivities. Furthermore, it was found that sustained exposure helped develop the students' sensitivity to timbre and sound character, as well as increased their ability to identify formal attributes. Lastly, students were able to explore and be taught more accurate ways of describing their musical feelings and understandings about their musical listening experiences, developing the attainment of higher affective and aesthetic levels of comprehension.

Emilija A. Sakadolskis (2003) completed a case study regarding the use of figurative language in the construction of musical meaning for three sixth-grade general music classes. The findings revealed (1) how students used particular container metaphors and personifications to describe musical events, (2) how students used similes, analogies, onomatopoeia and synthetic metaphors to describe timbre, (3) how students made judgments based on regularities and irregulars in the music heard, and (4) that students, to a great extent, rejected non-Western tuning systems. The findings allowed the researcher to explore the cognitive relationships between the students' sensory experiences, the mental representation and linguistic expression. It was concluded that the students would benefit from strategies to help them (a) explore and verbally deal with timbre, (b) bring musical meaning to consonance and dissonance, and (c) explore the relationships between experienced music and word choice further. The findings shed light on the essential presence of language and communication in the music classroom.

## Conclusion

The first section of this review shared research on the nature of autism. The cognitive, social, behavioral and musical traits of autism expounded upon were all determined to affect diagnosed individuals differently, making autism an extremely heterogeneous classification. It was determined that students with autism often have heightened musical sensitivity and skills, and that the ability to interpret socio-emotional information does not necessarily affect an individuals' ability to interpret socio-musical or musical-emotional information. In several recent studies, it was found that alexithymia affects one's ability to share emotional and metacognitive thoughts and processes with others, not autism. Despite this finding, and adequate number of self-reports of musical experiences by individuals with autism have not yet been gathered. The studies currently available are limited because they specifically tested the ability of students with autism to make conventional music associations (i.e. flash cards with faces), and as such, provided little to no insight into the personal nature of the participants' experiences, leaving more research to be done.

In the second section, studies of students' responses and reflections pertaining to their music education experiences were explained. These studies focused primarily upon the musical activities of composing, improvising, performing, and listening. It was found that children and adolescents respond to and reflect on music in a number of ways, and that these reflections provide a great deal of information regarding students' musical experiences (in- and out-of-school), understandings, development, thought processes, motivations, interpretations, and modes of meaning-making. These reflections provided rich and expansive detail about students' music experiences, and have even led to the

formation of graphic models of children's thought processes (Younker, 2000). The limitation of these studies is that they all pertain to neurotypical students. The words of students with autism are largely missing, leaving teaching professionals little information about their critical reflection processes.

When determining whether or not the words of people with autism can be regarded as credible within the research and education community, it becomes important to remember that despite six decades of research, a consensus on the developmental and neurological nature of autism has not been reached. It is, however, widely acknowledged that autism is a spectrum of disorders and is extremely heterogeneous. This heterogeneity is manifested in many ways, and limits the extent to which singular approaches can be adopted by educators and therapists. Because this heterogeneity has been shown to extend itself into abilities of emotional awareness and expression, especially pertaining to music, it is important not to discount the reflections of able individuals within the community. This collection of verbal, intellectual, and emotional findings indicate that the extent to which individuals with an autism spectrum disorder are able to achieve their educational and professional goals may depend on the development of appropriate therapies and educational approaches. If there is a group of individuals within the autism community who can communicate their responses to and reflections of music clearly, then this should be considered crucial factor toward developing a program in which they can achieve their fullest academic and personal potential.

## **CHAPTER III**

### **METHODOLOGY**

#### **Introduction**

This chapter presents the research design and methodological processes used in the construction of this study. After a brief overview of the research, the specific case study design that was employed for this study will be described. Then, I will describe how this design, the research questions, the theoretical framework, and my role as the researcher informed the selection of participants, the lesson planning techniques, and the types of data chosen to be collected. The procedures I used to gain access to the site, solicit participation, request consent and assent are also detailed. Subsequently, I explain the resulting data analysis including data collection, data preparation, data management, the coding process, and the methods used for forming themes. Lastly, I address issues of triangulation, verification and member checking.

#### **Research Overview**

This multiple qualitative case study was designed to explore how two students with autism responded to and reflected on their own experiences in a series of five private music lessons and one shared lesson that required creating, performing and responding to music. Each lesson aligned with the National Standards of Music Education. Leading up to this study, numerous quantitative and empirical studies concluded that music can play a significant role in the lives of children with autism, and indicated that these individuals had the ability to express their musical ideas and feelings despite their disability. There was, however, a lack of studies that qualitatively described the expressive responses and

reflections of children with autism. The absence of this type of study was especially noticeable in music education journals. The literature pointed me toward a need to explore the responses and reflections of individuals with autism in response to music education experiences. To do so, an open-ended and holistic form of inquiry was selected. Furthermore, the questions I sought to answer was designed not only to capture observations of human behavior and thought, but also to respond to the heterogeneous, flexible, and ever-changing details of whether and how these behaviors and thoughts contained meaning on the individual level. It was not an exploration of cause and effect, but an effort to analyze and describe the learning processes and expressions of two specific children. My hope was to humanize the learning process of these children for the teaching and research community, and perhaps shed light on the potential benefits and/or shortcomings of including a deeper awareness of all students' responses and reflections in inclusive practices.

### **Case Study Research**

Louise Smith (1978) was among the first educational ethnographers to define a case as something that occurs within a *bounded system* (Stake, 1995, p.2). Miles and Huberman (1994) defined a case as “a phenomenon of some sort occurring in a bounded context” (p. 25). More recently, Creswell (2008) defined a case study is “an in-depth exploration of a bounded system based on extensive data collection” (p. 476). What prevails is the notion of boundaries. In these instances, the term *bounded* is used to explain that each case to be studied must have clearly defined limits that separate the research, from all that is not to be studied; this is done “in terms of time, place or some physical boundaries” (Creswell, 2008, p.476). Stake (1995) furthered this definition by

asserting that a case is also *integrated* or in some way cohesive (Stake, 1995). From these definitions, I have concluded that a case study must in some way be finite, and unique.

Beyond choosing a finite and integrated system, each case must also be purposive (Stake, 1995); “We are interested in them for their uniqueness and commonality. We seek to understand them,” (Stake, 1995, p. 1). Stake (1995) described three types of case studies: intrinsic, instrumental and collective. An intrinsic case is a case that it is in and of itself of interest. It may be selected because it is unusual, or has some particular merit (Creswell, 2008, p. 476; Stake, 1995, p. 3). An instrumental case is chosen because “it serves the purpose of illuminating a particular issue,” (Creswell, p. 476). “In instrumental case studies the issue is paramount, while the case is a vehicle for gaining knowledge, and is secondary in significance,” (Carter, 2008, p.85). A collective case study (also called a multiple case study) is when “multiple cases are described or compared to provide insight into an issue,” (Creswell, p. 477). There is an “important coordination between the individual studies” (Stake, 1995, p. 3-4), and they are chosen because they can offer the researcher an even deeper understanding of the processes and outcomes,” (Miles et al., 2014, p. 30) and “lead to a better understanding and perhaps better theorizing, about a still larger collection of cases,” (Stake, 2005, p. 446), and allow the researcher to observe trends that emerge across the cases and data sets (Stake, 2005).

Lastly, it is of utmost importance that the researcher develop an “in-depth understanding of the case by collecting multiple forms of data” (Creswell, 2008, p.477). While there is no actual, or even theoretical, limit to what the size of a case can be (Merriam, 1998, p. 28), Creswell (2008) asserted that the challenge of “providing an in-



depth understanding requires that only a few cases be studied” (p. 477). The nature of the study is generally descriptive, exploratory and explanatory (Shepard & Greene, 2003; Yin, 2009). The researcher looks for themes or categories, rather than tests hypotheses or proves relationships (Shepard & Greene, 2003; Yin, 2009). Stake (1995) clarified this distinction when he wrote, “the case could be a child. It could be a classroom of children, or a particular mobilization of professionals to study a childhood condition. The case is one among others...the case is a specific, a complex, functioning thing” (p.2).

### **The Use of the Case Study Methodology in this Study**

For this study, I used an instrumental multiple case study design. While the subjects in this case might be seen to have certain intrinsic value, the research question truly had an instrumental purpose. Each case was selected to gain insight into how individuals with autism respond to, and reflect on, their music experiences, and to shed light on the larger issue of how autism is perceived, understood and accommodated in the music education community. It was multiple or collective because I observed the responses and reflections of more than one child in order to be able to decipher details, complexities, and subtleties both with-in and across cases, in hopes of developing a deeper more well-rounded understanding, strengthened through the act of reflective comparison.

Yin (2009) explained that the choice of methodology largely depends on your research question. He conjectured that “how” and “why” questions “are more explanatory and likely lead to the use of case studies” (p. 9). He also shared that, “the more a questions seeks to explain some present circumstance (e.g. “how” or “why” some social phenomenon works) the more that the case study method would be relevant,” (Yin,

2009, p. 4). This type of methodology was also selected because the goal of this research was to provide an in-depth description of *how* students responded and reflected through emergent themes. The results of this study were generated through an exploration of a wide array of data types including interviews, audio and video recordings and transcripts, and artifacts in order to deliver an in-depth interpretation and holistic description of each child's unique and mutual response and reflection types (Merriam, 1998, p. xiii).

### **Teacher as Researcher**

In qualitative case studies it is typical for the researcher to be the “primary instrument for gathering and analyzing data and, as such, ...respond to the situation by maximizing opportunities for collecting and producing meaningful information” (Merriam, 1998, p. 20). In this study, I will serve both the researcher and practitioner, which has certain implications. As both the teacher and researcher of two students I am familiar with, in their own school, I had the opportunity to observe them in an educational environment that they were comfortable with and accustomed to. This circumstance, perhaps, enabled them to be more expressive and genuine; it also enabled me to confidently plan lessons, and avoid having to make any critical program changes during the course of the study. This, however, is not to say that I did not make adjustments to the program. As I developed awareness of the students' responsiveness to certain music and music activities, I made certain choices regarding lesson content. In essence, through the process of eliciting responsive and reflective communication from these students, I too, became responsive and reflective. This approach aligned with the pedagogical nature of child-centered curriculum, which these students are accustomed to at their current school and resembled the type of teacher behavior they expect. This

environment undoubtedly had an effect on the findings of this study and should be considered by future researchers. More information regarding the educational program is described later in this chapter.

### **The Researcher's Lens**

Qualitative research begins with assumptions, a worldview, and a question. To study research questions, researchers are asked to abide by approved data collection, inquiry and analysis procedures; however, much of the final report relies on the reflexivity of the researcher. It is undeniable that I have viewed, reflected, described, analyzed and processed every aspect of my research experience through the lens of a special educator and a musician. In order to provide this report, I have had to analyze my own perspective and acknowledge my own biases. By maintaining a research journal, I was able to constantly interrogate my own relationship to the research, and remain as honest as possible. However, I believe it is my duty to share my worldview, so that others can evaluate the merits of this research.

### **My Connection to Individuals with Disabilities and The Lab School**

In 1985, I became a big sister. My first sibling was Kimberly. Kimberly would pass away at a very young age because of complications brought on after heart surgery. She had Down's syndrome, which had impaired her body's ability to heal efficiently. While this happened long ago, Kimberly still inspires a compassionate and even a kindred sense among my family members for individuals with disabilities and differences. From then on, I grew up with a constant reminder from my mother to embrace people with differences in my community, which has manifested itself through friendships, volunteer opportunities, and ultimately, my career choice.

This experience also had an effect on how the world responded to me. When I was an undergraduate, my advisor planned one of my student teaching experiences to be under the guidance of a fantastic music educator, who had begun her career as a special educator. During undergrad, I also began working at a music studio where I was assigned to teach piano to children with a variety of special needs. Even my first public school teaching position involved working with a class of “alternative education” students, who had emotional and behavioral challenges.

I currently work at The Baltimore Lab School, a Division of the Lab School of Washington. The founder of this school was Sally L. Smith. Sally blew my mind and changed my perspective on education. Sally was a pioneer of educating people who learned differently. Her educational vision placed a high importance on the arts; music, dance, drama and art were the four main pillars of her program. Each child was heavily exposed to these subjects through her curriculum. The crown jewel of Sally’s school curriculum was The Academic Clubs.

Academic Clubs are a child’s seminal experience at the Lab School and are designed to uncover and honor how individual children narrate their life experiences and make that thinking visible and intelligible to others. The conceptual framework of a club suggests that for children in school, deep transformative learning takes place when language is defined expansively to include a complex of signs. Sally knew that when a child entered school they were equipped with an enormous number of tools for acquiring and sharing knowledge; they were accustomed to communicating through art, play, song, dance, sport, drawing, painting, building, reading and speaking. The Academic Club used this broad realm of expressions as an asset.

To illustrate the central framework of an academic club, I will use Sally's own example of an undergraduate club called "Educational Philosopher's Club" (Smith, 2005, p. 1). In order to do so, I will ask you to play along. You play the role of John Dewey and I will be Jean Piaget; there will also be Maria Montessori, Jerome Bruner, Howard Gardner, Johann Pestalozzi, and Rudolf Steiner. Upon entering club we all put on our robes so we can play the parts we have been assigned. At the door to let us in, is a teacher wearing a toga playing Plato. We all whisper a secret password to him, *paradigm*, and find our seats. My chair is marked with the name Jean Piaget and four steps showing his four stages of development, yours is marked with blocks because Dewey believed children needed to construct knowledge from experience. We all learn about our character and study how to behave like them in class. We all experience moving from a one-room schoolhouse, to a standardized public school classroom, to an open learning space, to a new technological world so we can develop our own conception of schools. We will all build conceptual models of learning through symbolic use of art materials, and provide our classmates with a rationale for our design the next day. We might all play a teacher-made board game called "Choose Your Path," to ponder choices made by educators from different time periods or demographic regions. We will celebrate the birthday of each character as a unit exam. We will decorate the room with biographical information such as flags, play the music of the character's native country, play with the materials found in their school, and toast to their contributions to the future. We end each session with the quote from Plato's Theatetus 155d3 "Wonder is the feeling of a philosopher, and philosophy only begins in wonder." We take off our robes, return to our identities, and move on to another classroom. (Smith, 2005, p. 1-3)

At the Lab School I have observed several clubs in action such as The Cave Club, Knights and Ladies Club, Gods and Goddesses Club, Renaissance Club, American Revolutionists Club, Industrialists Club, and Museum Club. I have seen this methodology unlock the intellectual capacity of many struggling learners, and have come to practice many of its facets in my own classroom. I have spent so much time describing the idiosyncratic nature of my educational experiences because it has truly impacted how I see children as intelligent beings, how I think, and how I teach. It is certain that this impacted my research decisions and design, and shaped my interpretive and reflexive nature.

### **My Experiences with Music and Art**

Growing up, my interests remained broad. I was raised in the suburbs of upstate New York. I took ballet, tap, jazz and modern dance classes and studied piano and clarinet, but I also loved art and science. I grew up in a family of retired horse trainers and racers, and spent a lot of time learning to ride. The church in my town had an incredibly large and active youth group, and this environment became my second home. I invested several weeknights and weekends volunteering locally with the group, and summers volunteering on national missions. I was also an athlete, running year-round on my school's track and cross-country teams. In high school, I traveled to Italy and Greece as part of an advanced art course, and was awarded with an internship at a veterinary clinic due to my science skills and interest. I was a Renaissance woman – working hard in all directions, only afraid of one thing – decisions.

When it came time for college, I had many paths to choose from, and was very unsure of how to proceed. After months of reflection, I chose music. I completed my

undergraduate studies at The College of Saint Rose in Albany, New York. This was my first time ever focusing my efforts on one discipline. Many of my classmates had focused on music their whole lives, and I had a lot of catching up to do. Somehow, I managed not only to survive, but also, to thrive. During college, I studied music abroad in Ireland at the University College Cork, traveled the country with certain performance groups, and even to Costa Rica to partake in an organ performance.

Before I graduated, a professor recommended me for a position at Ravena-Coeymans-Selkirk Public Middle School. I signed my contract one week after graduating and stepped into my first teaching role. I taught general and advanced chorus, general music, and voice lessons. I brought my soloists and ensembles to compete in the NYSSMA festivals, and had a steady performance schedule.

But then, it all changed. I was less than a year into this position when Marty, my high school sweetheart, proposed. We decided to get married, and to move to Baltimore, Maryland. Marty was an aspiring artist and needed to be in an affordable metropolis with ample opportunities. While I worried about leaving my New York life behind, I knew it was for the best. Here, I discovered the Lab School, found myself as a musician, and completed my graduate degree.

For the past seven years, I have studied piano with Robert Hitz, and performed regularly with his non-profit, Family-to-Family Concerts. With Robert, I have expanded my classical repertoire, and have explored songwriting and composition. I have also enjoyed performing in local musical theatre companies, like the Heritage Players and Miracle Players, and singing in various amateur and professional choruses.

Perhaps one of my most salient experiences in Baltimore was having the opportunity to live at the Creative Alliance with my husband. Marty was honored with the position of Resident Artist there for three years. During this time we met with artists and musicians from around the world, and participated in events regularly. It was a fantastic and rich experience in our lives.

Last, but not least, I am certain that the professors I have met and studied with at University of Maryland have had a profound impact on my way of thinking. They inspire and challenge me in numerous ways, and have shaped the way I analyze, describe, and process my life experiences. It is this program precisely that has fueled my desire to partake in research that examines the musical thought processes of students with disabilities, as well as equipped me with the tools to do so. By doing this, I hope to gain and share insights that will help music educators provide these students with exceptional music education opportunities.

### **Participants**

In Creswell (2008) it states that “in qualitative research, we identify our participants and sites based on places and people that can best help us understand the critical phenomenon” (p. 213). In agreement with this statement, the primary participants of this study are two students who are on the autism spectrum, display apparent and innate musical strengths, and love music. After careful consideration, it was decided that these two students had the potential to help the teaching and research community understand more about the responsive and reflective processes of students with ASD. The first participant was an 11-year-old boy named “Harper,” and the second was a 13-year-old girl named “Callie.” Girls are often under represented in research on ASD (Weiss, 2011),



so I chose one boy and one girl to provide a balanced perspective. These two students display very different symptoms despite both being diagnosed with autism. By choosing participants at varying points on social, behavioral, verbal, cognitive and emotional spectrums I hoped to gain insights into how and if their unique personalities and characteristics related to their perspectives on their music education. In addition to having different gender and diagnostic characteristics, the participants also had unlike ethnic backgrounds, socio-economic backgrounds, different educational backgrounds, different types of musical experiences, and distinct levels of musical achievement. This divergence may have also provided for a wider range of responses and thoughts.

To gain a more holistic view of the cases, I also sought out secondary participants. The parents of the students were asked to share stories of their child's lives. This was done, in part, to provide a humanistic understanding of each student. These participants were also added in acknowledgement of the social and communication challenges that the students face. By selecting to have parents who could articulate clearly and express themselves traditionally, I was able to gather information that served as a reference point and helped me better understand their child. This helped me interpret the data collected with greater insight.

### **Research Site**

The research for this study took place at a Mid-Atlantic school for children with special needs and learning differences. This school is classified as a non-profit public/private school where a majority of the students who attend are funded by their public school system as a part of Public Law 94-142, although a several families also pay privately. The school is certified by the its respective state department of education and

teaches according to the Core Curriculum, as well as offering integrated courses in the arts and humanities. This school is founded on child-centered and project-based pedagogical styles, and has a central focus on the arts as a medium and tool to help children of all needs learn and communicate their thinking.

### **Access, Permissions and Confidentiality**

Access to this school was gained through a signed agreement with the Head of the School (see Appendix C). The parents of the participants granted permission for this study because both participants were both under the age of 18 (see Appendix D). Each participant, under the age of 18 also signed their own assent form (see Appendix E). This study was approved by both a department committee at the University of Maryland, as well as by the Institutional Review Board (see Appendix F).

To maintain confidentiality the names of the parents, children, and school are omitted or identified by pseudonyms. Similarly any ensembles, teachers, or organizations mentioned in the study are not named.

### **The Educational Program**

#### **Lesson Plans**

The lesson plans for this study were designed to provide students with various opportunities to create, perform, and respond to music as described in National Standards of Music Education. During the creation of the lesson plans, findings in the research literature were carefully considered. Numerous studies found that students' thought processes were most observable and easily verbalized when the activity was student-directed (Barrett, 1996; 1999; Younker, 1996; 2000; 2006). The literature also pointed to

improvising and composing as two primary forms of musical acts that draw-forth rich responses, reflective thoughts, and expressive behaviors from student participants. Based on this finding, all lessons incorporated these two processes. However, these two processes alone did not suffice to examine how students responded and reflected while involved in the other musical processes described in the National Standards. Therefore, activities involving students in listening, reading, analyzing, describing and relating music to other disciplines and cultures were incorporated to prepare students for improvising and composing. The final lesson was reserved for the two participants to share their compositions and improvise for and with each other. This session allowed for students' to be observed socially and musically interacting with a peer. One lesson plan appears in Figure 3.1, while the others can be found in Appendices A and B.

### **Schedule**

This study was conducted over a two-month period from September 2013 to October 2013. During this time, each student met with me for a pre-lesson interview, five individual lessons, and one final lesson for both of them to meet and share their accomplishments. The parent of each child worked with me to schedule five independent lessons within that time. Both sets of parents and I selected a mutually convenient time for the shared lesson. The individual lessons and the shared lesson were all one-hour in length. The first 45 minutes of each lesson was for delivering instruction, and the last 15 minutes was reserved for a brief post-lesson interview.

**Student: Harper**

**Lesson 4 of 5**

**Date: October 12<sup>th</sup>, 2013**

**Goal:** To prepare for our performance of “Light and Day,” continue to develop Harper’s original song, and compose an original piece inspired by “In C.”

**Objectives:**

1. The student will reexamine the score of “In C.”
2. The student will compose an original version of “In C.”
3. The student will rehearse challenging sections of “Light and Day” slowly, checking for accuracy, and then at normal pace to work on fluidity.
4. The student will make a plan to add expressive elements such as dynamics, tone color, mood, and articulation, to “Light and Day.”
5. The student will write an additional verse of his original song, “Life is Great.”
6. The student will choose a chord accompaniment style (i.e., arpeggiated, blocked, punctuated) of the song “Life is Great.”

**National Standards:**

1. Singing, alone and with others, a varied repertoire of music.
2. Performing on instruments, alone and with others a varied repertoire of music.
3. Improvising melodies, variations, and accompaniments.
4. Composing and arranging music within specified guidelines.
5. Reading and notating music.
6. Listening to, analyzing, and describing music.
7. Evaluating music and music performances.
9. Understanding music in relation to history and culture.

**Materials:**

1. Piano
2. Score of “Light and Day,” (DeLaughter, 2002).
3. Harper’s song in progress
4. Score and recording of “In C” (Riley, 1964).
5. Short informative text describing Terry Riley
6. Staff paper
7. MixCraft 6 recording software

**Procedure:**

1. **Entrance Routine:** Upon entering, Harper will be allowed to freely improvise at the piano or a keyboard for approximately three minutes. Then we will begin by playing the C major, D major, and A minor scale on the piano. We will also play a game with flash cards to help calm Harper if he is struggling with anxiety.
2. **Engagement and Explanation:** Examine the score of “In C.” Look for details we may have overlooked in our first glance yesterday.
3. **Exploration:** Sight-sing the loops of “In C” to help us identify them in the recording.
4. **Exploration and Elaboration:** Listen to the recording. Identify when certain loops enter. Identify instruments. Make overall judgments about the piece – is it music?
5. **Elaboration/Application:** Compose a new version of “In C.” The following steps will help guide the process.
  - a. Choose a tonality – do we want the piece to be “In C,” or do we want to compose in another key?
  - b. Provide the student with the time and resources to compose a minimum of 5 loops. This can be done on paper, or through the MixCraft software directly.
  - c. Have the student produce a recording of himself either singing or playing his piece using MixCraft software.
6. **Evaluation and Exploration:** We will practice “Light and Day” slowly and in small chunks to check for accuracy. Then we will review the piece again to add and attend to expressive elements as possible.
7. **Elaboration:** We will continue the songwriting process by writing at least one more verse of lyrics. We will also try playing the accompaniment in a variety of ways to determine what sound quality suits the piece best. We will also try to solidify a chord progression for the chorus.
8. **Evaluation:** We will informally evaluate the lesson through the interview provided in the protocol.

*Figure 3.1.* Lesson plan sample.

## **Data Collection**

### **Overview of Data Gathering Strategies**

This study was conducted in 6 hour-long sessions that occurred over a two-month period from September 2013 to October 2013. I collected data through observations, field notes, video recordings, personal interviews, electronic interviews, student work samples, and official school documents and reports.

During each lesson I acted as a researcher-practitioner, teaching and observing each student. In addition to making detailed field notes about the process and interactions, each session was video recorded. This provided a detailed rendition of what occurred so it could be more carefully reviewed, evaluated and transcribed. Any work samples provided by the child, such as written compositions, were also collected and analyzed.

Each lesson was followed by a brief interview that gave each student time to reflect on their experiences. During the interviews, the participants were asked to describe the lesson, their impression of the information conveyed, and their reflections on their experiences. The interviews were primarily done through dialogue and writing, but the participant had the opportunity to sing, play, or draw a response as well. Speaking, drawing, making music, and writing are different forms of sense making and thought representation and provided more communicative possibilities and clarity than only speaking. The interview protocol and questions are available in Appendices G and H.

Initial student and parent interviews were conducted in person, video recorded and transcribed. Any clarifying information needed after the initial interview was collected through e-mail at the convenience of the parent. The interview protocol and questions are available in Appendix I.

## **Data Collection Methods and Types**

Data collection sources were video recorded observations, video and audio recorded student and parent interviews, observational field notes, entries in my teacher's journal, lesson plans, student work samples, and students' school records. Harper's mother also provided me with artifacts during our interview. All data collected were logged in a data accounting log to keep track of who provided which data, and when.

**Video and audio recordings.** A total of 15 hours were video recorded over an 8-week period. Video recording was my primary and preferred observational tool, but I had audio recording software set-up if ever needed. The video and audio recording equipment was set up as part of my lesson preparation routine. To avoid the possible distractions of using a human videographer, I chose to use a tripod. The direction of the camera was changed each time we relocated for a new activity. The audio recorder ended up to be advantageous because on occasion my video camera malfunctioned, had been inadvertently stopped, or the battery had died sooner than anticipated. One disadvantage of being a teacher-researcher is the challenge of spontaneously attending to equipment.

The camera used was a Flip Camera with a built in microphone and zoom function. It easily could be attached to a tripod, or held discreetly in hand when needed. The camera was located openly, but unobtrusively in the classroom. The audio recordings were made using MixCraft6 recording software and an external USB microphone.

**Observational field notes.** The field notes contained certain brief notes, anecdotes or amplifications of events that took place in the classroom. A notebook labeled with dates and code names of each child was kept handy in the classroom, and nearby when I made my transcriptions so I could make jottings when needed. The field notes were

helpful if something particularly relevant or important to the study took place, or if something happened out of sight of the camera. Due to my constant involvement with the children, it was not frequently possible to write notes until their departure. These short notes helped me recall of certain events that may have otherwise been forgotten.

**Teacher journal.** Throughout the course of data collection, through transcription and even through analysis, I maintained a journal. This journal was kept near me at all times to memo and expand upon my ideas, hunches, observations, and anticipations at a moment's notice. This journaling process helped me formulate my codes and themes, and also to assess my own personal biases as a researcher. This process kept me aware of my thoughts, and ultimately proved very valuable to the analytical portion of this study.

**Parent interviews.** The mothers of both children were interviewed. The children both had two parents, but the mothers were the ones who volunteered and were most available. During these interviews the mothers were asked to describe their child's personal history including details about their schooling, the nature of their child's disability, and to provide a detailed account of their child's unique relationship with music. Both parents seemed very at ease with being interviewed and the use of a video recorder.

The parent's accounts were used to develop the child's biography, and to triangulate the data provided by the child in their interview, and with school records. Questions were also asked regarding the student's learning style and preferred modes of communication. The information helped me to design lesson plans, and accommodate to the students' needs.

**Child interviews.** The children were interviewed seven times during the course of the study. First, they were engaged in a pre-lesson interview that asked them to describe their own personal history, the nature of their disability, and how music had been involved in their lives. Callie seemed very at ease during her interview, while Harper experienced great difficulty. Harper was experiencing a novel onset of neurological symptoms that included sudden anxious and OCD-like thoughts and behaviors that greatly impacted his communicative abilities. His interview was shortened. These symptoms are described in greater detail in Chapter 4.

The students' accounts were used to help develop their biography and triangulate data provided by their parents and in school records. They also helped me determine the ability of the child to provide a factual account, and establish baseline communication patterns for each child. Information provided about their musical strengths, weaknesses and interests assisted me in tailoring their lesson plans.

**Student records.** The students' school records included their school report cards, standardized testing scores, cognitive testing scores, neuropsychological evaluations, psychological evaluations, music therapy evaluation, speech and language reports, and occupational therapy reports. These reports were used to help me write their biography, triangulate data provided in interview, and establish their learning styles and strengths.

**Miscellaneous artifacts.** During my interview with Harper's mother, Ellen, she asked if she could share several of Harper's notebooks, noting that they reveal a great deal of information about his thoughts and thought processes. The notebooks contained number lines, math problems, maps, lists of his favorite songs, lyrics from existing songs, lyrics to songs he has imagined, drawings, maps, and a variety of words, phrases and



statements. These books provided a great deal of insight into Harper's inner world; one page is shared in Chapter 4. These books were not considered a primary data source, because they were created outside the boundaries that defined this case study.

## **Data Preparation**

### **Video and Audio File Transcription**

All video and audio recordings were checked and reviewed regularly to assure quality and make sure control settings were accurate. All fifteen hours of material were transcribed by the teacher-researcher. This helped me with the formation of emerging research codes, categories, and even to re-evaluate my research question. The data on the tapes were multi-leveled as there was so much going on in the classroom sessions at one time. I first found it necessary to watch or listen to each recording in entirety.

Frequently, students were spontaneously musical, or began singing, for instance, in the middle of an activity or during a relatively quiet period. Children also might have been experimenting with sounds, improvising, or formulating compositional ideas in ways that I needed to describe. Ultimately, I was able to include notes about emphasis, notes about a variety of non-verbal communications, and numerous musical descriptions. This process also allowed me time to review the observational data slowly and in excruciatingly minute detail.

After watching, I felt comfortable to transcribe the tapes. During this process I realized that at times I had been too emotionally involved with the student or with the unfolding events to look at or listen to them objectively. I found that after a lapse of time, and one full viewing, I was able to become a more impartial observer. I could now take on a more profound concern for what was happening during the lessons. I noticed

things about the children's music making and actions that I had not noticed when I was closely involved with them. I also noticed important things about my own actions, and how what I was doing affected each moment of each class. The initial emotional involvement and the lapse of time could be seen as both limitations in this study, and contrastingly, as critical aspects of a holistic observation process.

### **Data Management**

Data management began with the creation of word-for-word multileveled transcriptions of the audio and video recordings. Comments were added regarding descriptions of location in the classroom, non-verbal activity, location in the classroom, and time increments. Transcriptions also included information about the music being listened to or created at any moment in time as this was also seen as a form of communication. The transcriptions were then converted to tables using Microsoft Word. The table included line numbers, two coding columns, and the transcription itself. Each time a new speaker was introduced, or a speaker took a turn a new row was added to the table, so each line could be coded independently in the beginning stages.

### **Data Analysis**

The following data coding system was an integration of ideas from Creswell (2008), Freeman and Mathison (2009), Merriam (1998), and Miles et al. (2014). Coding was done in the following order:

**1. Organizing and reviewing data sets.** After the transcripts were created and DVDs of observational data were labeled, each item was filed first by participant; within each participants filing section I placed each of their respective transcripts in chronological order. Clear labeling of folders made data retrieval efficient. I initially made two copies

of each transcript; one was kept as a clean original, the next was used for revising the coding list.

**2. Holistic and Attribute Coding.** Holistic and attribute coding, as described by Miles et al. (2014) were used to create biographies for each student. I needed to holistically look at all the data, and create a unified picture of the participant being described. I needed to capture a sense of the overall content of their character, life story, musical history and abilities. I also needed to code for the objective attributes such as their age, grade, history of schooling, diagnosis, and important and relevant life events. I needed to provide clear factual and essential information for reference, context, and future analytical interpretation.

**3. First cycle coding and codes.** After creating the lesson transcripts, I had developed some initial ideas for my first cycle of coding. Most codes were straightforward and descriptive labels, while others were more complex or subjective. Codes were added or removed from the list as I realized the effectiveness of their use. These codes were listed on a table with an abbreviation. The code abbreviations later became useful to search, quickly find and pull out data when I was interested in looking for clusters or patterns. This clustering allowed me to make a chart of codes that occurred the most by quantity, and those that were critical or pivotal moments during the study. These chunks helped me condense the data, and further set the stage for second cycle of coding.

**4. Second cycle of coding.** Each lesson transcript was reviewed individually. I began by highlighting each code in a different color, memoing important events, counting the occurrence of each code and writing the most frequently occurring codes on a Post-It note. Each Post-It was placed on a large handmade chart divided by lesson. This

procedure revealed certain clusters, and patterns started to emerge. In addition to the number of responses, critical lesson events were considered in pattern making, but also were kept separate as focal points for higher-level reflection. This process also allowed me to see various similarities and differences between the two children. The first and second cycle codes are shared in Chapter 6.

**5. Thematic construction.** The final thematic construction began with charting the second cycle codes on a Likert Scale for their prevalence. I then created a variety of graphic organizers to examine the relationships between the second level codes. The next step involved reflection and questioning. For instance, is there a similar cause or additional factor that is eliciting a certain response? Or, is the perceived positive affect of the student habitual or is it conscious and genuine? Notes about students overall processes during lessons, motivations, and behaviors were noted in their files. This helped me weight the evidence, triangulate, check for my own influence over the outcomes, and look for both common and unusual behaviors (Miles et al., 2014, p. 293-312). Throughout this process, I also revisited the literature described in Chapter 2 to freshly acquaint myself with the work of my predecessors, and look for clues, leads, rival explanations, similarities and differences (Miles, et al., 2014, p. 308).

Ultimately, I was able to create a series of greatly condensed flow charts to depict the results; these condensed charts became themes. The charts helped me note patterns, see clusters of information, count how often something occurred, make comparisons and test relationships, and maintain a logical chain of evidence (Miles et al., 2014, p. 276-288). The themes were discovered as metaphors for the rich and complex web of condensed data they represent (Miles et al., 2014, p. 280). These webs were also used to

trace connections for the construction of a cross-case analysis, as well as in the formation of the discussion, and implications that end this report.

**5. Member checking.** After the biographical and analytical chapters were drafted, I reviewed all the data with the relevant participants. Each participant sent me notes regarding their perceptions, concerns, comments, and corrections. Adjustments were made to this report carefully and thoroughly following examinations of these notes. Following these adjustments, each participant was encouraged to communicate any further specification and questioning they wished.

**6. Triangulation.** In order to construct each child's biography, I corroborated all facts about their life from multiple data sources. The sources used for this triangulation included parent interviews, student interviews, and each child's school records. Each child's school records included: school report cards, standardized testing scores, cognitive testing scores, neuropsychological evaluations, psychological evaluations, speech and language reports, and occupational therapy reports. Harper's school records also included a music therapy evaluation. The formation of well-grounded participant histories helped me determine appropriate lesson goals, objectives, and procedures, and anticipate how each child may best communicate.

**7. Reliability.** All steps of the coding process were discussed with my advisor. She reviewed the code lists, definitions, and my processes. We looked for curiosities, ambiguities, and issues of plausibility. We worked together to make adjustments as needed. For example, I was troubled in determining the nature of the emotional responses I had observed, and through collaboration, we determined succinct and distinguishing descriptions.

## CHAPTER IV

### HARPER

#### “Doesn’t that sound like a green tree?”

This analysis was formed from my researcher’s journal, a parent interview, a student interview, and school records which include: school report cards, standardized testing scores, cognitive testing scores, neuropsychological evaluations, psychological evaluations, music therapy evaluation, speech and language reports, and occupational therapy reports.

Harper: Errrrrrrrr!!!! What?! You don’t know what that is? (smiling)

AW: No, what is it?

Harper: Jjhhjeeeuuuu! You don’t know that one?! (giggles)

AW: No, I don’t. Why don’t you come on in and we’ll get started?

Harper: Can I take a break?

AW: Already?! You just got here!

Harper: Yeah, but maybe..

AW: Alright, go ahead.

Harper: *Harper laughs and runs back into keyboard room and starts to play. He turns on multiple keyboards, playing his favorite sounds and sequences on specific keyboards. He joyously giggles intermittently.*

Entering the room, Harper floats past me, humming and buzzing. He has a mop-top hairstyle, perfect for a musician. He is wearing his typical uniform: cargo pants, a t-shirt and a black fleece jacket. He has a kind disposition, and there is a pleasant restlessness about him. As he passes, I notice that walks very slowly and lightly. I get the impression that he is floating off a cloud. As he moves around the periphery of the room, I realize from his big brown expressive eyes and spontaneous gestures that he is completely consumed and markedly entertained by his thoughts. He periodically giggles and laughs; whatever he is thinking about is bringing him great joy.

After some questioning, I find that he is imitating the sound of a refrigerator. This is normal for Harper. On many occasions, I have been hard pressed to separate him from the joy brought on by his vocal emulation of a florescent light bulb buzzing or the hum of a microwave. He is enthralled with the sounds of the world, and this is how he plays. He loves to internally entertain himself with thoughts of words and sounds emitted from life's exposure. He envisions, alters, orders, and combines them; he cannot resist. He is a constant composer.

### **Student Overview**

Harper is an 11-year-old boy, who is in the sixth grade. He attends a progressive arts-based school for children with learning disabilities. He is diagnosed with Autism Spectrum Disorder, characterized by a Mixed Receptive-Expressive Language Disorder, Unspecified Neurological Disorder, Deficits in Executive Function, Dysgraphia, and an Unspecified Anxiety Disorder (Neuropsychological Evaluation, 2013). He is sweet, cooperative, and receptive. He demonstrates significant hyperlexic and hypergraphic features. Numbers, letters, shapes, dates, street maps, time and music all fascinate him. He has perfect-pitch, and can play a great number of popular pieces from memory. His mother described many of these traits as being "savant-like." His first word was "circle," and he knew all of his letters well before 18 months of age. He said the word "octagon" years before he said the word, "mama." He has an uncanny memory for dates and times. He maintains numerous journals in which he writes street names, numbers and math equations, makes lists of songs, writes lyrics, writes music, memorizes musical facts, and draws.

### **Relevant Family Background**

In 1987, Harper's mother, Ellen, earned her Bachelors degree in English at the University of Pennsylvania and went on to become a television writer and producer for MTV Networks and did on-air promotions on Nickelodeon, Nick at Nite, and TV Land. She later became a self-employed writer, and co-authored a motivational book for parents of children with autism.

Ellen is a musician. She enjoys singing, as well as playing the piano and guitar. She has a knack for figuring out songs by ear. She shared during her interview that her love of music, "...turned out to be a great thing, because later in life, it turned out that music was really the key connection to my son, that it was our way of connecting at the beginning."

Harper's father, Morgan, completed his undergraduate degree from Brown University and his Doctoral Degree in Medicine from New York University Medical School. He is a thoracic surgeon, at a Mid-Atlantic medical center. He has no history of learning differences, or of any of musical pursuits.

Harper has a 14-year-old sister named Blair, who he has a warm and loving relationship with. Blair's enjoys music very much. She is a singer, in addition to being a self-taught pianist and guitarist. From a young age she has felt very dutiful about helping care for her younger brother. She is a very bright young lady and with no history of learning differences. She and Harper have a very close relationship with their parents.



### Early Life: Perfect Pitch and Synesthesia

Harper was making sounds since the moment he was born.

Ellen: When he was still a baby, he used to have this little elephant toy that played music, and he used to keep it right here (holding two hands by one ear), like really close to his ear. It was like something that our whole even our extended family commented on, how Harper walked around with this elephant pressed to his ear.

As he got a little older, he did the same thing with a Fisher Price radio. Harper, now 11, has reported distinct baby memories to his mother. One memory is of a mobile that hung above his crib that played a Mozart tune. He can distinctly remember the mobile and tune, now, ten years later.

Around age one, Harper's musical interests began to emerge. In the morning, he would wake up in his crib and steadily hum a note. One night, his mother carried him down to her electronic keyboard, "and with no hunting or pecking, he just knew where the note was!" Amazed and baffled, she started teaching him the names of the notes. By the time he was three, he knew them all by ear. Ellen remembered driving with Harper and hearing a lawn mower, to which Harper exclaimed "Bb!" That same year, his parents took him along with them to hear an Irish band.

Ellen: While they were tuning up between sets, somebody played a note, and Harper said, "I like that A!" With raised eyebrows, the man played another note, and Harper goes, "Nice C#!" And then another guy turned to me and said "Oh! You have a little Amadeus!" Every note they played, he was calling it out. And then, we bought a piano.

As a child, Harper revealed had memorized the piano keyboard completely.

Ellen: I think I told you the story about when we had our piano tuned for the first time. When we first got our piano, we had our initial tuning. Harper was in the kitchen and the guy was in the living room, and you cannot see from one room to the other, and Harper was calling out, not just the names of the notes, but the corresponding number of key. Like 42 B or whatever it was, and not like starting from the beginning, it wasn't like he started from one, you know, he just knew in isolation what key number it was – he was 3.

AW: Oh my gosh!

Ellen: The guy almost fell off the bench.

A few years later, when Harper turned 6, Ellen was met with another surprise.

Harper shared with her that he saw mental images of color when he heard particular notes. This is a common characteristic of a psychological phenomenon known as synesthesia. Synesthesia occurs when the stimulation of one neurological pathway leads to an automatic, involuntary experience in a second cognitive pathway (Eagleman, Kagan, Nelson, Sagaram, & Sarma, 2014). Figure 4.1 shows a page from one of Harper's notebooks what he recorded which color he sees for each pitch.

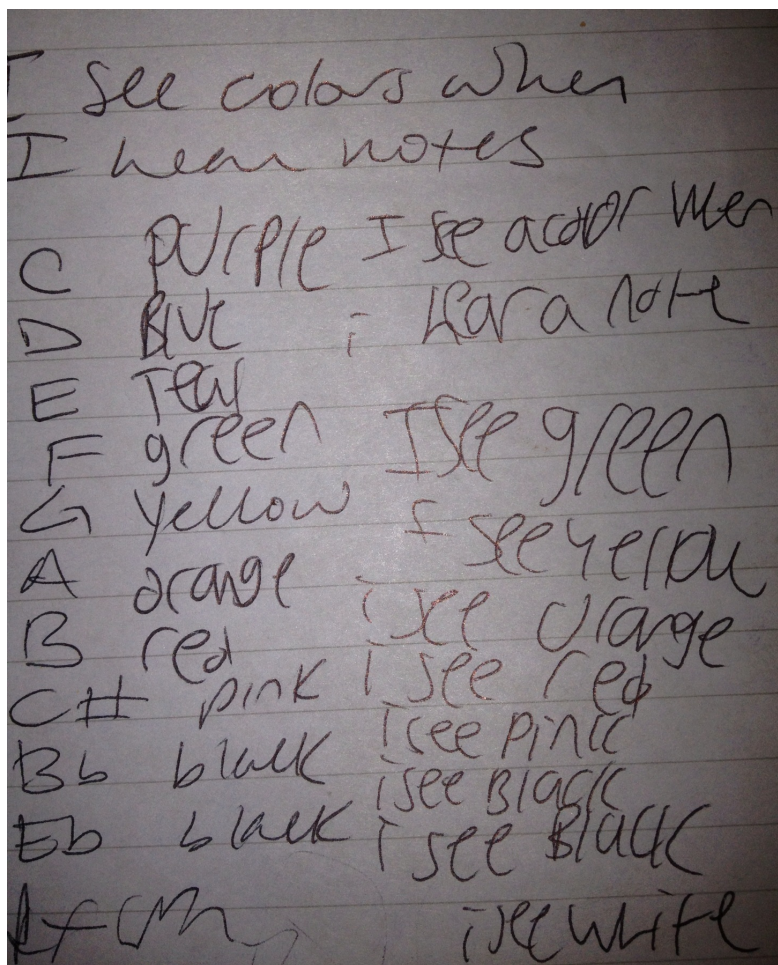


Figure 4.1. Harper's handwritten list of the colors he sees when he hears certain pitches.

Ellen: Then when he was six he started telling me that different notes had different colors. I am not really sure if he has synesthesia, or if he was goofing around when he was telling me, but it was fairly consistent. I think C was pink, and I forget exactly what they are, but I have them written down from one of his notebooks. But specific notes had different colors. I remember asking him if C is yellow, and E is blue, then when you hear them together, do you see green? But he didn't, but I thought it would be really cool.

Harper described this phenomenon twice during our sessions. The following conversation occurred during our third lesson.

AW: Yeah? What goes on in your head when you improvise?

Harper: I like to improvise because it is neat and special.

AW: What kind of thoughts do you have when you improvise?

Harper: GOOD thoughts!

AW: Do you ever see colors in your head when you improvise?

Harper: Oh, you remember that I think notes are colors?

AW: I do!

Harper: F is green uhhhhh (tone)

AW: yeah?

Harper: uhhh (tone) greeeeeeen and ahhhhhh (new tone) bluuueee

AW: When you improvise, do you sometimes think the notes are colors?

Harper: Yeah, but this really sounds like blue. Doesn't it? To me that is what it sounds like.

AW: How about ahhhhh (tone)? What is that one?

Harper: Yellow.

AW: Hah!!

Harper: Is it yellow?

AW: I don't know. I don't see colors in my brain.

Harper: That sounds like yellow.

AW: Does that look like yellow in your head? Do you see yellow in your brain?

Harper: It just reminds me of the color yellow because it sounds like it.

AW: What note is black?

Harper: Bb, because the note is black.

AW: Oh really?

Harper: I just think the way I sound...it looks like yellow. Eeeeeeeee! (tone)

AW: But you don't see the color yellow when you sing it?

Harper: AHuuuuuuuuuu! (tone)

AW: Hey, Harper?

Harper: What?

AW: Do you see the color yellow?

Harper: It looks like yellow paint. I picture yellow paint inside my head.

AW: You do?

Harper: When I uhhhhhhhhhh (the sound of something coming closer) pfft! (the sound of a splat)

AW: (Laughing) Is that a paint splat?

Harper: (Laughing) Yeah!

AW: That is awesome! That is a cool brain man! I love it. Do you think of those colors when you are improvising?

Harper: Yeah.

The second time synesthesia was discussed was at the shared lesson he had with Callie.

He was thrilled to talk with her about it, and gave several examples.

Callie: Do you have perfect pitch Harper?

Harper: Very perfect!

Callie: Ms. Weishaar said that!

Harper: And I used to hear colors! And I used to ...I used to hear colors in notes. Like uuhhhh (singing a note) C would be purple! And uuuuuhhhh (singing a note) D would be blue.

AW: It's true!

Harper: Ahhhhhhh (tone) would be red.

Callie: So "A" would be red?

AW: Its called synesthesia.

Harper: "A" would be red?! No! "A" would be ORANGE!

A: If you hear notes and see colors in your mind, it's actually a thing you can have.

Callie: Huh, really? That is cool!

Harper: B would be red though. G would be yellow ahhh! (singing) That is yellow, I picture.

Callie: Oh, okay! That's cool Harper, that's really cool.

AW: So when he hears notes, he sees color, which is a really cool phenomenon.

Callie: I never knew that.

AW: That synesthesia existed?

Harper: ...and F is Green!

AW: Surprise!

Harper: AHHH! (tone) Doesn't that sound like a green tree?

AW: Not to us, but to you it does.

And when Harper was five or six, he started correcting his mother's wrong notes while she was playing the piano.

Ellen: There was several years where if I was sitting at the piano trying to figure out a song, he would just float by and say, "You know, that's the wrong key for that song mom, there is an F# in it mom." Now we play this game where I'll play a snippet of a song from the radio, and he'll guess it, he is way better at it than me. We can flip it, but he likes to guess. And he'll tell me if it's in the wrong key, and if I get it right, he'll say, "yes mom, right key."

Then when he was six, he started improvising spontaneous harmonic arrangements of popular songs. He still does this when asked to today.

Ellen: When he was maybe six or seven, he started figuring out songs on the radio, it was really uncanny and amazing, because he wasn't just figuring out the melody; he was doing some kind of chord things. They were really very elaborate iterations of what was going on, it wasn't a simple note-by-note thing.

She went on to explain how Harper then began figuring out whole songs from beginning to end. She would play the bass line, and he would fill in the other voices. I have had the privilege of hearing him do this. It is true that he has a very keen aesthetic sense for chords. Even without explicitly knowing the how chords and chord tones function, he can combine notes to form rainbows of color, both honoring and improving a piece.

### **First Diagnosis and Early Intervention**

Harper was typically developing until about 18 months of age. Around this time, his mother remembered visiting her family, and her sister commented on how Harper was in his own little world, and did not respond to his name being called. He was really interested in his books, and electronic toys, especially those that could play music, but never sought attention or interaction. Her concerns led Ellen to take him to their regular pediatrician, who thought he was fine, but said we could take him to get tested if it would make them feel better. To further investigate, they brought him to a specialized clinic for testing, where their doctor diagnosed several developmental delays, but said, "this child is too playful to be autistic." Harper was enrolled in several early intervention programs for his delays, but again his parents were told, specifically that he was not autistic. In 2004, Ellen took two-year-old Harper to a developmental pediatrician, who reluctantly

said, “I think what is happening is that your son has something called Asperger’s syndrome.”

From this moment on Harper’s family actively sought interventions, including speech therapy and occupational therapy. Despite the fact that Harper hugged and sang with his family, he did not seek interaction. Their pediatrician also noticed that Harper had delayed auditory language processing. These deficits caused their developmental pediatrician to recommend a radical change in how they communicated. She advised them that Ellen and Morgan over animate their conversations with Harper, and become almost “clown-like.” Ellen responded by doing everything she could to over emphasize, clarify and make every conversation fun.

Ellen: So, it was me being like a maniac all day long, and then I discovered, you know, I already knew he liked music and everything, so I found that when I sang to him, he really kind of perked up. So, we just started singing everything to each other. For like a year, we just sang.

AW: So, life was a musical.

Ellen: Yeah. Everything was musical, instead of playing with toys or playing games, we would sing songs back and forth. Anything to do with music was how I played with him early on.

### **Harper Goes to School**

Harper’s first classroom was a music classroom. While placed on a waiting list at the pre-school of choice, Ellen enrolled Harper in a music class at a premier music conservatory, specifically designed for mothers and toddlers.

Ellen: He was obsessed with the violins when he was like that age, like 2 or 3, and...there was this big room where they had the class, and then down the hall were people practicing at the same time as the class. Harper used to wander out of the class and down the hall and go listen to all the people playing string instruments, and at first we couldn’t figure out what he was doing, and then we realized, he kept making a b-line of the strings. It was really kind of cool.

AW: He had such a natural attraction, wow!

Ellen: Oh yeah, tons.

After this program, Harper attended a model inclusive pre-school that specialized in autism and related disorders, and then finished his kindergarten year in an early intervention program specifically for children with autism that focused on speech and language skills and integrated Applied Behavior Analysis methods and modifications. For first grade, Harper was enrolled in a Montessori school, whose founder and principal specialized in inclusion and special education.

Ellen: Montessori was really good for him in certain ways because he was really advanced in reading, I mean he was reading at age three, and his math skills were crazy! So I think if he had had to sit in a typical first grade classroom, it would have been a waste of time for him. But there were 26 kids in the class, and even with an aide, he just fell through the cracks. With the Montessori method of being very self-directed, that was not very good for him. So, that is when we tried {Name of School}.

In 2010, at age 7, Harper began third grade at an inclusive school for children grades one through twelve, diagnosed with ADHD, dyslexia, and other learning differences. The school is modeled on Sally L. Smith's methodology. It features an arts-infused multisensory curriculum. The program is designed to integrate various therapies into classroom practices including speech and language, social and communication, psychological, and occupational therapies. Harper is still at school there today.

Ellen: I think it was actually really a lucky find, because, you know the whole arts-based curriculum is really good for him, especially with him having such a strong interest in music. It has been great. The staff is really nurturing. And I think that there was a lot of the school that didn't know about Harper's particular brand of autism, but they were really good at bring people in, and taking our support, and kind of create a team, that could create a really great place for him. I really can't imagine him any place else.

### **Socializing and Communicating**

At school, Harper's teachers and therapists perceive him as being very cooperative, eager to please, and friendly. He struggles with expressive, receptive and

social-pragmatic language skills. His auditory processing of language is delayed, which puts him at a disadvantage when there is fast-paced or shifting conversation. In order to remain socially and academically engaged, Harper requires a lot of individual attention. He receives the support of a Temporary Support Assistant to help him succeed in these areas. His ability and interest in communicating with adults far exceeds that with his peers. With adults he is able to express his emotions in a limited, yet appropriate, manner. With peers, his expressive nature is still highly inconsistent, ranging from unresponsive to exaggerated.

### **Harper's Musical Endeavors**

#### **Music Therapy**

Harper has received small amounts of music therapy. When he was little, Harper had a Floortime therapist who worked with him on sensory processing, integration and regulation. The therapist's brother was a music therapist, who also worked with Harper on various occasions. In 2007, Harper traveled to The Nordoff-Robbins Center for Music Therapy in New York City for an Evaluation. The clinicians found that

His musical intelligence was evident as he spontaneously subdivided the beat, playing combinations of quarter and eighth notes... his strong rhythmic sense reflects his ability to organize himself in time, and is a strength for him. ...His knowledge of musical terminology is sophisticated for his age, but this knowledge seems to limit his spontaneity...He was a very musically sensitive child, who clearly felt at home in a musical environment,...he demonstrated mutuality in his music making by listening and responding to the musical ideas he was hearing, even while he himself was playing. (Music Therapy Evaluation, June 15, 2007).

The report was concluded by suggesting that,

Through creative musical activities, Harper can further develop his ability to focus and stay on-task, increase his self-confidence, and gain mastery of skills in the areas of gross motor, cognitive, communicative and social functioning. These developmental domains are critical for his academic success. Since music is such



a powerful motivator for Harper, we highly recommend that music be incorporated into his curriculum whenever feasible. (Music Therapy Evaluation, June 15, 2007)

### **Musical Involvement in School**

At school Harper was recognized right away for his special gifts. In and outside of music class Harper was given attention for his skills. In music class, it was discovered quickly that he had perfect pitch, that he could play songs by ear, or from memory, that he could recognize key signatures, and scales. He was very focused and observant when listening to music, often making observations about details, or commenting on particularly interesting passages. Outside of music class, many of Harper's academic teachers began using music as an accommodation or curricular supplement to motivate and engage him. (School Report Cards, 2008-2014)

During the first two years at his new school, Harper's successes were mainly seen inside the classroom and at home, however, during his fifth grade year his ability to focus and take direction strengthened. He was now showing the skills needed to participate in an ensemble. By mid-year he was featured as a co-accompanist three times. First, for a community event, where he supported the chorus by playing the melody of "Great Big Beautiful Tomorrow," by The Sherman Brothers, and "Fireflies" by Owl City. Next he played Rolfe the Dog, in his school's musical rendition of "The Muppet Show." Finally, he was featured as co-accompanist again, this time as part of the chorus.

Chorus at Harper's school is reserved for middle and high school students, but Harper was invited in as a fifth grader for his advanced abilities. For this group, he learned arrangements of the pieces "America the Beautiful," and "On Top of the World," by the Imagine Dragons to for the Senior Commencement Ceremony. His choral

experiences are particularly interesting, not only because of his ability to meticulously prepare for a large audience, but also because of what happened during rehearsals. After listening to each of the vocal parts once, Harper knew them by heart. In the meantime, the rest of the chorus was learning their parts through days of practice. There were two microphones in the classroom reserved for some soloists, but one day, it was discovered that they could have another purpose. Harper and the director both stood at the front of the class and sang the harmony parts in various combinations so the rest of the chorus could hear them, study them, and sing along. He also was able on a few occasions to accompany the group independently, while the director cued him from a distance to rehearse particular sections. At one point, his graduation experience came up in our initial interview:

AW: Do you remember performing at Graduation?

Harper: Yeah! It was fuuun! (big smile)

AW: What did you do for the graduation performance?

Harper: Oh, I sang very clearly and nicely.

AW: What else?

Harper: I watched the other people perform.

AW: I thought there was something else...

Harper: I don't know. I played the piano!

AW: That is right! Did any other kids get to play the piano?

Harper: No, I don't think so.

AW: That is because you are the only kid who got to, because you are so talented!

Harper: That was where we did On Top Of the World!

AW: Yeah!

Harper: And America the Beautiful!... And someone said I was a great student!

AW: Yes, because you are!

Harper: They said "Wow! Harper knows all the notes!"

AW: Yeah, they thought you were a rock star.

Harper: Yeah.

AW: Did that make you feel good?

Harper: Yeah. And somebody said, "Hey, that kid is cool!"

AW: That is so great!

Harper: Maybe we'll do that again sometime!

Music was, as his music therapy evaluation predicted, beneficial for him on numerous levels. From the skills he learned, to the practice performing on stage, to the social praise and chance to be a part of the group, music was the key. This brief discussion shows Harper can engage and communicate with an adult expressively and descriptively. While his comments are mostly factual (i.e. what was preformed) and he did not talk about his feelings explicitly, he did remark that he had fun, and did express excitement in his voice when he asked to participate in chorus again. This also showed some evidence of social awareness (remembering what others said), the ability to accurately recall an event, as well as musical interest and motivation.

### **Piano Lessons**

Ellen: I remember when he was little, when I first tried him with a piano teacher. She was awesome. She was a combination piano teacher, O.T., massage therapist, and Feldenkrais Instructor.... I told her about his number thing, it's not only a gift, but it's an obsession, it's one of his areas of perseveration. She started off, like right away, like at his second lesson teaching him intervals and he loved that.

AW: He still brings that up!

Since Harper was in the fourth grade he has studied piano. During his piano lessons he has learned a number of songs by ear, prepared for numerous performances, improvised regularly in virtually every key, composed original songs, and worked through a series of standard lesson books. He sometimes plays with flash cards or plays computer games to reinforce his learning, which Harper loves.

### **Beat Boxing Lessons**

In fifth grade, Harper's school hosted an interactive performance by a local beat boxer. After finding out about the event, Harper's mother pursued the beat boxer, because she had always envisioned beat boxing as being the perfect art form for Harper

to combine his love of noise and music. Harper began lessons within a month, which he continues to this day. With his beat boxing teacher, he has worked on developing new vocal techniques as well as learned some basic recording skills. Harper and his teacher compose pieces together regularly, and even maintain a SoundCloud page of their work. The pieces typically combine Harper's voice and an electronic beat. They are often repetitive, and are inspired by Harper's favorite environmental noises.

### **Unexpected Complications**

It is important to note that during the course of this research, Harper experienced a novel set of neurological symptoms that greatly impacted him. Starting on September 19, 2013, a sudden onset of anxious, OCD-like thoughts and behaviors began. This onset was characterized by involuntary movements such as slapping his leg and shooting his arm in the air, and vocalizations of random words. These were all very atypical and markedly different from his behavior when he was initially selected for the study. The thoughts, movements and vocalizations greatly impaired his ability to sustain focus, and to complete and communicate thoughts. This episode lasted through September 30<sup>th</sup>, and was followed by a second which began October 15<sup>th</sup>, and lasted through and well beyond the end of our sessions together. During the period from September 30<sup>th</sup> to October 15<sup>th</sup>, he returned to baseline. All interactions and data before September 19<sup>th</sup>, and from the period between September 30<sup>th</sup> and October 15<sup>th</sup> are what I would consider the most "typical" expressions of Harper.

### **Harper's Educational Program: Overview of Our Six Lessons**

Harper participated in a total of six lessons. The first five lessons were taught one-on-one with the teacher-researcher, and the sixth was a shared lesson with Callie. Each lesson lasted for one hour and was followed by a brief interview. The lessons were designed to address specific goals and objectives that aligned with the National Standards of Music Education, and the student's respective state curriculum. Each lesson was taught in accordance to the student's IEP. This individualized lesson format allowed for instruction to be delivered in a hands-on and highly interactive fashion.

To maintain the child-centered and project-based teaching format that Harper was accustomed to, I allowed his interests, requests, strengths and weaknesses to influence the content of each lesson. Furthermore, the six lessons were conceived of, and presented to Harper as both intensive and flexible, with time allotted for the completion of three miniature projects: an original song, an original composition and a performance of an already existing song. This format encouraged interaction between the researcher and student, and made an optimal environment for Harper to feel his responses and reflections were valued.

There were four goals for these lessons: (1) to identify, construct, analyze chords and chord progressions as related to traditional major and minor tonalities, (2) to compose an original instrumental or vocal piece that demonstrated an understanding of tonality, (2) to write an original song showing an understanding of chord progressions, and (3) to perform a published work either on piano, vocally, or both. All three goals were met. The student's interests and abilities determined the content and objectives of each lesson. Harper had a variety of musical interests, including improvisation, numbers,

patterns, routines, piano, MixCraft, popular music, and games which all were explored in some way.

Each lesson started with a few minutes for Harper to freely explore and improvise using the classroom instruments. He always chose to play with one or more keyboards, either alternating between certain stations, or playing them simultaneously. Next, I would share the schedule with him, and go over our daily goals. The next activity was always “warm-up.” It was a time for engaging his prior knowledge and preparing his body for organized music making, either through playing scales or using flash cards. This could also involve a more structured improvisation, or the creation of a short composition or compositional fragment.

Our first lesson began with Harper and I playing through several major and minor scales. Next, Harper improvised melodies for a few short pieces using specified scales, while I accompanied him with a series of standard pop and folk song chord progressions. Third, using a PowerPoint presentation, we completed a series of listening and music making activities. First, we listened to four songs and Harper had the task of picking out as many musical patterns as he could from each. The discovery of numerous patterns led to theoretical discussion on songwriting. This conversation focused primarily on the use of the traditional chords found in a major key, and how they can be grouped together to form chord progressions. We then did ear training and improvisation activities to help Harper clearly establish the auditory difference between major and minor triads, and also to practice identifying chords by their number. This not only served as a theoretical and ear training exercise, but also established some formal language, and background knowledge and experience for writing a song in the days to come. We ended the lesson

by sharing ideas with each other for a potential performance song. Harper very quickly selected “Light and Day” by Tim DeLaughter (2002) from a list I had compiled in advance based on his interests.

The second lesson remained focused on songwriting and our performance piece. The first activity involved creating chord progressions and identifying them by number and quality (major, minor, or diminished). We played a game to identify chords, and then listened to “The Four Chord Song” by Axis of Awesome. This song is a medley of pop songs that all use the progression I, V, vi, IV. It was used to demonstrate that while popular music is in many ways formulaic, there are limitless expressive possibilities within this formula. Harper was asked to identify the chord progression, and then play the bass line on a xylophone along with the recording. This activity reinforced the chord changes visually, kinesthetically and aurally. Next, we worked together to slowly play the piece “Light and Day,” (DeLaughter, 2002) on the piano. We focused primarily on the accompaniment. We ended the lesson by brainstorming topics for Harper’s original song, and completed our interview.

During the third lesson, we analyzed sections of “Light and Day” (DeLaughter, 2002) to apply our new knowledge of chord theory. We also practiced the piece together, focusing on the introduction with a complicated scalar passage. Next, we chose a topic for Harper’s original song, which he titled, “How Great Life Is.” We worked together to experiment with a number of chord progressions, and were successful at choosing a progression for the verses. After the chord progression was chosen, we improvised with potential melodies and lyrics, which led to us drafting two verses, and also to the discovery of the chorus hook. As we wrote, we continually played through the piece,

both in sections and in entirety. During our playings we naturally and fluidly revised the piece as creative thoughts occurred, and as we noticed areas of weakness. The lesson ended with the interview described in the protocol.

The content of the third lesson revolved around continuing to develop proficiency playing the piano accompaniment of “Light and Day” (DeLaughter, 2002). The student was given time to develop his own version of the instrumental solo in the piece, and began getting used to singing while playing. The student also worked with the teacher to develop a chord progression for the chorus of his original composition, and test it in the context of the verses he had already created. Lastly, Harper’s composition project was introduced. Based on his love of musical spontaneity, improvisation, repetition, tonality, noises, and layers, I chose to use the piece “In C,” by Terry Riley (1964, 2009) as inspiration. This piece was composed in 1964 as a response to abstract academic serialist techniques. It can be played by any number of players (though a group of about 35 is desired) and consists of 53 short, numbered phrases, lasting from a half a beat to 32 beats. Each phrase may be played an arbitrary number of times, determined by the judgment of the players. Each player progresses through the phrases at their own pace, but are asked to focus on blending with the group. During this lesson, Harper and I read through a portion of the performance directions, and sight sang select phrases to prepare for analytically listening and composing in the next lesson.

During Harper’s fourth lesson we read the remainder of the performance directions for the piece “In C” (Riley, 1964), sight sang through other phrases, and examined the phrases for their similarities and differences. We listened to the piece, made observations about dynamics, timbre, and texture. We also listened for the phrases



we had sung to see when the players introduced them into the piece. Next, with some support, Harper used MixCraft6 recording software to compose and edit an original vocal composition inspired by “In C,” which he jokingly titled, “In-different.” We also continued to rehearse “Light and Day,” (DeLaughter, 2002) now making our expressive intentions clear. We discussed dynamics, timbre, mood, and articulation in reference to specific sections of the piece. Lastly, we wrote another verse of Harper’s song, now titled, “How Great Life Is,” and made stylistic decisions regarding the accompaniment; we played it choppy, syncopated, arpeggiated, and blocked with various stylistic intentions, and determined which approach suited the piece best. We ended with a brief interview.

The fifth lesson was used to prepare Harper for sharing his work. We practiced performing the pieces, and also worked on his performance behavior. This lesson also included a brief introduction to the blues. We listened to examples, and Harper improvised using the blues scale while I accompanied him with the 12-bar blues progression. This was included to continue developing Harper’s palette as a songwriter and composer, but more directly to help Harper understand and enjoy the blues piece Callie wrote to share with him at the last lesson.

The sixth lesson used for Callie and Harper to meet and share music with each other. They took turns sharing and discussing their compositions and performance pieces. This provided them with a chance to perform, and gave them a chance to musically and socially interact with a peer. With this, I hoped to provide further insight into how their musical reflections and responses may change based on social context.

## CHAPTER V

### CALLIE

**“I have a few ideas to make this better.”**

#### **Journal Entry, Sept 5:**

*After my first lesson with Callie, I was left feeling very elevated and excited. She is such a fun student to teach. This began with her intense, persistent desire to learn and her unrelenting curiosity. She came to our lesson with questions she wanted answered, and ideas she wanted help developing. She had learned to play the opening organ riff of “Three Little Birds” by Bob Marley in her school music class and was inspired. In just a few minutes of playing alone at the piano while I prepared the camera she discovered a little cluster of notes to play above the accompaniment and vocal part.*

*What makes this little exploration so exiting is that she really doesn’t know much about the piano. She can just barely find the notes. She came up with her ideas just by tinkering, using her ears and musical sense. (A. Weishaar, researcher’s journal, September 5, 2013)*

#### **Lesson Transcription:**

AW: So, what did you want to ask me about?

Callie: Well, I have a few ideas to make this better. Something like this maybe ... I just have to get my fingers in the right places. I am still working on this a little bit.

*She plays the organ riff with two hands in various registers.*

AW: I love that you worked on that. That is so ambitious!

Callie: Thank you!

AW: You are playing the opening riff with two hands.

Callie: Mhm! And then I had an idea.

*Callie plays the riff down low then adds a note cluster over the top of it, which she has found by ear. It is essentially a sus2 chord – the way she has used some chord, and some color tones creates a shimmering effect. As she plays, we both start to sing.*

Calle and AW: Don’t worry about a thing...

Callie: and then somewhere at the end while we’re fading out...

*Callie plays the riff down low, softening as she goes. She finds the highest “A,” and gently walks up to the highest “C,” letting the sound float away.*

AW: Or maybe you could end on the “A,” because “A” is the root note of the song, remember how it started on A?

Callie: Oh yeah! Mhm...

AW: It’s like the most important note of the piece, so if you did that again, but ended with any “A” on the piano, it would sound finished.

*Callie: Callie looks around for an “A” to play on the piano. She replays her ending, but this time ends by walking up to the “A.”*

*Callie: Voila! A finished piece!*

*While “voila” she made a hand gesture to emulate the word.*

One of the first things I noticed about Callie is her bright affect; even her voice was radiant as she greeted me, “Hi, Ms. Weishaar!” She had big blue eyes and rosy cheeks. She was tall for her age, and was interested in fashion. She had tan hair that brushed her shoulders and straight bangs that framed her face. She wore her headphones around her neck, and was often inclined to pass the time by writing in a notebook she carried.

### **Student Overview**

At the time of this report, Callie was 13 years old, and in the seventh grade. Her report cards and clinical evaluations noted her as being kind, hard working, eager to please, cooperative, and enthusiastic about learning. Her primary diagnosis includes Autism Spectrum Disorder, Pervasive Developmental Disorder Otherwise Not Specified (PDD-NOS), and Attention Deficit Disorder (ADD) (Neuropsychological Evaluation, 2010). She is also diagnosed with a Learning Disorder Not Otherwise Specified, characterized by executive deficits in flexibility, fluency, planning, organization, and self-monitoring, as well as weak pragmatic and receptive language. Callie also is noted to have high anxiety and a low tolerance for frustration (Neuropsychological Evaluation, 2010). She has a history of trichotillomania, difficulty sleeping, nail biting, picking her skin, and sensory defensiveness (Neuropsychological Evaluation, 2010). Callie’s interests include music, animals, baking, reading, writing, and learning about history. She has a passion for global issues; she aspires to own an animal shelter, and wants to join the Peace Corp. Her heroes are Ghandi, Anne Frank, and Martin Luther King, Jr.

### **Relevant Family Background**

Callie's mother and father separated in July of 2006 and subsequently divorced. Callie lives primarily with her mother, Lisa, in a small apartment on a horse farm. They share a dog and a cat. Her mother completed her associates degree and works as a medical office coordinator for a Gastroenterology department at a large mid-Atlantic university hospital. In the recent past, she has also worked as a veterinary technician. Callie spends a significant amount of time with her maternal grandmother, Karen. Karen has served as Callie's day care provider and babysitter since she was born. Callie sees her father, Joshua, on Thursdays after school, and on limited weekend days. Her father completed his high school diploma and works in management.

Lisa shared that in Callie's immediate family there is a history of arthritis, thyroid disease, attention difficulties, anxiety, learning disabilities. Her maternal family history is remarkable for holoprosencephaly, anencephaly, Asperger's syndrome, bipolar disorder, depression and anxiety (Neuropsychological Evaluation, 2000, 2010). Lisa reported that she has learning difficulties in the area of math. Her father has no known disabilities or learning difficulties.

There is no significant history of musical pursuits in Callie's immediate or extended family. They do report that one of Callie's uncles, and one of her cousins have participated in rock bands. Her family does listen to music regularly, and they do sing at home for enjoyment.

### Early Life and Diagnosis

Callie was born in November of 2000. During infancy, she displayed irritability and feeding difficulties, and was helped by a gluten free casein free diet. Despite this, she developed normally until two years of age. At age two there was a noted behavior change characterized by avoidance of eye contact, aloofness, unresponsiveness to name and stranger anxiety. She began to display toe walking and hand flapping, and developed sensory sensitivity. Sensory issues were problematic for Callie because she refused to wear clothes, being very irritated by the feel.

Lisa: Oh my gosh, from her being in her first program at 27<sup>th</sup> months, I kept saying to the teacher, "I can't keep clothes on her!" and the teacher said, "Oh Lisa, if she just wants to run around in a diaper I could care less if she is wearing clothes." But then there was also an issue if she got wet. If she got wet she had to take the shirt off immediately.

Her mother also mentioned that sand, tags and parties could cause Callie to fret. Callie also recalled circumstances from her childhood where her environment bombarded her.

This particular story shows a particular sensitivity to light.

Callie: When I was little I was really autistic.

AW: Before you came to {school name}?

Callie: Like yeah, I was pretty little. I used to go to my grandmothers all the time, like while my mom was at work, so technically, I kind of lived with her while my mom was at work. She would babysit me and stuff. She is nice like that. She babysits practically all the cousins in the family. But, this one time when we had to go to like a printing store or something like that, there was a lot of lights coming down and I didn't like it, and I started screaming and crying and I had a temper tantrum and I fell on the floor and I was just moving around having a big tantrum.

AW: Just having a fit!

Callie: Yeah, and then this big idiot comes up and he was like you should take your child out of the store and my grandma got so mad! She started telling him off, and she was like why don't you go down to the library and get a book about autism and read about it! She was telling him!

Lisa told a similar story about how Callie was overwhelmed by the sounds and smells of the grocery store, so much so, that she decided to stop bringing her for a period of time. During this time, there was an observed regression in Callie's vocabulary, and a refusal to imitate sounds, words or actions. Lisa stated, "When she was younger she couldn't speak, but she comprehended what I was saying." With all these clues, Lisa knew it was time to see a specialist.

Lisa: She was diagnosed at 27 months, but I picked up on it probably at 9 months or so. I had two other girlfriends and we were all pregnant at the same time, and we used to walk the track and all that; and one was born in August, one in September, and Callie was born in November. We used to go to Gymboree together on Mondays. That was our day together, and just having close friends with kids the same age, you start to pick up on what those kids are doing, and I would wonder, why isn't Callie doing that? You know? Not putting two words together, and parallel play as opposed to playing with a child. Callie would play next to a child, and not really interact. So, I started trying to get her evaluated, and finally a pediatric neurologist at {hospital name} was willing to listen, and I just spilled my guts, and they were like, "Yeah that raises the red flags for autism.... We'll get you in for an appointment right away" Sure enough we had a good 2, 2 ½ hour long evaluation.

AW: It must have felt good to get listened to.

Lisa: And I said, EEeww (pain noise) "okay..." and that's actually all I wanted to hear. I wanted someone to actually say to me, well not that I wanted them to say *that*, I just needed to get something concrete.

After that initial evaluation, Callie was also assessed by two other specialists who confirmed her diagnosis. Shortly following, Callie was enrolled in several early intervention programs. She began at a specialized clinic that supports families and children with developmental disabilities. There she was determined to have an expressive language delay and was enrolled in speech and language therapy. In this program, she started to learn new words and improved her eye contact. She also attended an intensive occupational therapy and speech and language program at a local elementary school, which she attended for three days a week.

Musically, Callie's early experiences were limited. Lisa felt that beyond music at family gatherings and the Beethoven's Classics CD she listened to at bedtime, there were no remarkable events or educational experiences. Despite this, her mother could not deny that there was always the gentle omnipresent existence of Callie's tendency to sing. Her mother shared that singing was a natural part of her existence. She was always singing.

AW: So I guess I have my own feelings about Callie and music, but did you ever feel like Callie had a special talent in music?

Lisa: Mhm. All the time. From the minute she started talking, she sang. Even when she wasn't talking, she was humming, always. That has always been, I can't tell you how many times I have been in a public restroom, and Callie is going to the bathroom, and is just singing away. And, people are always like "hmm," and I am like "Yup, she sings all the time," and they say, "She has such a lovely little voice." She would sing you know everywhere. I used to sing, but I have no voice. We would sing, you know, stupid stuff. Like, we'd be brushing out teeth and I would sing it to the Indian song like "One little, two little, three little teeth, four little, five little, six little teeth, eight little, nine little, ten little teeth in Callie's mouth." Just stupid little stuff like that, so I don't think it was something she got from me. I think it's just something that was in her. She was just a singing kid."

AW: She is a singing kid! She asked me about when she started singing, "Was it second grade, was it third grade, Ms. Weishaar?" I am just like, I have never known you not to sing.

Lisa: Yup! Always! Like I said, even before she could really have a conversation with you, she would sing, or she would hum, or she would make noises, and stuff like that. But what she did all seemed kind of rhythmical. Everything went together.

AW: It still does. I don't want to put words into people's mouths, but did you ever feel like this was a special talent? Or was this just kind of a normal thing that Callie did?

Lisa: I have always thought she had like the raw, she just needs to get tweaked a little, but I have always thought that she had like the raw talent.

### **Callie Goes To School**

Callie attended prekindergarten at a program for children with autism, where she continued to receive speech and language services, and behavioral intervention for temper tantrums and emotional dysregulation. She was transferred to a new school for

kindergarten where she could receive special services for autism in a “multi-disability classroom” (School Report Cards, 2007). At this school she received 30 minutes of counseling, 1 hour of occupational therapy, and 30 minutes of speech and language per week. Her IEP meeting on May of 2007 included concerns for sequencing, organization, attention, assignment completion, language, following directions, and poor fine-motor skills. It was noted that she had poor social awareness, preferred parallel play, and was rigid during interactions. To provide her with opportunities to socialize, her mother enrolled her in Daisy Scouts, ballet class, and soccer. All of these activities overwhelmed Callie, but she gained some level of comfort over time.

Callie’s school report cards, neurophysiological evaluations, speech and language evaluations and occupational therapy evaluations all show that she is an enthusiastic learner who is eager to please. She is known to be very inquisitive, and curious, and frequently initiates spontaneous conversation with adults.

In first grade, Callie was doing very well academically. So well that Callie’s teacher’s reported that she was ready for a more challenging program.

Lisa: She was doing so well, that the teachers said “We can find a classroom for her next year, but it is going to be (A) hard, and (B) she is going to be the star of the show. Yes, that is great, but sometimes it is nice to have other kids to aspire to, rather than having all the kids aspiring to Callie.”

AW: Right.

Lisa: At the time, my boss, his son went {Current school name}, so I knew all about the {Current School Name} from his son. He was saying that this was it like at {Current School Name} after leaving a very restrictive environment. At that point we were considering her either being mainstreamed, or there are some other places like {Another School Name} or whatever. Which was possible, but I just really liked the things that he had to say about the {Current School Name} so that is why she is going here.

In 2008, at seven years of age, Callie entered second grade at the same school Harper would be enrolled in two years later. The school is designed for children grades



one through twelve, with ADHD, dyslexia, and other learning differences. It features an arts-infused multisensory curriculum. The program is designed to integrate various therapies into classroom practices including speech and language, social and communication, psychological, and occupational therapies. Callie is still at school there today.

### **Socializing and Communicating**

As mentioned, Callie's teachers and practitioners find her to be extremely hardworking, cooperative, curious and eager to please. She is dutiful and responsive to directions. Callie lacks a solid understanding of how to socially or imaginatively play with other children outside of a rule bound context. During free playtime, such as recess, Callie may avoid social contact with peers. She is uninterested in participating in competitive sports, games and activities, and is indifferent to peer pressure regarding the latest craze in toys or clothes. She has some difficulty with both expressive and receptive language, and has notable difficulty interpreting and using nonverbal communication. Callie's mood is generally euthymic and content; however her affect is not always consistent with her mood (i.e., she may be much more anxious than she appears). She tends to use less eye contact than expected, and speaks in a formal way, sometimes seeming scripted. She can be more prudent than necessary, and her tone can sometimes seem corrective. Callie can impulsively respond during conversation, frequently using words like, "yeah," "right," and "okay." Callie is inclined to take the literal interpretation of comments and is often confused by metaphorical phrases. Callie is passionate about topics related to animals, history, music, and writing; she has a strong long-term memory for facts in these areas, and avidly collects information about these topics. Callie

socializes with adults more comfortably than with her peers, and thrives on their praise. (Neuropsychological Evaluation, 2010; Annual Speech and Language Report, 2013; School Report Cards, 2008-2014)

### **Callie's Music Endeavors**

#### **School Musicals and Productions**

Callie's singing and musical abilities were recognized since the moment she began second grade at her current school. Her current school offers a large number of performance opportunities per year. Since this age, Callie has had roles in at least four productions per year. In second, third and fourth grade, her roles were predominantly in the chorus and supporting roles. Then in fifth grade, she began being featured in leading rolls. Some examples of this include playing Darla in the production of *The Little Rascals* (involving two solo pieces), playing Maid Marian in a production of *Robin Hood*, being featured as a soloist in a Jackson 5 parody, and was chosen a lead singer for the high school rock band for a school variety show. (School Report Cards, 2008-2014)

Beginning in second grade, Callie's report cards also reflected her musical strengths. For example, her second grade annual report read,

Callie is a very enthusiastic music student and always offers her insights and ideas into group activities and discussion. Callie has a great use of her singing voice and is able to use it in many expressive ways. Callie has shown the ability to take positive risks and is rewarded constantly by surprising herself with wonderful, intuitive skills. In class, we constantly make up songs and improvise out sections of material. Callie has consistently shown the ability to do this very well. Improvisation and composition are skills that involve both decision-making and value judgment. She has shown the ability to choose appropriate patterns, determine whether they are aesthetically pleasing decide whether they work or not. Callie has improved in her ability to interpret through words, visuals and movements, the different qualities and characteristics of music. This has been seen through various activities, and through a very in-depth study of Camille Saint-Seans *Carnival of the Animals*, where we exploited all possibilities of interpretation....Callie has proven to be

on or above grade level in music, and in order to foster her at her own level, I would recommend as many musical opportunities over the summer as possible; Children's choruses, instrumental lessons, sing-a-longs, music camps, attending performances, etc. She shows a great passion for the subject, and the sooner and richer her experiences are, the better she will be able to utilize her skills in the long run. (School Report Card, 2008-2009)

This sort of praise is found through Callie's quarterly, and yearly reports since. For example, her most recent report card read:

This quarter in music Callie participated in the school's performance of "The Place Where You Live," a musical about community. After this, we explored timbre, dynamics, and the physics of sound. We also had the opportunity to learn about Ben Franklin's Glass Armonica. Currently, we are learning music from around the globe as well as some music from right here at home, such as "When I Am Gone," by Anna Kendrick, and "Wake Me Up," by Avicci.

Callie continues to love music. She is singing expressively and continuing to seek out extra individual opportunities to learn music with the teacher at lunch. Callie has been a very active participant in all explorations of timbre, enjoying the opportunity to listen to and discuss different voices and instruments through listening and hands-on activities. Callie also shows a great joy for reading and discussing the history and culture behind each piece of music. Callie is working on learning to play the cup game with her classmates and is showing the ability to execute a series of coordinated actions with support. Callie is looking forward to the opportunity to learn guitar this semester. (School Report Card, 2014)

### **Chorus**

The chorus at Callie's school is reserved for students in middle and high school, but Callie was invited to join in her fifth grade year because of her vocal skill and her ability to strongly contribute to an ensemble. As part of this ensemble Callie has had the responsibility of learning both the melodic and harmonic parts, and has the discrimination skills to switch parts as needed. She also has been given permission on occasion to add extra harmony notes either within, or above the written harmonies. She intuitively finds these notes, and even adds in passing tones or other non-harmonic tones as needed to make the new tone blend as part of the pieces natural construction. Callie has been

nominated for solos by her peers, and has been an understudy for solo parts, but has not had the opportunity to perform a solo that privilege is reserved for high school members.

### **High School Rock Band and African Heritage Celebration**

Callie has been invited on several occasions to sing solos at high school events. One opportunity came during Callie's sixth grade year. In the late Fall, 15 high school students and three teachers had formed a large ensemble to perform the song "Home" by Jade Castrinos and Alex Ebert for the school's December showcase. This song was written as a duet for a male and female, but for this performance two couples were used; Callie was selected as one of the four. Her performance was phenomenal, so much so that the head of the high school approached her days later and asked if she would sing Whitney Houston's "The Greatest Love of All" for the school's African Heritage Celebration that February. Callie accepted.

"The Greatest Love of All," was performed beautifully. Callie's voice was able to transition gracefully from the highest and lowest notes of Whitney Houston's magnificent range. She delivered the piece with deep expression, demonstrating knowledge of the greater meaning behind the text. The performance of this song was not only a momentous experience for Callie, but also one that brought her mother to tears.

Lisa: Like I said, she was diagnosed when she was 27 months old, but the really ironic thing is that, just a total side bar, was that Callie sang the Whitney Houston song for the...

AW: The African Heritage Celebration in February.

Lisa: Yeah yeah yeah, yes yes yes!! That was ten years ago to the day that she was diagnosed.

AW: No way!!

Lisa: So you know, I was BAWLING! To the day! I remember putting that on Facebook, because oh!!

AW: Oh!!

Lisa: You know, when she was first diagnosed I can remember walking out of the meeting bawling my eyes out crying wondering is she ever going to speak. Is she

ever going to toilet herself? Is she ever going to have friends? Is she ever going to get married? Is she ever going to hold down a job? And da dada dada... and you know, and all the normal fears of someone whose child has just been diagnosed with autism.

AW: Yeah...

Lisa: You know it was horrible. It was a total blow. And once we got passed the initial ::Gasp!:: of it then we just dove in head first and you know googled, and researched everything up one side down the other and tried you know somewhat experimental things and different things that I think have made an amazing difference. So, that is why when she sang that day I was like "wahh!!!"

AW: That must have been amazing!!!

Lisa: I was like, it has been ten years, and I was like "TAKE THAT AUTISM!!!"

AW: You are like, "Yeah, she is so beautiful and grown up! Look at her!"

Lisa: I know right! It was so neat.

AW: Does she know that? Did she put it all together too? I don't know if it would be as important to her.

Lisa: Yeah, well I mean, I told her. She was like "Oh my gosh, that is cool" but I mean, my mom and I were like having chills!

AW: Yeah, well, Callie didn't have that same feeling the first day, she was a kid, so when she left the doctor, she didn't know anything had changed, she was like, "Here I am, I am still me," but for you it was probably like...

Lisa: Oh my gosh! It was a momentous day!

AW: The boat got rocked.

Lisa: Yup yup yup, yeah!

### **Out of School Experience**

Lisa mentioned during our interview that Callie had once joined a musical theater group in their community. The group performs several times a year, and is specifically for people with disabilities, of middle school age and older. Lisa said Callie enjoyed the experience, but then she decided not to participate this past year.

Lisa: And then she didn't do it, because she wanted to be with more typical kids. She said "Oh mom, you know some of them are really you know," and I was like "I understand you are really getting on to the more typical side and you'd rather be in a play with typical kids, I get it," but two years prior she was in an adorable made up musical and she sang and danced and all that kind of stuff, so we did that.

### **Callie's Educational Program: Overview of Our Six Lessons**

As part of this study, Callie participated in a total of six lessons. The first five lessons were taught one-on-one with the teacher-researcher, and the sixth was a shared lesson with Harper. Each lesson lasted for one hour and was followed by a brief interview. The lessons were designed to address specific goals and objectives that aligned with the National Standards of Music Education, and the student's respective state curriculum. Each lesson was taught in accordance to the student's IEP. This individualized lesson format allowed for instruction to be delivered in a hands-on and highly interactive fashion.

To maintain the child-centered and project-based teaching format that Callie was accustomed to, I allowed her interests, requests, strengths and weaknesses to influence the content of each lesson. Furthermore, the six lessons were conceived of, and presented to Callie as intensive yet flexible manner, with time allotted for the completion of two miniature projects: an original song or composition, and a performance of an existing song. This format encouraged interaction between the researcher and student, and made an optimal environment for Callie to feel her responses and reflections were valued.

Through these two projects, I had four predetermined curricular goals for Callie: (1) to identify, construct, analyze scales, chords and chord progressions as related to traditional major and minor tonalities, (2) to demonstrate an understanding of tonality through the improvisation of song arrangements and original tunes, (3) to write an original song showing an understanding of chord progressions, and (4) to vocally perform a published work. All four goals were met. The student's interests and abilities determined the content and objectives of each lesson that were used to reach these goals.

Callie's predominant musical interest is singing, but she has also shared a developing passion for piano and djembe. She loves to improvise, play scales, use flash cards, listen popular music and is always eager to perform. All of these interests were incorporated in some way.

Each lesson started with a few minutes for Callie to freely explore and improvise using the classroom instruments. Callie usually chose to play scales or improvise on pieces from her repertoire on the piano. Occasionally, she would also play djembe. Next, I would share the lesson schedule with her, and state our daily goals. After this we would "warm-up" by playing scales on the piano, vocalizing, or improvising together in a particular key. This was a time intended to engaged Callie's prior knowledge and prepare physically for music making. We would then move on to the core activities of the lesson, revolving around music theory, improvisation and composition. Each lesson closed with the interview described in the protocol.

Our first lesson opened with Callie eagerly sharing some ideas she had for her own arrangement of "Three Little Birds," by Bob Marley. I listened to her ideas, and we worked together on bringing some of them to fruition. Next, using a PowerPoint, we engaged in a series of listening and music making actives. First, we listened to four songs and Callie was given the task of picking out as many musical patterns as she could. The discovery of numerous melodic, rhythmic, and harmonic patterns led to a theoretical discussion on songwriting. This conversation focused primarily on the use of the traditional chords found in a major key, and how they can be grouped together to form chord progressions. Ear training and improvisation activities to help Callie clearly establish the auditory difference between major and minor triads were also included; she

also practiced identifying chords by their number. Callie also learned to play the C major scale with her left and right hands, and play several root position chords with assistance. These not only served as a theoretical and ear training exercises, but also helped to establish some formal language, background knowledge, and experiences for writing a song in the days to come. The lesson ended by listening to the song Callie had asked to perform: “King of Anything,” by Sara Barellies (2010). We also completed a preliminary examination of the score. Before leaving, Callie was asked to brainstorm topics for her original song.

Our second lesson began with time for Callie to develop her own rendition of “Three Little Birds” (Marley, 1977). Together, we started playing and singing through the piece, integrating ideas from the previous session and freely exploring new possibilities. This activity resulted in the addition of vocal harmonies, vocal ornamentations and embellishment of the piano accompaniment. Due to Callie’s interest in reggae, we then read about and discussed the history of Reggae. This discussion was supplemented with two listening examples. The first was the original ska version of “One Love,” (Marley & Mayfield, 1965) followed by the more popular reggae version (Marley, & Mayfield, 1977). We compared the two stylistically and in terms of the elements of music. This material also helped us formulate and evaluate our own performance of the reggae piece. This was followed by a review of the discussion of theory, which occurred at the previous lesson through scale practice, and an ear training activity. We ended by discussing Callie’s interest in writing an inspirational song about life lessons.



Our third lesson began with Callie proclaiming her joy for learning scales. Since our second lesson she had figured out the G scale on her own and was eager to show me. We practiced it together, and then I showed her how to play the D scale as well. Because Callie shared her interest in figuring out scales independently, we also had a discussion on how major scales are built using whole and half steps. The second phase of this lesson focused on preparing Callie to perform of “King of Anything” (Bareilles, 2010). We began with vocalises, and then identified certain notation symbols in the score, such as repeats and codas, as well as any style and tempo markings. We also took note of the chords used, and related our findings back to our theoretical discussions. We sight sang through the piece once to get acquainted with it, and to consider how to best approach it in light of its challenges. We sang through the piece a second time to become more familiar with the overall structure and sequencing of the piece. The third and fourth rotations began to focus on clarity, accuracy and expression. At the end of the lesson I introduced her to chord progressions commonly used in songwriting. As I played the progressions, we sang the bass lines together. As a culminating activity, I asked Callie to identify chords of the “The Four Chord Song” by Axis of Awesome. This song is a medley of other songs that all use the progression I, V, vi, IV. It demonstrates how popular music is in many ways formulaic, but also shows that there are limitless expressive possibilities within this formula. I asked Callie to identify the chord progression, and then play the corresponding bass line on a xylophone along with the recording. This was done to reinforce the chord changes visually, kinesthetically and aurally.

Our fourth lesson began with Callie excitedly showing me she had practiced the C, D and G major scales, and had taught herself the E major scale using the pattern I had shown her during the previous class. Next, I asked Callie to aurally identify I, vi, V and VI chords in short, repetitive progressions I played for her. To transition into working on our performance piece, we analyzed the chords progressions used in, “King of Anything” (Bareilles, 2010). Next, we rehearsed the piece. First we focused on certain challenging phrases and rhythms, and then sang through the entire piece. Callie shared that she was still unsure of how to begin writing her own piece, and it was clear that she was struggling to provide the initial mood, message or idea that would drive the writing process. Noting her natural improvisational style, I decided to introduce her to the blues to see if inspiration might strike. We listened to several pieces, but the one that struck Callie was “Hound Dog,” by Big Momma Thornton. She was extremely excited by it and asked to listen to it again and again. This new found motivation led to us learn the blues scale, watch a slide presentation on this history of the blues, learn to play the 12-bar blues chord progression, and improvise lightly. By the end of the class, Callie had improvised and discovered the hook for her own 12-bar blues, “Life Ain’t Fair.”

The fifth lesson began with a review of Callie’s favorite major scales. Then we practiced the blues scale. I then asked Callie to use it to improvise melodies while I accompanied her with the 12-bar blues progression. To elaborate on her understanding of the blues, and provide her with a lyrical structure we studied the “Joe Turner’s Blues” (Handy, n.d.) together. This was an in depth discussion that involved reading a historical article about the piece, discussing relevant aspects of the culture of post-Slavery America, and listening to several renditions of the piece. We then analyzed the rhyme scheme as

being AAB, CCB, DDB. We used this same structure to write Callie's piece. Callie quickly determined that the "B" section or refrain, would repeat the message "life ain't fair." The other lyrics were based on instances Callie invented or shared of life not being fair. We succeeded in drafting three verses in this fashion. Any editing and rehearsal of the piece happened fluidly and naturally throughout as part of our compositional process.

As mentioned in chapter five, the sixth lesson was a shared lesson with both Callie and Harper. They took turns sharing and discussing their compositions and performance pieces. This provided them with a chance to perform, and gave them a chance to interact with a peer. My hope was that this would provide insight into if and how their reflections and responses might change depending on environmental and social context.

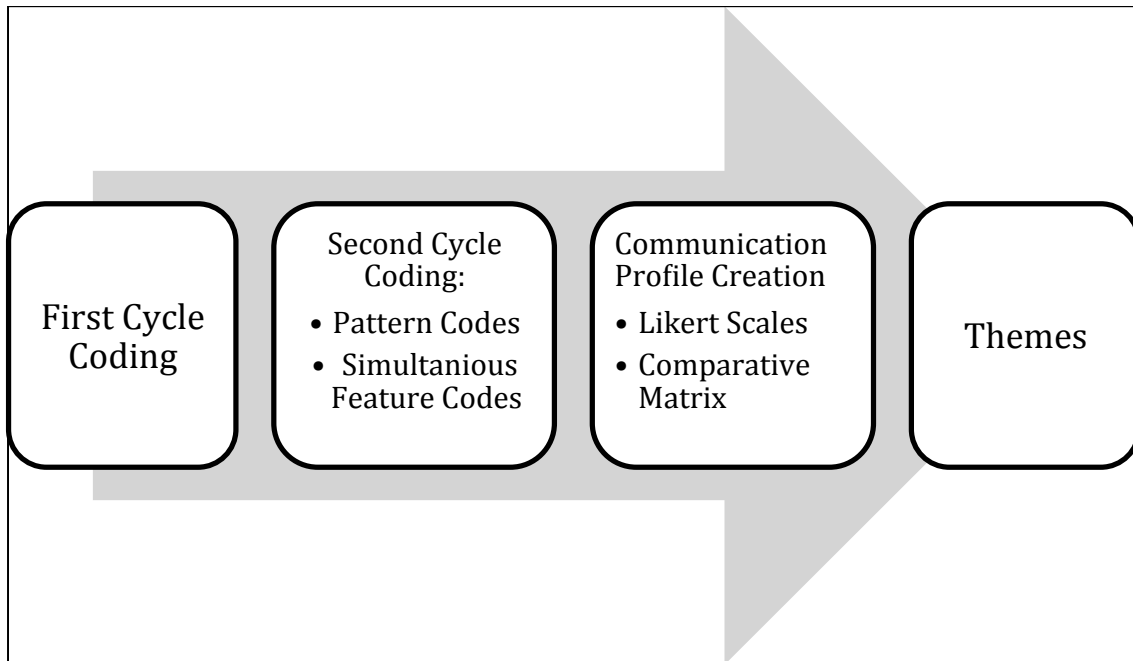
## CHAPTER VI

### RESULTS

“Where words leave off, music begins.” – Heinrich Heine

The commanding question of this research was “How do two students with autism respond to and reflect on their own experiences during a series of six lessons that require creating, performing and responding to music?” This chapter provides the within-case and cross-case analysis of the data in order to provide the reader with a clear understanding of what occurred. The within-case and cross-case analysis will be presented through significant themes. The within-case analysis is focused on the unique themes that emerged from the analysis of each individual student, while the cross-case provides themes that emerged across both cases, showing that the cases were very localized, but not entirely idiosyncratic.

This chapter will begin with a description of how each student’s data were coded. While describing the coding process I will discuss the use of two types of codes: (1) *pattern codes* that describe the mode of communication the child used to deliver a response or reflection (i.e., verbal, musical, or non-verbal) and (2) *simultaneous feature codes* that were used to assign an attribute or feature to each coded response or reflection (i.e., emotional, literal, or associative). The second section of this chapter will share how I themed the data using matrices to develop succinct communicative profiles for each student. Lastly, I will describe and provide evidence for the within-case and cross-case themes that emerged for Harper and Callie. The coding process is summarized in the Figure 6.1.



*Figure 6.1.* Diagram of Coding Process

### **Pattern Codes and Simultaneous Feature Codes**

Pattern Coding is a second-cycle process that is meant to pull together first cycle codes into a smaller number of categories, groups, or constructs, which form “more meaningful and parsimonious units of analysis” (Miles et al., 2014, p. 86). It can be likened to the cluster-analytic or factor analytic devices used in statistical analysis (Miles et al., p. 86). Pattern codes are explanatory and inferential, and help identify emergent themes configurations or explanations (Miles et al., p. 86).

In this study, pattern codes were used to condense and group the various communicative modes used by participants. In order to create my pattern codes, I revisited my codebook to make sure my first cycle codes were precisely defined. I also revisited my data to look for instances where multiple codes had been used to describe a similar behavior or communication. Determining the exact meaning of each code, and

the way it was used idiosyncratically or in combination with other codes assisted me in grouping many of my initial codes. During this process, it became clear that larger themes, and cross-case themes were beginning to emerge. From here, I consulted the literature for appropriate terminology for the behaviors I had observed. After selecting terms, I engaged in applying the pattern codes and simultaneous feature codes across my lesson transcripts, field notes and journals. The combinations, frequencies, and intensities of the pattern codes and simultaneous feature codes led to the creation of unique communicative profiles for each child.

### **Pattern Code and Simultaneous Feature Code Categories**

The process of grouping the first cycle codes led to the formation of two broad categories of communication modes: musical and language. This categorical distinction was supported because it was used by Reimer (2003), and was also found in education (Frick, 1999) and music therapy studies (Edgerton, 1994). Within each of these categories, several more specific communicative behaviors were organized and grouped. To describe these groups, I revisited the literature to look for the common usage of relevant communicative behavior terms. This was also done to ensure the terms I chose would be relevant and comparable to the terms used in music education, related fields of study, and current literature. While other terms were carefully considered, I chose to utilize certain terms employed by Frick (1999). This was decided for two reasons. First, Frick's research and definitions were designed to combine fields of music, special education, and communication. Second, my analysis revealed that several of Frick's terms naturally fit the criteria proposed by Saldaña (2012), which states that codes should "symbolically assign a summative, salient, essence-capturing, and/or evocative attribute"

and create a “critical link” from the data to the explanation (p.3). Three of Frick’s musical response types were used to describe to my musical data groupings: Direct Musical Response, Delayed Musical Response, and Spontaneous Music. To this, I added the categories Extended Musical Response and Personal Verbalizations or Sounds. Three of Frick’s communicative response categories were used to organize the types of language observed: Direct Verbal Response, Delayed Verbal Response, and Non-Verbal Response. For the purposes of my study, the term Non-Verbal Response was redefined, and the code Written Response was added.

The pattern codes were found to be crucial, but were also found to be limited. They were limited because they only described the participant’s *mode* of communication, but did not describe the nature of the content delivered through their communication. To better analyze the data, Simultaneous Feature Codes were applied to every response and reflection. These codes could be combined with any of the pattern codes and were seen as having equally weighted meaning. These codes assigned a feature to each response or reflection, and provided a snap shot of the nature or quality of each communication. The Simultaneous Feature Codes included: Non-interpretive Response, Emotional Response, Empathetic Response, Associative Response, Literal Response, Cooperative Response, Creative Response, Reflective Response, and Inappropriate Response. To clarify, every time pattern code was assigned to a particular response or reflection it then paired with an appropriate simultaneous feature code. Therefore, the term, “I love music!” would be coded with the pattern code, Direct Verbal Response, as well as the simultaneous feature code, Emotional Response. The definitions and descriptions of how each of these code categories were used to explain attributes of the participants’ responses and reflections

are found in the codebook provided in Appendix J. A list of the pattern codes and simultaneous codes are provided in Table 6.1.

*Table 6.1. Pattern Codes and Feature Codes*

<b>Pattern Codes</b>	<b>Simultaneous Feature Codes</b>
Direct Musical Response	Inappropriate Topics
Extended Musical Response	Non-interpretive Response
Delayed Musical Response	Literal Response
Spontaneous Music Response	Cooperative Response
Direct Verbal Response	Emotional Response
Delayed Verbal Response	Empathetic Response
Non-Verbal Response	Associative Response
Written Response	Creative Response
Personal Verbalizations or Sounds	Reflective Response

### **Communication Profiles**

Saldaña (2009; 2012) referred to a process called “theming the data.” Theming is a process through which the researcher can draw connections across patterns, categories or participants, and allows large claims to emerge. Theming is a type of coding because it is yet another, more advanced level of shrewdly joining together large amounts of data into congruous units. However, theming differs from the previous stages of coding because it allows for the expression of connections and comparisons between codes, larger patterns, aggregate patterns in the form of statements of claims rather than through a single word or phrase descriptors (Saldaña, 2009, p.139-140).

Qualitative data were also analyzed through the use of data displays. A data display is a way to arrange data in a manner that helps to make visual, systematic sense of themes and occurrences (Miles et al., 2014, p. 108). One form of data display is a matrix. A matrix is essentially a method of seeing the intersections between two lists (Miles et



al., 2014, p.109). Matrices can be designed to incorporate an evaluative scale in order to explain a response pattern (Miles et al., p.109). This can assist in condensing large amounts of information down into a single page.

To assist in generating themes I combined the data gathered for each student into three matrices that allowed me to study and consider each child in a consolidated format. The first table included all the communicative behaviors each child exhibited, and ranked them with a Likert Scale of how often each behavior occurred. This helped me to determine each student's primary mode of communication. The last column was reserved to notate if there was an instance during a study where a student elicited a Critical or momentous response or reflection. A Critical Response was given attention due to its observed impact on the child's course of learning, rather than on its frequency (for further description see Appendix J).

The second table allowed me to consider the feature codes independently, and frame both subjects from yet another standpoint. After examining both the communicative behaviors and communicative features separately, I created a third and final table. This table allowed me to consider the relationships between the pattern codes and feature codes in a succinct format. In this table the Likert Scale rating system is used to rank how often each pattern code and feature code occurred simultaneously.

### Harper's Communication Tables with Summaries

*Table 6.2. General Frequency of Harper's Communication Behavior Types*

Pattern Code	1	2	3	4	5	Critical
Direct Musical Response (DMR)				X		
Extended Musical Response (EMR)				X		
Delayed Musical Response (DeMR)		X				
Spontaneous Music (SM)				X		
Direct Verbal Response (DVR)			X			X
Delayed Verbal Response (DeVR)		X				X
Written Response (WR)	X					
Non-Verbal Response (NVR)						X
Personal Verbalizations or Sounds (PVS)			X			

The Rating Scale: 1.Almost Never 2.Seldom 3.Sometimes 4.Often 5.Almost Always

#### Table 6.2 Summary

Summarizing Harper's modes of communication allowed me to see that he most frequently communicated through music, and that musical responses were mostly direct, extended, or spontaneous. I learned that Harper sometimes communicated his responses and reflections verbally. I made a special note that there were three critical instances where Harper non-verbally or verbally conveyed a response of great significance. Harper also often used personal verbalizations and sounds.

*Table 6.3. General Features of Harper's Communication Behaviors*

Feature Codes	1	2	3	4	5	Critical
Non-Interpretive Response (N.R.)				X		
Literal Response (L.R.)				X		
Emotional Response (E.R.)			X			X
Empathetic Response (Ep.R.)				X		
Associative Response (A.R.)			X			
Creative Response (C.R.)				X		X
Reflective Response (R.R.)			X			X
Cooperative Response (Co.R)					X	
Inappropriate Topic (I.T.)			X			

The Rating Scale:1. Almost Never 2. Seldom 3. Sometimes 4. Often 5. Almost Always

### Table 6.3 Summary

From the process of creating Table 6.3 I was able to conclude that Harper made a great deal of Non-interpretive Responses, Literal Responses, Resonant Responses, Empathetic responses, and Creative Responses. He also sometimes contributed Emotional Responses, Associative Responses, and Reflective Responses. I also noted that Harper's Critical Responses were emotional, creative and reflective.

*Table 6.4. Comparisons Between Harper's Communication Types and Features*

Features vs. Types	N.R.	L.R.	E.R.	Ep.R.	A.R.	C.R.	R.R.	Co.R.	I.T.
DMR	4	3	4	4	3	4	3	4	3
EMR	4	3	4	4	4	4	1	4	0
DeMR	1	1	3	0	3	3	3	4	1
SM	5	0	4	1	2	5	3	3	3
DVR	4	4	2	1	3	3	3	4	3
WR	0	5	0	0	0	0	0	4	0
DeVR	2	2	3	3	2	1	3	4	3
NVR	0	3	5	3	0	3	3	4	3
PVS	3	3	3	0	3	3	3	0	4

Rating Scale: 0.Never 1.Almost Never 2.Seldom 3.Sometimes 4.Often 5.Almost Always

### Table 6.4 Summary

After creating Table 6.4 I employed *multiple tactics* to draw conclusions including making comparisons, counting, and noting patterns (Miles et al., 2014). Next, made some speculative correlations. The transcripts were consulted to verify, revise, confirm or disconfirm all of my speculations. I continued this cycle until I was able to determine thematic categories of Harper's responses and reflections. As I was cyclically examining the data, I also took note of how each behavior correlated with the acts of creating, performing and responding. As I continued, I made the following list of

conclusions, which fell into two main categories: musical responses and reflections, and language responses and reflections.

### **Conclusions Regarding Harper's Musical Responses and Reflections**

1. Harper showed a great deal of musical creativity in his spontaneous music making, improvisations and compositions.
2. When Harper and I improvised together he was able to predict my actions, and adjust his own playing accordingly. Furthermore, he was also able to respond with musical humor on many occasions by deviating from the predicted or expected trajectory of an improvised piece. This demonstrated that Harper was able to employ the interpersonal skills and empathy when making music.
3. Many of Harper's improvisations and compositions were coded as being Extended Musical Responses.
4. Harper's musical responses show an association with musical styles from his culture and from the music we were studying during lessons. It is unknown if these associations are conscious or subconscious.
5. When Harper had his daily goal in mind, a majority of Harper's musical responses were cooperative. When he lost focus of his goal, his musical responses strayed and became more whimsical. These were sometimes coded as inappropriate.

### **Conclusions Regarding Harper's Language Responses and Reflections**

1. Harper made intermittent verbal associations, interpretations, and reflections regarding the acts of creating, performing and responding to music.
2. Harper would sometimes make brief comments or suggestions during collaborative improvisation.

3. All three of Harper's Critical Responses were characterized by a great burst of emotion, and an increase in verbal behavior.
4. Harper and I discussed songwriting ideas through a blend of verbal, non-verbal, and musical turn taking.
5. A majority of Harper's verbal and emotional responses that followed a music creating activity were characterized as being Non-interpretive or Non-interpretive emotional responses.
6. Many of Harper's verbal and emotional responses that followed preparation for performance were characterized by emotion, especially self-praise.
7. When creating and performing music Harper demonstrated great focus.
8. When listening to music, Harper's verbal responses were often brief and descriptive. The descriptions gave detail about the elements of the music, such as instrumentation, dynamics, form, patterns or tonality.
9. Harper typically described emotion in general terms, though occasionally he could be quite specific and profound. Certain profound instances were coded as being Critical.
10. Harper would often emit strong non-verbal communications of joy through laughter, smiling, and widened eyes when encountering music he enjoyed, regardless of whether it was associated with the acts of creating, performing or responding.

### Callie's Communication Tables and Summaries

*Table 6.5. General Frequency of Callie's Communication Behavior Types*

Pattern Code	1	2	3	4	5	Critical
Direct Musical Response (DMR)				X		
Extended Musical Response		X				
Delayed Musical Response (DeMR)			X			
Spontaneous Music (SM)		X				
Direct Verbal Response (DVR)					X	
Delayed Verbal Response (DeVR)				X		
Written Response (WR)			X			X
Non-Verbal Response (NVR)			X			
Personal Verbalizations or Sounds (PVS)	X					

Rating Scale: 1. Almost Never 2. Seldom 3. Sometimes 4. Often 5. Almost Always

#### Table 6.5. Summary

The creation of this table brought me to realize that Callie most commonly communicated through words, and that while her written responses were less common, yielded critical information. I also realized that she often produced direct musical responses, and sometimes would produce a delayed musical response. Callie would also sometimes use non-verbal communication.

*Table 6.6. General Features of Callie's Communication Behavior Types*

Feature Codes	1	2	3	4	5	Critical
Non-interpretive Response (N.R.)		X				
Literal Response (L.R.)					X	
Emotional Response (E.R.)				X		
Empathetic Response (Ep.R.)				X		
Associative Response (A.R.)			X			
Creative Response (C.R.)			X			
Reflective Response (R.R.)					X	
Cooperative Response (Co.R.)					X	
Inappropriate Topic (I.T.)						N.A.

Rating Scale: 1. Almost Never 2. Seldom 3. Sometimes 4. Often 5. Almost Always

### Table 6.6 Summary

The creation of this table allowed me to thoughtfully determine how often Callie exhibited particular features when responding or reflecting on her musical experiences. From this process was almost always cooperative, and very often literal and reflective. Callie would frequently express her own emotions or realize the emotions of another person or the music. She sometimes made associations during her music making, and would sometimes produce a creative response. Callie's responses were never inappropriate or unintelligible.

*Table 6.7. Comparison of Callie's Communication Types and Features*

Features vs. Types	N.R.	L.R.	E.R.	T.M.	A.R.	C.R.	R.R.	Co.R.	I.T.
DMR	0	4	2	2	2	3	3	5	0
EMR	0	3	3	3	0	5	5	5	0
DeMR	0	3	2	0	4	3	3	5	0
SM	0	2	1	0	2	3	3	5	0
DVR	3	3	3	3	3	3	4	5	0
WR	0	3	4	2	4	4	5	5	0
DeVR	0	3	3	3	3	2	4	5	0
NVR	4	0	3	3	0	0	3	5	0
PVS	0	0	0	0	0	0	0	0	0

Rating Scale: 0. Never 1. Almost Never 2. Seldom 3. Sometimes 4. Often 5. Almost Always

From Table 6.7 I was able to deduce the following snapshots of Callie's reflections and responses. Callie's direct musical responses were very often literal, while her extended musical responses were almost always creative and reflective. Callie's seldom made music spontaneously, but when she did it contained a mixture of literal, creative and reflective features. Callie's frequent verbal responses ranged in quality, being coded in numerous ways, though she was most often reflective. Callie's non-

verbal behavior was most often coded as being non-interpretive, but could sometimes show emotion, empathy, or reflection.

### **Conclusions Regarding Callie's Responses and Reflections**

After creating Callie's communication profile I revisited the data and made the following conclusions. Callie's summaries did not require categorization.

1. Callie's verbal responses often reflective. When traced back to the data, many of these instances found to be extremely inquisitive, showing a deep curiosity. She always wanted to know the "how" and "why" behind everything.
2. Callie's direct musical and verbal responses that were also coded as literal were traced back to a number of instances where she was imitating my model, or a model provided on a musical recording.
3. Callie's delayed musical responses that were also coded as literal were often instances where she was practicing independently.
4. Callie's instances of extended musical response that were also coded as reflective, emotional or creative are instances where she was making an effort to improve a familiar piece of music, or after a recursive compositional process.
5. Many of Callie's verbal responses that were also coded as emotional can be seen in the data as instances of self-criticism, the displaying of a positive attitude toward learning, or the expression of liking a particular example of music.
6. Callie's written responses are coded as being emotional and reflective. They are also coded as being critical, meaning that they were used in thematic creation due to the impact they had on her learning process, rather than based on how frequently they occurred.



### **The Formation of Themes**

A theme is a construct that summarizes large portions of data based on the relationships of the codes, the frequency of their occurrence, and the analytic reflections of the researcher (Saldaña, 2012). Theme titles are selected because their definitions have enough depth and explanatory power to capture the nature or basis of the observed experience, but also because they are sufficiently abstract in such a way that they can unify the necessary data sets into “meaningful wholes” without force (Creswell, 2008, p. 444).

After employing multiple “tactics” to theme my data, as described by Miles et al. (2014), including coding, counting, categorizing, making comparative tables, describing the relations between variables, and analytical reflection I was able to realize key connections between the pattern codes and simultaneous feature codes, and certain themes emerged both within and across cases. Each theme was organized into a hierarchy of analytical layers from very sophisticated groupings down to very basic (Creswell, 2008). Themes are divided into sub-themes, and subthemes are divided into categories, and codes. These layers are depicted in charts placed within the thematic sections to follow.

Three within-case themes emerged from Harper’s data: (a) Attunement, (b) “Good Things,” Glimpses and Glimmers, and (c) Constant Composer. Two themes emerged from Callie’s data: (a) Revealing Words, and (b) Exploration and Recursion. The derivations of these themes are depicted through a set of concise graphic hierarchies. Harper and Callie’s thematic hierarchies are respectively displayed in Figures 6.2, 6.5, and 6.7, and Figures 6.8 and 6.11. Each theme is then defined, and discussed along with examples of the data that brought it into fruition. The derivation of cross-case themes will be discussed in the last section of this chapter.

## HARPER'S THEMES

As mentioned, three themes emerged from Harper's data: (a) Attunement, (2) "Good things," Glimpses and Glimmers, and (3) Constant Composer. Within each thematic section to follow, I provide (a) a hierarchy for how each theme was derived and organized, (b) a description of how the title of each theme was selected, (c) a summary of the data that led to the conceptualization of that theme, and (d) examples from the database to support my interpretations.

### Theme 1: Attunement

*Attunement* is the process of responsively adjusting and coordinating with another person in an effort to communicate, or enhance communication, of a particular message or to create a better mutual understanding (Barnes, 2010; Kim, Wigram, Gold, 2008). In this study, the term attunement was used to describe the complex act of interacting and communicating musically and non-verbally to share musical thoughts, messages, understandings, ideas, or feelings. This term was chosen because it is already accepted as a communication style in the fields of music psychology and music therapy<sup>7</sup> (Barnes 2010; Kim, et al., 2008; Trondalen & Skarderud, 2010), and has been introduced in the field of music education (Fink-Jensen, 2007). In fact, Kim et al., (2008) described a

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<sup>7</sup> Although the observation and utilization of a form of communication used by music therapists may make this study seem like music therapy, this program was not intended, nor definable as music therapy. Music therapy is "an established health profession in which music is used within a therapeutic relationship to address physical, emotional, cognitive, and social needs of individuals" and to provide them with musical treatment to and effort to strengthen clients abilities (American Music Therapy Association, 2014). In this study, none of the afore mentioned needs were assessed, measured or treated. Neither did the research attempt to act as a music therapist. Rather, the sole focus of this study was to develop the participants' musical skills and understandings through the establishment of music education goals, objectives, and procedures that required creating, performing and responding to music. The word attunement is used, in this case, to describe how a student responded to and reflected on his music learning experience.

specifically musical attunement: “the term ‘musical attunement’ implies a moment-to-moment responsive use of improvised music” (p. 1759). This type of exchange falls into the theoretical construct of communication as described in Chapter 1, and is supported by the vision of The American Speech-Language and Hearing Association which states that a communicative exchange can take place in many forms: “communication is any act by which one person gives to, or receives from another person information about that person’s needs desires, perceptions, knowledge or affective states” (National Joint Committee for the Communicative Needs of Persons with Severe Disabilities, 1992).

Barnes (2010) described three behaviors often characterize attunement: shared attention, interaction, and communication. Shared attention is when both parties involved identify and focus on the same musical phenomena; this creates a point of possible contact (Barnes, 2010). This may be observed through direct visual attention, proximity, listening, or movement (i.e., tapping to the beat); shared attention does not necessarily imply social intent (Barnes, 2010). Interaction is the moment when the student and teacher begin to overtly engage with each other and the music (Barnes, 2010). One may try to influence the music through intentional sound or pattern play (Kim et al., 2008). Through this process, the student and teacher begin to develop a sense of whether the other person will choose to interact, how the musical dialogue will function, and they may begin to try to synchronize or coordinate their exchanges (Greenspan & Wieder, 2006, p. 18; Prizant et al., 2005, p. 123). “Responsiveness and flexibility in improvisation can be a powerful asset in interaction with others” (Barnes, 2010). Communication occurs when the music develops distinctive norms and interconnections by which both parties begin to understand the expectations, and possible alternatives and

augmentations (Ockelford, 2008, 2013). These three characteristics are not separate steps, nor are they mutually exclusive. Rather, they are instances that occur in continuum and it is their fluid interconnection that characterizes the responsive and reflective act of attunement (Barnes, 2010; Kim et al., 2008).

In many instances, Harper and I would improvise together, mutually creating one musical act. In other instances he would improvise for me, explicitly saying, “I want to show you something.” This explicit desire to share a musical idea, or to engage in a mutual exchange of musical sounds is a communicative act that I very frequently encountered while teaching Harper. The coding process that brought me to realize this theme is shown in Figure 6.2. Attunement is divided into two sub-themes: Flow and Focus, and Scaffolding. The Flow and Focus was demonstrated through instances when Harper would produce an extended musical response that was accompanied by a series of non-verbal communications. Through the interplay of these two modalities, Harper shared ideas, thoughts and feelings that were coded as having empathetic, reflective, associative, emotional and creative features. Flow and Focus is associated with the acts of creating and performing improvised music.

When attunement was used to learn how to perform pre-composed music it was called Scaffolding. This process was very similar to Flow and Focus, because many of Harper’s responses still had associative, reflective, creative, and reflective features. Differently, scaffolding involved a large number of literal responses, when Harper and I literally imitated music that was provided by the other person, or by a recording. Through this act we layered or scaffold on new information to work toward our goal.

In the following sections, examples of Flow and Focus and Scaffolding are provided. This section ends with a section titled “An Exception to the Rule,” which will describe an instance where Harper’s behaviors were not true to this theme.

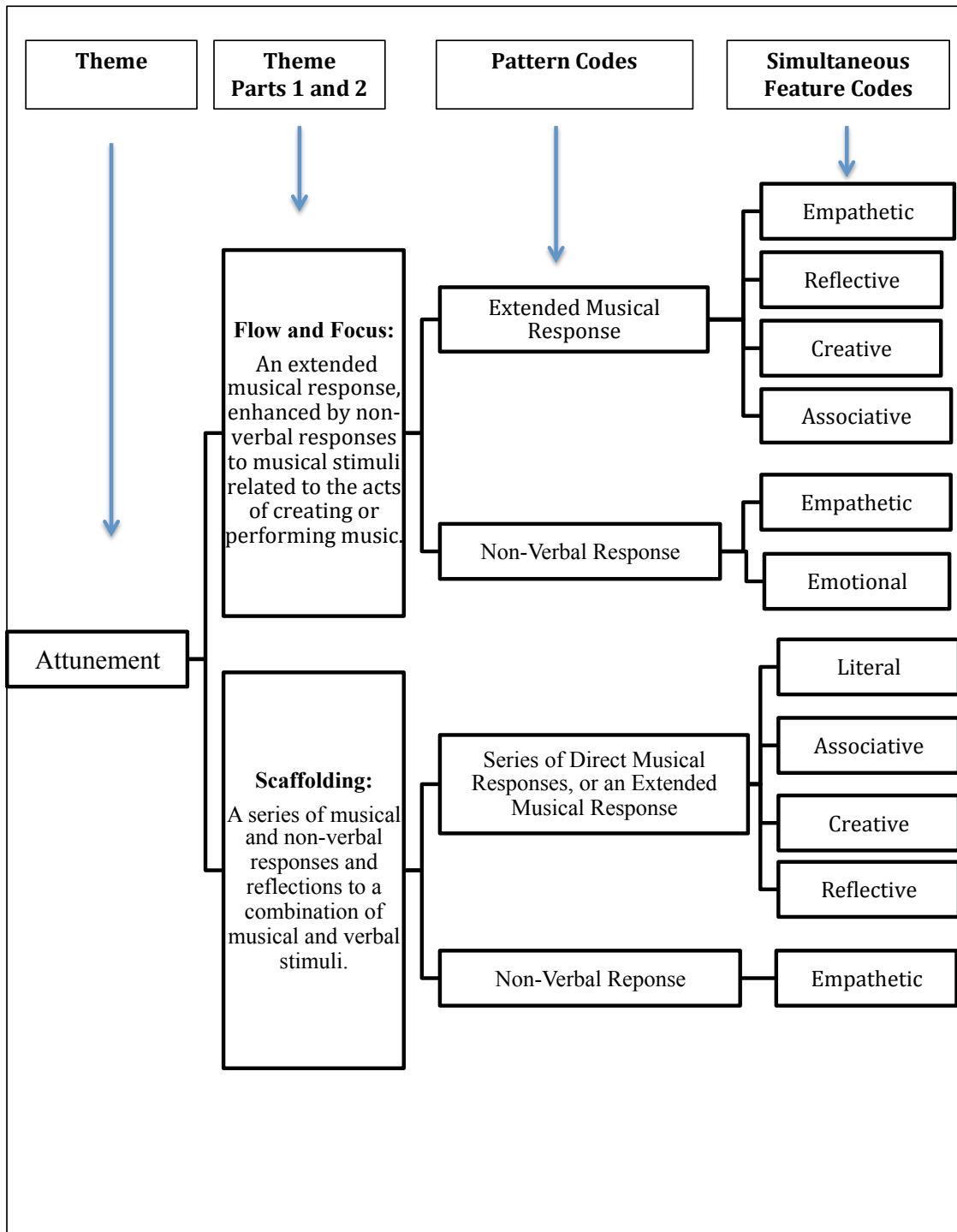


Figure 6.2. The Derivation of Harper's Theme 1: Attunement.

### Flow and Focus

Flow and focus is a type of attunement. It is defined as being a series of musical and non-verbal responses to musical stimuli related to the acts of creating or performing improvised or self-composed music. The term *flow* was used because the student was responding and reflecting on music in a fluid way, and also because Harper actually used the word flow to describe this process (this conversation is expanded upon in the “Glimpses” section of Theme 2 for Harper). The term *focus* was used to signify the observed intent and sustained attention given to each musical event. While the student was focused there were virtually no instances of inattention, discussing inappropriate topics or inappropriate behaviors.

#### Example 1: Harper’s First Improvisation

As I finished positioning the camera for our first lesson, Harper was seated at the piano. He was repetitively playing intervals of a second somewhere in the third register. Gradually, this pattern turned into a series of trills ending with descending thirds, fourths, or augmented fourths. The series gradually moved down to the second register, and then lower to the first register. It ended in a downward stepwise motion finishing on the lowest B. As he played, he smiled and stared off into the center of the room, not appearing to be visually focused on any one item. I adjusted the bench, and attempted to join him. He engaged me by playing the opening notes to a song by Mackelmore & Ryan Lewis, which is a song he knew we were both familiar with.

AW: Let me see, can I move the bench up, Harper?

*Harper continues to play while I work around him, but he does stand up and move forward just enough for me to move the bench into place. Harper then plays the opening chords to the Macklemore song he played at his interview.*

Harper: Uh oh!

*He smiles and looks over at me, making eye contact. I look back.*

Harper: Uh! Macklemore, again! Right?

AW: Are you doing that again?

*Harper laughs and replays the segment.*

AW: I like that song, do you like that song?

Harper: Yeah. Look!

*Harper begins to improvise a new segment. Using his two pointer fingers, he begins with two notes a minor third apart. He giggles and then instantly his expression softens and his eyes become distant. He listens carefully as he plays. He adds another note a minor third higher creating a diminished chord. He repositions his hands to brace all the notes with his left hand, and pulses on them for a few beats. This frees his right hand, and he uses it to play a blues riff an octave higher. Something stops him suddenly. He searches the keyboard for a few brief seconds, by plunking on several notes, and then arrives at a pattern. He plays arpeggiated Db major, Eb major and F major chords in succession twice and giggles. He stops and begins to just focus on the Db and Eb chords alone. I decide to try to interact.*

AW: Oh Beautiful! Is this what you did Harper?

*I attempt to play back what he played. He plays it back along side of me, but subdivides it into triplets. As he plays the pattern three times as fast as me, I continue steadily.*

AW: Can you think of something to go with this Harper? What could go with this pretty little thing?

*He stops momentarily, and makes a percussive sound with his tongue, like a whispered "da da da." Then he smiles and looks at me. He begins to play a melody that traverses the Db and Eb chords despite their distant tonal relationship. Sensing the key change, the first part of his melody is a Db and Ab, and then next is an G...*

We continued. The musical events that developed are shown in Figure 6.3. While I could not notate the clusters precisely in measures 4 and 9-11, the rest of the piece is notated accurately. I played the notes represented on the bass staff, and Harper's contribution is on the treble.



## Harper's First Improvisation

Adagio  
 Play right hand an octave higher than written.

Harper

AW

6

10

15

8vb

8vb

Figure 6.3. Transcription of Harper's first improvisation.

In this example, Harper provided the two chords that caught both of our attentions. From that moment, a rapid interplay of communicative behavior occurred. As I imitated Harper's idea, and he chose to interact; this started with the playing of his first three notes, as shown in the score. During those three notes Harper touched the piano lightly, seemingly unsure, but then his attitude became confident, and his playing grew slightly louder. The initial three notes had brought him to some conceptualization of how to relate the two keys. He seemed to recognize, either consciously or unconsciously, a possibility of tonal play, and through this, was able to derive a distinct sound quality that remained for the entire piece. During measure 3, Harper looked at me, and I looked back. He had wide eyes, and I smiled. It appeared that we both enjoyed what we heard, and we both were excited about the possibilities.

Throughout the improvisation he showed a natural ability to align this sound quality with the meter, tempo, harmonic rhythm, and rhythmical motif. This alignment shows that he was indeed responding to the music I was playing, and that our creation was mutual, rather than this being a circumstance of coincidence. The resulting music emulated an off-kilter waltz, something that I picture would be perfect for a lonely marionette. In measure 9-11, Harper had a delayed musical and verbal response to my original statement of challenge "What could go with this pretty little thing?" by playing clusters of notes in two registers on the piano. He comically interjected, "Uh oh, this is not pretty is it!" This indicated to me that he had fully consumed the nature of the challenge I presented him, and was in control. Even more so, it seemed to suggest that he was prepared to honor or dishonor the challenge at his own will. I answered him by also adjusting my playing to be less "pretty," by blocking off the chords with some dissonant

tones in a lower register. I gradually returned to the original germ of the piece, playing the arpeggios once again. In measure 13, Harper returned, too, issuing another melodic compliment to suit the ostinato. After just measure I saw his eyes wander, and felt his attention fade. To regain his attention, I reintroduced the F major chord (m.16), Harper beamed at me and giggled. He stopped playing, his hands flew into the air, and he laughed; the third chord from his original moment of playful speculation had returned! It was a moment of sheer joy. He contained himself just in time to play the last measure. Following this there was no time to ask any questions because Harper immediately started a new improvisation. Later, during our interviews, he mentioned our improvisations.

AW: What was your favorite part about today's lesson?

Harper: How we created music together.

AW: What do you mean? When we played "Light and Day," or when we improvised?

Harper: When we improvised.

AW: What made you like that so much?

Harper: Because it was fun.

AW: How did you feel when we were making up songs?

Harper: GOOD. *::the capitals indicate an emphasized tone::*

AW: Can you tell me more about those good feelings?

Harper: I don't know, they were just good feelings. That is all.

AW: You are such a natural improviser.

Harper: Yeah, it is fun. We should work on improvising more next time.

The musical exchange above represents only the first three minutes of class.

During this time, Harper had already gone into a mode of focused experimentation. The instance was characterized by several occurrences of musical interactions. One performer introduced material, the second imitated. This imitation conveyed a desire to the other. Now, the first one had a choice – to interact, or not interact? Once the choice to interact was made, the material turned into a musical dialogue. In some instances, the

first player influenced the second, and other moments, the opposite was true. This mutual influence and exchange was surrounded by the honoring of a germ -- a moment where we both agreed on a particular sound quality. The give and take of this “conversation” was rapid, fluid and cyclical: response, reflection, and response again.

### **Example 2. The Clock.**

During our fourth lesson Harper and I created an improvisation that was inspired by one of his favorite things: the clock. This improvisation is approximated in Figure 6.4. This figure is called an approximation, because sometimes Harper played incidental notes accidentally or for enjoyment, or giggled causing him to fade in and out, which I could not show in standard notation. Harper also had a profound sense of tonal articulation that I could not represent visually. Furthermore, the non-verbal aspects of our communication as we played are not visible in the figure. All of these aspects will be described in the following sections.

#### **Journal Entry: October 12**

*As Harper and I improvised The Clock today, there was a lot of giggling. He would sometimes curl up into himself slightly as he laughed. While Harper laughs a lot, somehow each laugh is distinct. They have levels of surprise, levels of amusement, some explode, and some are more like moans. These differences make me believe that they are not just subconscious, thoughtless gestures, or a behavioral flaw, but rather, a sign that something has resonated with him in a very particular way.*

#### **Summary of Responses and Reflections that Transpired During “The Clock”**

AW: Alright, let’s make up a song about the clock today. Are you ready?  
*Harper looks over and gives me eye contact.*

The clock began with me playing just eight slowly descending quarter notes alternating with middle C. As I played, Harper was slouched next to me with his left arm across his chest. His right elbow perched upon it, and his right arm extended up so he

could hold his lowered forehead in hand. As he listened and cooed, emitting a low, gentle, steady half laugh. A few beats later he sat up, smiled and said, “That’s the tick-tock!” His first musical response was a syncopated gesture (m. 3). Next, he mirrored my descending line in a higher register (m. 4-5). Continuing, he subdivided the beat quickly and incorporated several clusters. The clusters confused me and I looked at him quizzically. He froze, held down a high “C,” and looked back at me with wide eyes and a guilty inverted smile (m.8). Desiring to continue, I accented my accompaniment playing (m.8) and then began to regally play blocked chords. Coincidentally, Harper also began to play blocked chords (m. 9). Harper’s playing quickly developed deliberacy, matching my regal tone. He looked at me with a wide smile, and I looked back. As his hands marched, he melodically transitioned back to the mirror image of the original downward scalar figure against a repeating C. His playing quickened, and then climaxed with a rapid scale (m.16). Harper giggled, seeming to love his own gesture. When this gesture returned (m.17), he altered it; this time he played the up and down the scale, and alternated the scale tones with a treble G, rather than the usual C. I looked at him and showed approval; he looked back, and gave a slow laugh that quickly up-surged into a joyful screech. After 8 bars or so, I attempted to return to the regal theme. Harper followed my lead, creating a suiting melody around the note “A,” the relative minor. Suddenly, Harper looked at the clock on my wall, and asked, “Is it broken?” Without stopping the music, I answered, “Yes.” In Harper’s part, the “tick-tock” descending line can be seen to return once more (m. 31), quicken after three measures (m. 34), and accelerate into a running scale (m. 36). I answered his scale with a predictable cadence,

ending on a C chord; Harper ends his scale on high C (m. 37). We both start laughing, and high five.

Later, the following conversation happened during our interview.

AW: Harper, what made you choose the patterns you played in the clock piece?

Harper: Well, at first I didn't know.

AW: At first you didn't know what?

*Harper vocally tones for a few minutes before responding.*

Harper: I didn't know because...*(long pause)*

AW: And then what happened?

Harper: Well, after a few measures, I did know.

AW: What made you figure it out?

Harper: It made me figure it out because... you told me to sound like a clock, and so I did. I just figured it out on my own.

AW: Did your brain tell your hands what to do?

Harper: Yeah...

AW: So, the notes came from your brain?

Harper: I thought of it because it just came up in my head.

AW: In your brain, were you thinking about what notes to play?

Harper: No, I was not thinking. No! Wait. My brain *must* have been thinking. Or else...

AW: Did the sounds you played come from your brain?

Harper: Yes... No! The sounds came from the piano!

AW: How did the piano know what to do?

Harper: Because we put our hands on the piano, and we just made a song. *He places his hands on my desk as he would on a piano.*

### **Analysis of Events**

Unlike the first improvisation, it was I, rather than Harper, who contributed the initial musical sound that brought together our shared attention, and led to an extended and attuned improvisation. Harper and I improvised like this during every class; each time was different, and we shared the task of providing initial sound material. Harper's ability to engage in music of his own influence, and mine, shows communicative flexibility, indicating that he did not have to control the musical conversation to partake in it. He could both give and receive.

After this first moment of shared attention, we began to interact. The seminal interaction of the piece occurred when Harper laughed at my tick-tocking downward line. This exchange unfolded through an interplay of non-verbal gestures, facial expressions and musical responses. Harper's musical decisions showed that he was aware of, able to maintain, and interested in maintaining the overall sound quality and structure of the piece. This is first noticeable in measure 5 when he imitated my scalar figure. This imitative gesture indicated to me that he understood and had the ability to control the musical dialogue. His understanding was also evident in his natural abidance to the four-bar phrasing created by the harmonic rhythm; each of his melodic phrases is four-bars long. Furthermore, his series of decisions all worked to sustain the mood and character of the piece.

This piece contained certain surprises. My first surprise occurred when we both simultaneously altered the texture by blocking chords in measure 9. I cannot point to a particular outward sign that indicated this change, other than my strengthening bass line in measure 8. Perhaps my more stoic playing was just enough stimulus to trigger the thought in both of our minds that it was time to build in fortitude. It is also possible that the improvisations we shared during our previous sessions developed our musical language and non-verbal communication to a level of sensitivity higher than what is readily observable through a video recording. It is also possible that this was sheer coincidence. While this matter is speculative, it interests me deeply.

The biggest surprise occurred after analysis. In measures 6 and 7, Harper's playing seemed to be spinning out of control. After noticing my quizzical look he chose to make the piece succeed by returning to more imitative playing. Little did I know at the

time that the “out-of-control” scalar gesture was, in fact, meaningful to him, and that it would return twice more before the close of the piece. This alternation between imitation and scalar figures gave the piece characteristics of strophic form, with three highly related sections: measures 1-8, 9-16, and 17-37. He had developed a musical pattern with each recurring episode depicting the last in a way that balanced freedom and structure, familiarity and spontaneity, continually fostering our musical dialogue on many levels.

Stepping back, this finding helped me realize that this piece was created through the cyclical process of responding to and reflecting on musical sounds that were being simultaneously created and performed (improvised). This cooperative interplay of musical and non-verbal communication allowed us to share, blend, alternate, and overlap facets of our ideas, desires, and knowledge of both music and each other. We mutually influenced the conversation through a transpiring sound-language that revealed a complexity of thinking on both sides.

This improvisation was followed by conversation that seemed to yield little information at first, but later, after some time had passed, and I had reflected, it revealed a great deal. While Harper could influence, control, respond and reflect to music through music, he could not verbally conceptualize what occurred. He could not transform his sound-think into language-think (Reimer, 2005). Without the methodological decision to observe a variety of musical behaviors many of Harper’s responses and reflections would have gone unnoticed. This would have been a great limitation in light of the fact that it was precisely the responsiveness and flexibility of our attuned interactions that enabled us to co-create and communicate.



# The Clock

Harper

AW

13

The image displays three systems of musical notation for a piano piece. Each system consists of three staves: a single treble clef staff at the top, and a grand staff (treble and bass clefs) below it. The first system begins at measure 19. The second system begins at measure 27. The third system begins at measure 35 and includes a fermata over a measure with the annotation "15ma" above it. The notation includes various rhythmic values, accidentals, and dynamic markings such as accents and slurs.

Figure 6.4. Transcription of Harper's Improvisation, "The Clock."

### **Scaffolding Through Attunement**

The term *scaffolding* was first introduced by Wood, Bruner, and Ross (1976) as a metaphor to describe a type of learning where a more knowledgeable teacher, parent or peer provides support to the learner in a specific learning context to complete tasks beyond learner's current capacity. The developmental progression starts with a high degree of support, which is gradually reduced as the learner develops the requisite skills and self-confidence to perform the task independently. During this process the student is allowed to complete as much of a task as possible unassisted (Benson, 1997). Teachers and students may have an open dialogue to determine what and how students are thinking, and determine how to clear up any misconceptions, and to individualize instruction (NRC, 2000). Scaffolding reflects Vygotsky's notion of zone of proximal development (ZPD), which describes the gap between what a learner can accomplish alone and what can be accomplished with assistance (Rogoff, 1990). The ZPD and the specificity of scaffolding needed by the learner changes over time as the learner's knowledge and skills develop (Rogoff, 1990).

For this paper, scaffolding is another type of attunement specifically defined as a series of musical and non-verbal responses and reflections to a combination of musical and verbal stimuli, related to the processes of learning or re-creating previously composed music. This process is very similar to the Flow and Focus type of attunement, but the child is involved in a different musical act, and is required to make a different set of decisions. The process of learning still involved shared attention, interaction and communication. Interestingly, this process aligns with the six general elements of scaffolding as identified by Zhao and Orey (1999), which are:

1. Sharing a Specific Goal: In this step it is the teacher's responsibility to establish a shared goal that recruits the learner's interests and known skills.
2. Whole-Task Approach: The focus is on the overall goal to be attained throughout the entire process.
3. Immediate Availability of Help: Guided assistance is provided in a timely and effective manner to prevent frustration.
4. Intention Assisting: Immediate support and coaching is provided to keep the learner motivated and in pursuit of the task. When frustration arises, the teacher may need to help the learner overcome difficulties by being cognizant of numerous ways of accomplishing the task, and helping the learner view the task from multiple perspectives.
5. Optimal Level of Help: The learner should be given just enough help to overcome the current obstacle.
6. Conveying an Expert Model: An expert model can provide an clear demonstration embedded with techniques for accomplishing the task.

Based on these previous definitions of scaffolding, and my observations of how Harper naturally non-verbally and musically responded and reflected while learning to play a new piece of music, I chose scaffolding as an appropriate metaphor. Due to his natural tendency to learn through this process, I responded reciprocally by teaching this way, but I was not explicitly able to identify it by name until after analysis.

### Example 1. Being Introduced to “Light and Day”

Harper and I learned the piece “Light and Day” (DeLaughter, 2002) largely through attuned scaffolding. The scaffolding process did involve some intermittent banter, but was characterized most strongly by long stretches of non-verbal and musical interaction. This example occurs one week after Harper heard the piece for the first time, in our previous lesson.

AW: Alright, what’s next mister?  
 Harper: Play “Light and Day”?  
 AW: Should we listen to it first so we can remember it?  
 Harper: No, play it.  
 AW: Just skip the listening? And just play it?  
 Harper: Yeah!  
 AW: Do you know it enough?  
 Harper: Well....  
*Harper starts to sing the melody of the piece to me.*  
 AW: You do!  
*We both sit at the piano.*  
 AW: Alright, lets see what we can remember!

### Structure of the Song “Light and Day”

Before proceeding, it is important to familiarize the reader with the structural properties of “Light and Day” (DeLaughter, 2002) so the subsequent description can be understood. The piece “Light and Day” is in the key of D major. It is a strophic piece, in the form Intro, A, A1, A1, Coda. The introduction is 24 bars long. The first eight bars introduce the melody in the form of a bass line, while the treble part is a series of arpeggiated chords. In the next 16 bars, the melody remains in the bass line, while the treble features a countermelody that will pervade throughout the piece. The A sections features 12 bars of unique lyric material, and ends with a four-bar refrain. An eight-bar instrumental solo follows. The A1 sections features a variation of the original melody that maintains the same contour as the original, but is now sung a third higher. This

section, again, ends with a four-bar refrain, but now the instrumental interlude is only four-bars long. The coda is two repetitions of the refrain. A transcription of this piece was available during our lessons, however Harper and I did not follow the transcription necessarily; much of our learning and exploration was done by ear.

### **Summary of Responses and Reflections that Occurred While Rehearsing “Light and Day”**

As Harper and I began to rehearse for the first time, I began the piece by playing the first eight-bars. I continued into the next eight-bars, and as the treble introduced the countermelody Harper elected to join in. He began by trying to figure out the countermelody in a higher register. He was able to insert portions accurately and on time. These eight-bars repeat. On the return he was able play more of the notes. He stumbled periodically, but he naturally responded by listening closer to what I was playing. He paused for a moment, puzzled, but after a few seconds he jumped back in. He recovered in a curious way: he played the bars he missed in fast-forward. When his fast-forward playing caught up to me he returned to my tempo. We repeated the introduction so he could try again. This time he was able to play more of the countermelody correctly and exclaimed:

Harper: I am playing with you!

*We continue. The introduction ends on a fast upward scale. He nails it.*

AW: You are doing really good!

As we moved into the verse, I sang and played, and Harper followed along closely, playing and singing with me. Rather than sitting on the bench, he stood. As we approached the end of the chorus, he jumped in the air slightly, but put his hands back down on the keys just in time to play the cadence. I realized he was having a hard time

coordinating his fingers as we continued into the next verse, and so I slowed down. He responded by echoing what I played just a moment after. He ended the section by playing the cadence perfectly. When the first instrumental section arrived I said, “Oo! The guitar solo, what are we going to do? Should we improvise?”

Harper looked at me quickly and began to invent a melodic solo. The solo was largely comprised of his own invention, and was only loosely related to the melodic content of the piece. Despite his originality, he did interact predictably with the accompaniment chords, playing in key and in tempo. We both sensed the end of the interlude coming, and led into the next verse on the dominant chord.

As we progressed into the first repetition of A1, he again alternated between playing along with me to the best of his ability, and echoing. During the second repetition, he played a few phrases on his own. He looked at me periodically to see if I was impressed. I often noticed and smiled back.

As the last Coda arrived, we both got excited and sang along. The ending consisted of the two of us exchanging two-bar scalar passages – one echoing the next. The refrain had been Harper’s strength throughout, and as we played it two final times, he was able to willfully add expression to his playing. As we progressed, we swelled in volume, building to the end. When the last four bars arrived we both articulated our piano and vocal part the same way. Without words, we decided to slow down slightly, and cut the last note off abruptly, ending with a staccato punch. We both looked at each other, laughed and gave a high five.

### **Analysis of the Scaffold Attunement while Rehearsing “Light and Day”**

In this instance, there are many examples of shared attention, interaction, and communication. In the moment that Harper verbally elected to rehearse “Light and Day,” (DeLaughter, 2002) we began to share our attention on the musical sounds we were familiar with from listening to the piece. Harper’s musical literacy skills were not developed enough for him to read the transcription easily. To accommodate, he worked from his memory and from my “expert” example (Zhao & Orey, 1999). The first interaction was when Harper sang the melody to me, before the official rehearsal of the piece began. This moment of imitation demonstrated that he could imagine the musical sounds, and was even able to reproduce them. My excited recognition of his imitation revealed that his imitation was accurate to the sounds in my mind as well.

As we moved through the piece, neither of us elected to stop and rehearse small portions. Instead, we elected to through-play the entire piece, or examine the whole-task (Zhao & Orey, 1999), and so that the level of difficulty, and amount of knowledge Harper already had could be observed and assessed. In this instance, the question in my mind was: what do we already know just based on hearing the piece? In this case, Harper’s playing showed that he had some semblance of the overall piece, and had completely internalized the refrain. It also showed that he did not know the more intricate patterns of the countermelody, and certain sections of the verse. Rather than give him explicit instructions, I allowed him to think musically (Reimer, 2005) through the task, and arrive at solutions as independently as possible. As we continued to learn this song over the course of our next five lessons, I reduced my support, and almost without a word, Harper rose to each consecutive challenge, moving steadily towards his goal. His performance



for Callie in the final lesson showed that he had made great strides toward accomplishing his goal. While he did not play the whole piece with complete independence, he was able to willfully use tools of musical expression (i.e., dynamics, tempo, and articulation) to demonstrate that he had developed some level of control and ownership of the piece through our attuned sessions.

### **An Exception to the Rule**

While it was typical of Harper to create and re-create instrumental pieces through the processes of attunement, there was one instance that did not fit into the above categories: song writing. For this task, Harper was asked to use a new set of musical symbols, as well as compose lyrics. During this task Harper and I used a great deal of oral communication.

The new set of musical symbols that Harper was asked to apply were Roman numerals to designate chord progressions. As preparation to writing a song, I helped Harper learn how chords can be represented numerically by (a) by listening to pop songs and singing or playing the root notes of their chord progressions, and (b) through ear training drills, where I played a chord progression and Harper attempted to identify the chords by number in the order they were played. During our third lesson, I noticed that Harper still had not quite mastered this skill; he could consistently identify chords by note name, but not by number. To help Harper practice associating chords with numbers, he and I brainstormed chord progressions for his song together. This process involved verbal and musical turn-taking where he would suggest a progression, and I would play the progression in a number of ways, so he could decide whether and how it should be changed. Here is one of our conversations from lesson 3:

AW: Harper, let's try to write our own song.

Harper: The song about life and getting better at things? Like we started last time?

AW: Yes. That was your idea from last time. You did say we should try to write a song about getting better about things.

Harper: Okay.

AW: So, we heard a lot of the 1 5 6 4 progression today – should we try that?

Harper: We should do 1 5 7 4.

AW: 1 5 7 4, seven is a little tricky, but I think we can try that.

Harper: Seven is on there (*looking at a roman numeral diagram I had on the piano*)... it might be good.

AW: Well, it is the diminished chord, which makes it a little tricky, but we can try it.

Harper: Sing it to me.

AW: I have to play it, each chord has three notes, and I can't sing all three at once. I can only sing one at a time.

*I play the progression a few times, giving each chord four beats, as if it was repeating through a song.*

Harper: 1 5 7 4.

AW: You want the seven chord, do ya?

Harper: Yeah.

*I play the progression again, this time slightly arpeggiated. Harper laughs hysterically.*

AW: Why are you laughing?

Harper: I don't know, that just made me laugh.

AW: That is the seven chord. That's what you want for your song right?

Harper: Yeah.

AW: Well, I am trying to make it fit. What do you think?

*I play, and sing the number of the chord as I play. Harper joins me.*

AW and Harper: 1 5 7 4

Harper: 7, 4, WHAT!?

AW: Do you like it?

Harper: What about 1 5 4 4?

AW: 1 5 4 4? Okay, lets try it.

*We both play and sing the progression*

AW and Harper: 1 5 4 4, 1 5 4 4...

*Harper laughs loudly again.*

AW: Do you like that one?

Harper: Yes.

AW: Better than the other one?

Harper: YES!

*Harper is laughing again. I realize he might be thinking about the numbers.*

AW: What, the double four?

Harper: YES.

AW: Forty-four?

Harper: *Fifteen* forty-four.

AW: What is that?

Harper: That's an address of a house sometimes. Some people have that.

AW: Is that your house?

Harper: No.

AW: Whose house is at 1544?

Harper: I bet other people's houses are...

AW: My house is 1010.

Harper: We are going to use fifteen forty-four in our song.

AW: Okay, should that be for the verse or the chorus? Maybe we could try it first as a verse and see how it goes?

Harper: Yes.

In this conversation, Harper suggested ideas and I helped him by testing his ideas and keeping him aware and critical of his choices. Through this process Harper made a decision, and I elected to move the process forward. Shortly after, we had another turn-taking conversation about choosing the song topic, which led directly into improvising and lyric writing.

AW: Alright, Harper, then what kind of lessons do you want to teach people about life?

*Harper laughs.*

AW: What is a song that somebody would like to hear?

Harper: I don't know.

AW: Well, if we are going to sing a song for Callie, we are going to have to pick. What do you think a good life lesson to teach somebody might be?

Harper: I don't know...

AW: What is a lesson you have learned about life?

Harper: 1 5 4 4? (*Giggles*)

AW: Is life easy all the time?

Harper: Noooooo...

AW: Okay, so what is a lesson we might know?

Harper: How hard it is.

AW: How hard it is, (*then singing*) how hard it is...

*Harper laughs.*

AW: Do you want to write a lesson about how hard life is?

Harper: Yeah.

AW: You do?

Harper: No.

AW: No? What do you want to write a song about?

Harper: How GREAT life is!

AW: Ooo! Even better! So this is going to be a song about how great life is...

*I start writing, and as I do, I tease Harper a little. As I write, I read aloud.*

AW: How great cheese is...

Harper: LIFE IS!

AW: I was just seeing if you were paying attention. How great life is. Do you want to improvise what the words might be? What are some words that might be in this song...

Harper: (*sings and accompanies himself on piano*) How great life is.... Really great!

AW: Okay, let's think about things that explain that.

Harper: (*snaps, and sings a new tune*) Riding a bike is a good thing to do in life... riding a bike is a good thing to do in life.

*I write this idea down.*

Harper: Riding a bike is a good thing to do in life, right?

AW: Yeah, it is a really fun thing to do... What else?

Harper: (*singing*) Solving math problems is a good thing to do in life.

AW: I think I hear, sol sol sol sol, or 5 5 5 5 1.... (*Jotting down the notes*)

*Harper laughs loudly.*

### **Analysis of the Responses and Reflections that Occurred During the Song Writing**

#### **Process**

In this instance, Harper abandoned his attuned communication style, and engaged with me verbally. His speaking revealed that he was thinking reflectively in many ways: (1) he tested chord progressions, (2) decided on a chord progression using his own judgment, (3) provided an original song concept, (4) improvised lyrical ideas, (5) figured out how to accompany himself on the piano, and (5) shared that the numerical associations with his teacher that made him laugh. He was a cooperative student and his responses and reflections contributed to an interactive environment, where he and I collaborated in a focused manner to complete a project.

This example also aligns with Zhao & Orey's (1999) definition of scaffolding. Harper and I exhibited "Sharing a Specific Goal," by mutually focusing on the creation of one song. The "Whole-Task Approach" was implemented, because we agreed upon the goal of writing an original song in advance. There was "Immediate Availability of Help" because I sat with Harper, and helped facilitate and guide his decision making.

“Intention Assisting” was implemented when I rephrased questions or provided suggestions to help Harper move forward. I provided Harper with an “Optimal Level of Help,” by playing the chords only until he showed the ability to play them independently. Lastly, I served as an “Expert Model,” by guiding Harper through the song writing process I have developed through my own private and professional song writing experience.

This process does not fit the definition of attunement as defined in this paper, because it displayed verbal, non-verbal, and musical communication, rather than simply non-verbal and musical communication. There is some overlap between this example, and the examples of attunement, in that both display shared attention, interaction and communication. Harper’s non-verbal and musical communications were central to the formation of the theme “attunement,” while his verbal turn-taking style of response and reflection were considered an exception to this pattern of behavior.

### **Theme 2: “Good Things,” Glimpses and Glimmers**

The second of Harper’s three themes is titled, “Good Things,” Glimpses and Glimmers. As attunement was used to organize Harper’s musical and non-verbal responses and reflections, this theme has been developed to help organize and define Harper’s verbally provided responses and reflections.

While examining Harper in a wide range of musical activities, I noticed a direct correspondence of verbal responses and reflections clustered within, and directly following a musical experience. I observed that during, or shortly after, a musical experience, Harper demonstrated an elevated state of arousal, which corresponded with an increase in his verbal output. The verbal responses given at these times were often

coded as containing reflective, creative, emotional and associative features. In contrast, when Harper was directly questioned, or when a verbal language prompt was provided his responses were coded as being brief, pure, and sanguine.

To discuss this finding, three sub-themes were utilized: “Good Things,” Glimpses, and Glimmers. The coding process that led to the formation of these sub-themes is depicted in Figure 6.5. The term “Good Things,” describes the more common instances where Harper provided pure and sanguine affirmations given to direct prompting or questioning. This sub-theme was formed from two categories: Pure Emotional Responses and Sanguine Responses. Pure Emotional Responses were exhibited through pure emotional words or phrases such as, “good,” “good feelings,” and “good thoughts.” Harper’s transcripts were coded with numerous instances of positivity and praise. He was very, very rarely negative in any way. Sanguine Responses were other instances where Harper was slightly more descriptive about the nature of his emotions, but was still very positive.

Glimpses and Glimmers are two sub-themes that describe the unsolicited free-flow of interpretive and emotional verbal reflections during or directly following a musical experience. *Glimpses* describes a pattern of direct verbal responses to music events that were coded as having associative, reflective and creative features codes. *Glimmers* metaphorically describes instances when Harper had an intense or critical emotional response that caused a sudden increase in his verbal activity. His verbal responses during these emotional reactions were also coded as having reflective and associative features. Harper’s verbal responses during this time could be strong, clear and profound. These two metaphors are fitting because, much of the time, Harper’s most

interpretive verbal commentary was uncontrolled and unsolicited by the researcher. Just as a glimpse or a glimmer of light may appear in a train tunnel as an indication of what lies beyond the walls, these interactions were just momentary, passing indications of what Harper might be experiencing internally.

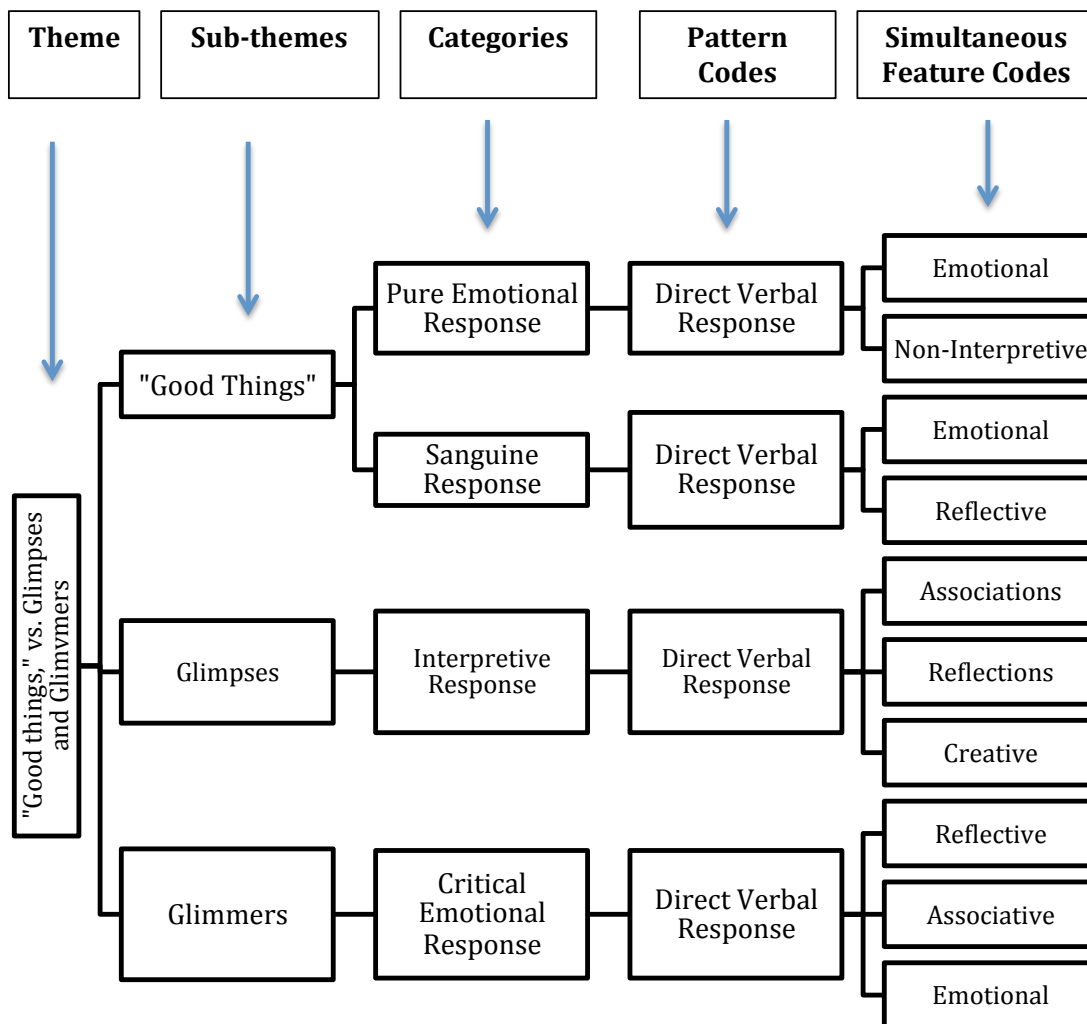


Figure 6.5. The Derivation of Harper’s Theme 2: “Good Things,” Glimpses and Glimmers.

## “Good Things”

To help develop a clear picture of this phenomenon, this section will include four examples of Harper’s Pure Emotional Responses, and five examples of his volunteering Sanguine Responses.

### Pure Emotional Verbal Responses

The following examples are examples of instances that led to the creation of the sub-theme, Pure Emotional Verbal Response. These examples should help the reader understand Harper’s omnipresent positive verbal commentary. Example 1 shows Harper using the pure emotional word “good” in conversation as he did on many occasions. Example 2 shows him using the word “good” in his original song.

#### Example 1. Good Thoughts

AW: Harper, what are your feelings when we improvise? What goes through your head?

Harper: Improvising makes me feel glad good...

AW: Yeah, what goes on in your mind when we improvise?

Harper: I just like to improvise because it is neat and special.

AW: What kind of thoughts do you have when we improvise?

Harper: GOOD thoughts.

#### Example 2. Harper’s Original Song.

<b>How Great Life Is</b>	
Chorus How great life is, really great: x4	Verse: I V IV IV
Verse 1 Riding a bike is a good thing to do in life : x 2 Solving math problems is a good thing to do in life: x 2	Chorus: vi V IV IV
Chorus	
Verse 2 One thing that’s best in life is reading a story: x 2 Getting to know people and shaking hands is a good thing to do in life: x 2	
Chorus	



### **Sanguine Responses**

During our sessions Harper was ceaselessly positive. He was always ready to learn, and frequently commented on our lesson activities in a bright, cheerful and highly motivated manner. This led to his responses being frequently coded as verbal with emotional features. Harper maintained his sanguine outlook during both easy and challenging lesson activities, leading to the notion that this was a pervasive, not passing, attitude.

Harper displayed his positive state of mind constantly. During our interviews, when asked to reflect back on his lesson, and he would say things, such as “Everything was great!” “This was the best day ever!” and, “I am just so glad we had our piano lesson today!” During our last interview he even exclaimed, “I LOVED EVERYTHING WE DID TODAY!” When asked to provide three words that described our lesson he chose enthusiastic terms like, “Smart, fun, funny!” and, “Awesome, fabulous, excellent!” One conversation example of a conversation we had that includes Harper’s joyful attitude is:

AW: Where did you get the idea for writing your song?

Harper: Because, I think that life is great... I just think that life *is* great...

AW: How would you describe your song to someone else?

Harper: Wonderful, and thankful.

AW: Aw! Thankful is a great one. Nice word!

Harper: My next favorite thing is going to be...the thing that I recorded on MixCraft that whaaaa awww awww uhhhh uhhhh (singing one of the loops).

AW: So how would you describe that piece?

Harper: SWEET!

## Glimpses

On several occasions Harper provided verbal glimpses into his learning and meaning making processes while listening to or creating music. This category was created because a number of times Harper responded by providing verbal descriptions that indicated certain associations he was making between his new learning and previous experiences. Furthermore, while providing these descriptions he would also often creatively use metaphor or imagery to creatively describe those connections. These verbalized connections and interpretations gave glimpses into Harper's reflective learning processes. To help describe this sub-theme two examples are provided.

### **Example 1. Listening to "Light and Day"**

While listening to "Light and Day," (DeLaughter, 2002) Harper would be very intent, focused and calm. As he did so, he intermittently described his thoughts. Some thoughts were objective descriptions of what he heard and saw, but others were rich and creative associations and interpretations. The lines in this example are numbered to assist in the analytical discussion to follow.

- 1) AW: Ready Harper? Get ready to be a good listener.
- 2) Harper: Okay.
- 3) AW: This is by The Polyphonic Spree.
- 4) *Harper looks at me and smiles. The music starts with the sound of a sustained synthesizer tone. Harper's eyes widen, and his smile grows. He looks at me again and starts to imitate the tone.*
- 5) Harper: Eeeeehhhhhhhhh!
- 6) *I join him. A second synthesizer joins in, in a lower register, playing a sequence of very legato scale patterns.*
- 7) Harper: Why is he doing that dadadadadada? It's like a broken record.
- 8) AW: It's another repeating pattern! There is the guitar. What key is this in?
- 9) Harper: The Errrrr is like an air conditioner.... D.
- 10) AW: Yes!
- 11) *On the screen there is an image of a blue sky with balloons floating by, small portraits of people wearing sunglasses fill the screen.*
- 12) Harper: It's like at a country house, right?

- 13) AW: Yeah, I think you might be right about that.
- 14) AW: His name is Tim DeLaughter. (Looking at the lead singer.)
- 15) Harper: DeLaughter? Like he has something to laugh about? Or laughing at him?
- 16) AW: Exactly!
- 17) *Harper lightly sings along, imitating the music. As he does so, he appears to be listening intently.*
- 18) AW: Oh, I hear the guitar!
- 19) *As the first verse begins Harper just listens. He does not always look at the screen. At the end of the first chorus, the first instrumental section of the piece begins. It is characterized by harps, guitar, violins and bright trilling flute; Harper observes:*
- 20) Harper: That's the light? Right? That's the light.
- 21) AW: Yes, I bet it is! What a great description.
- 22) Harper: That is the light!
- 23) *Harper stands up, and gets very close to the screen, he backs up, and then perches on his chair. As he adjusts his body, his eyes never leave the screen. He puts his hands on his forehead, and listens quietly for a moment then says...*
- 24) Harper: This song is getting louder and louder and louder.
- 25) AW: Yes!
- 26) Harper: But songs do that. Get louder and louder and louder.
- 27) AW: I think you are right about that.
- 28) Harper: From the beginning. Quieter then louder.
- 29) AW: Yeah. They do that all the time. Don't they?
- 30) Harper: Why do they do that? Start quieter and then get louder?
- 31) AW: It seems like a lot of composers like to introduce their songs in a quiet way and then build, build, build.
- 32) Harper: With every song?
- 33) AW: Not with every song, but they do that a lot of the time.
- 34) *Harper pauses, he looks away from the screen, his eyes stare into the middle of the room, and move from side to side – he looks to be thinking very contently.*
- 35) Harper: It is a movie - the screen is like a movie.
- 36) AW: It is a movie! It is a movie of them having a concert.
- 37) *Another pause in conversation, he contently listens. The second chorus passes, and another instrumental section begins.*
- 38) Harper: Horns, right?
- 39) AW: Yeah!
- 40) Harper: They are trumpets.
- 41) AW: Yes, definitely!
- 42) Harper: That's Tim DeLaughter?
- 43) AW: Tim DeLaughter is the lead singer.
- 44) *The last chorus finishes, and the synthesizer returns as an outro to the piece. This time it has a somewhat darker tone than in the introduction.*
- 45) Harper: I like that noise. What is that?
- 46) AW: I don't know. I think it's a keyboard.
- 47) Harper: Maybe that's the stars or the galaxy.
- 48) AW: Maybe!

- 49) Harper: It's like the night, right?  
 50) AW: Oh my god! That is like the night!! You are so smart!  
 51) *Harper explodes with laughter. His face turns red from the excitement.*  
 52) Harper: That is funny!  
 53) AW: That is funny! So, do you think that is a song that you would like to learn with me?  
 54) Harper: Yes.  
 55) AW: Are you sure you like it?  
 56) Harper: YES!  
 57) AW: What do you like most about it?  
 58) Harper: I just like it.  
 59) AW: You just like it?  
 60) Harper: And, that ending sound! (*Harper laughs.*)  
 61) AW: Do you like the piano part?  
 62) Harper: Yes.  
 63) *Harper leaves the computer table and goes over to the piano. He plays an arpeggio and then holds down all the notes.*  
 64) Harper: To me, this is the lights coming on.  
 65) AW: Oh yeah?  
 66) *Harper replays the arpeggio that spans two octaves, and pauses before blocking the chord.*  
 67) Harper: And now, they will come on. *He plays the last chord. Now they are on.*  
 68) *He replays this pattern a few times smiling, and opening his eyes widely at me when the last chord is played. In this way, he teaches me his musical metaphor for lights.*

### **Analysis of Example 1: Listening to “Light and Day”**

This instance is an exemplar case of the sub-theme Glimpses because as Harper listens he freely shares a mixture of literal, associative, creative, reflective, and interpretive verbal responses and reflections, giving glimpses into his immediate and multi-faceted understanding of the piece. My analysis of this conversation will follow; line numbers are included at the end of each statement for easy reference.

As the piece opened, Harper was immediately drawn to a sustained tone and imitates it (5). He responded to this tone by making an association with something familiar: the air conditioner (9). In the introduction of the piece, a series of arpeggiated chords repeat. Harper immediately verbally observed and musically described

(dadadadada...) the pattern, and then inquired about it (7). He then interpreted the image on the screen as possibly being from a country house (12), and made some educated guesses about the meaning of Tim DeLaughter's name (14-15). He then observed and imitated the music again, quietly to himself, while still listening (17+19). As the instrumental section began, Harper shared that he believed he was hearing a musical metaphor for "light" (20+22). He sat quietly for a minute, and realized that the music was getting louder; he reflected that this might be a general characteristic of all songs (21-30). Next, he made a literal observation about what was socially happening in the video; the band had made a movie of themselves performing in concert (35-36). Following this, he identified an instrument he heard, and the lead singer (38-43). He was then intrigued by the sound of another instrument he heard and inquires about it (45-46). He realized that this sound might be a metaphor for the "galaxy," but then arrived at an idea he liked better; it might be a metaphor for the "night." He found this idea to be a very "funny," because it provided an ending to a song about light (47-53). Following this, I directly questioned him and he responds with the short and direct answers, "yes," and "I just like it." Most of the comments between lines 54 and 62 are somewhat non-descript, though do show that he enjoyed the music (54-62). Line 58 stands out in this group because he reveals that he is still emotionally moved by it through laughter. Perhaps the most reflective moment was when he left the computer, and independently decided to go to the keyboard to create his own musical metaphor for light. He engaged me to listen, and repeated his musical fragment while verbally and non-verbally emphasizing its intentionally chosen characteristics to me as he played (62-68).

During this example, Harper's responses and reflections included literal, associative, creative, emotional, interpretive and reflective features. His most interpretive responses were triggered by the music itself rather than by my direct questioning; when direct questioning was tried, his commentary was less descriptive and personal.

**Example 2. "That's not a song! It's a flow!"**

During our second lesson, Harper began by improvising. As he did so, he grimaced, bit his tongue, scrunched his nose, and tensed his eyes. His patterns were repetitive, fast and arpeggiated. At one point he paused. His grimacing stopped and his affect became more neutral. He started playing a new pattern. He turned his head sideways and brought his ear closer to his hands. He turned back toward the keyboard and kept playing the pattern over and over again, until finally, I was intrigued. I sat next to him and started playing the pattern with him. He played in unison with me for a short period of time, and then doubled his speed. He then jumped up a register and varied the pattern just slightly. We played this way for about a minute. It was very calming and relaxing for me. The main musical figure that drove this improvisation is shown in Figure 6.6.



Figure 6.6. Transcription of, "That's not a song! It's a flow!"

This conversation followed:

AW: Harper, I really liked that.

Harper is sort of dreamy eyed and distant.

Harper: Oh.

AW: What should we call that song?

Harper: I don't know, I don't know what we should call it.

AW: Does that song remind you of anything?

*Harper suddenly straightens up, and speaks to me with a slightly scolding tone.*

Harper: That is not a song! It's a flow!

AW: Oh my gosh, Harper, you are right. I love that. Can I call it that on my paper?

Harper: Yes. Because that is what it is.

While this example is brief, it shows an instance where Harper verbally interpreted a musical experience reflectively, associatively and creatively. The use of the term "flow" showed that he had critically reflected on the musical process he used, he associated it with the feeling or action of flowing. This association was both creative and interpretive, and helps support the sub-theme Glimpses.

### **Glimmers**

Glimmers were instances when Harper reacted emotionally to an event characterized by a sudden increase in verbal activity. His verbal responses were coded as being predominantly emotional, but could also have associative and reflective features. These interpretations could be strong, clear and even profound. These events did not occur frequently in the data, but are not important because of how many times they were counted. Rather, they are included because they were marked as Critical to signify that they had a significant impact on the participant and researcher, and had a strong influence on our learning environment.

#### **Example 1. Callie's Voice**

During the shared lesson, Harper did not speak to Callie for forty minutes. He was either unresponsive toward her, or addressed issues through me. At minute forty, Grace sang the blues song she had composed, called "Life Ain't Fair." In response, Harper burst forth with verbal and non-verbal activity. All of a sudden, Callie existed to

him. After this, Harper made a number responses and reflections that were largely characterized by emotion.

*Callie just finished performing her song.*

Harper: AHHH!!!! (Screaming)

AW: Do you love that?

Harper: Life Ain't Fair? That's the name?

AW: Life Ain't Fair, yup. What did you think about that Harper? You screamed.

Why did you scream?

Callie: Did you like it?

Harper: Yeah!

Callie: You did?

Harper: Yeah! Is that the song you made up?

Callie: Yes, I did, me and Ms. Weishaar wrote it together, but its sorta fading  
(*looking at the sheet music*)

*Harper gets out of his seat and crosses in front of me at the piano and points to the sheet music on the piano.*

Harper: It is right there?!

Callie: Yeah, do you want to see it? It's a little fading, at the bottom, that's the last lyric.

AW: Do you want to hear it again, Harper?

*Harper studies the lyric sheet closely.*

Callie: Well, that really got his attention!

*This is the first interaction they have had!*

AW: Can we do it again?

Callie: Yeah, totally. Can I have the paper, Harper?

Harper: Yeah...

*I try to take it but he holds it, not letting it go.*

AW: Do you want to look at another one? Well, I have another one, but it doesn't have the faded lyric on it... maybe we can just remember it?

Callie: I think I can remember it.

AW: Can we put it right here (*pointing to the piano desk*) so you can look at it?

*Harper does not respond.*

Callie: It's okay, I'll be fine.

AW: Harper, are you ready?

Callie: Harper, I am going to show you something, then you show me something.

AW: Okay, here we go.

*Callie and AW perform. Harper claps along, and sometimes counts along with the beats.*

Harper: 2, 3, 4...

AW: 2, 3, 4 ... You want to do that, Harper?

Harper: 2, 3, 4,

*Callie and AW finish performing*

AW: Oh, I loved that!

Callie: YES!!



AW: WOO!!  
 Harper: YES!!!! She sang loud in that song!!  
 AW: Yes she did sing loud, but she also sang beautifully, don't you think?  
 Callie: You like when I sing loud don't you?  
 Harper: YEAH!  
 AW: He had the biggest smile on his face when you were singing.  
 Harper: *(seems flustered)* I don't even know that song!  
 AW: No words, but he is smiling, I would take that as a compliment.  
 Harper: I don't even know that song!  
 AW: She made it up in her head!  
 Callie: Really. I wrote it with Ms. Weishaar.  
 AW: Just like you wrote a song.  
 Callie: Yeah! I want to hear your song, Harper.  
*Harper continues to get flustered, he seems stirred up from the music. He is pacing the room, and starts to pull his head into his fleece jacket.*  
 AW: Do you want to take your jacket off, Harper?  
 Callie: Can I hear your song, Harper?  
 Harper: It's like a cave in here!  
*Harper has pulled himself into his coat. He approaches Callie to show her.*  
 Harper: It's like a cave in here!  
 Callie: You can go in your cave later.  
 AW: Yeah.  
 Callie: I don't want to see your cave. Can I see your face?  
 Harper: In the jacket you mean?  
 Callie: Can I see your face?  
 Harper: YEAH!!  
*Harper skips and dances back to his chair.*  
 Harper: Those were blues chords?  
 Callie: YEAH!  
 Harper: I loved that "Life Ain't Fair!"  
 Callie: Thanks!

Later during the interview, this song game up again.

AW: Harper, was there anything you didn't like about today's lesson?  
 Harper: No, I loved everything.  
 Callie: YES!  
 AW: Did anything surprise you about today's lesson.  
 Harper: No, nothing.  
 AW: You already knew Callie could sing the blues?  
 Harper: OH!! That was surprising!  
*Callie and AW smile.*  
 Harper: She belted the blues for like one whole minute! Well, I don't know how long it was, but it was definitely good!!  
 AW: It was definitely good.  
 Callie: YES!

Harper: I don't care how long it was.

Callie: Aw, that is so nice!

Harper: However long it was, it was still good.

Callie: That is so nice of you to say, Harper.

AW: Yeah, it was!

Callie: Your smile was so big, you were like...*(shows him a big smile)*

AW: It is a pretty big smile.

Harper: Yeah, I just really like that, "Life Ain't Fair" blues!

### **Summary and Analysis of "Life Ain't Fair."**

In this example, Harper communicatively engaged with Callie for the first time in forty minutes. His first response was a scream, "AHHH!" After this moment, he responded to her comments and music making, and even engaged her by trying to initiate new conversation. In this instance, his verbal activity increased dramatically, from nearly no verbal communication to numerous instances. Even the jacket ("cave") conversation, despite being also coded as "Inappropriate," was significant, because he was approaching and trying to socially engage Callie on his own because he was excited by her music. When she asked to see his face, he responded appropriately, and verbally emphasized that he loved her music. Harper also non-verbally engaged by clapping along, desiring to hold and keep the sheet music, pacing around, and even jumping.

The responses and reflections that occurred during this instance resulted in a cluster of verbal, non-verbal and emotional codes after a specific musical event. This coding led to it being labeled as a critical emotional response or a "glimmer."

### **Example 2. "You wish you could see their face in the sun or the sky."**

Once, directly following a rehearsal of "Light and Day," (DeLaughter, 2002) Harper shared a profound thought with me.

AW: What did do you think reach for the sun means?

Harper: Reach for the sun is an expression for being happy. Well, because someone died when they wrote this song. It was written by Tim DeLaughter, right?

AW: Yeah, Tim DeLaughter wrote this song to help himself to feel better after his friend died. He wanted to make his friend's death a good thing.

Harper: Yeah.

AW: What is dying, Harper?

Harper: Dying means...um...is when you lay down and you stop living your life. That is what dying means.

AW: Harper, you are right. That was a beautiful way of saying it.

AW: Why did you want to learn this song?

Harper: Well, it was the song I didn't know before that you named, and it is good to learn new things. I never knew this song before.

AW: What is the emotion of this piece?

Harper: Happy.

AW: You said something about how it got lighter and lighter, with more instruments. What does that mean?

Harper: It's cool how they play all of the instruments really fast in this song.

AW: Yeah?

Harper: They all come together. Like jjjjjuuuuuuuuuuhhhhh (*toning*). Faster and faster, louder and louder. They don't even say anything anymore.

AW: What do you mean?

Harper: They are silent.

AW: They are silent? But, I hear them.

Harper: No, they are silent. Just jjjjjjjjjjjuuuuuuuuuuuuhhhhhhh (*toning*).

AW: I see what you mean, they are so smooth, like, just one tone. They are not talking.

*Harper is walking around the room. He stops and stands still, holds his arms away from his sides, and just freezes, talking to me, but not making eye contact.*

Harper: I wish no one ever had to die. Dying is a very sad thing. You wish you could see their face in the sun, or in the sky. ...You know, you can't see people in heaven. ...You can feel them though.

*With his last phrase, Harper closed his hands over his heart.*

AW: Harper, that was beautiful. I could just cry. That was a really, really beautiful thing to say.

*Harper wanders away from me, and goes and fidgets with some guitars along the perimeter of the room.*

Harper: I wish I could live for one billion years. But, I guess I can't. That would be great, right?

AW: Yeah, I would like that, too.

Harper: Maybe my face will be in the sun or the sky.

AW: Maybe.

Harper: But, I don't think I can live for one billion years.

### **Summary and Analysis of "You wish you could see their face in the sun or the sky."**

During this example, Harper had a profound verbal reflection on the song “Light and Day” (DeLaughter, 2002). There were three main sections of this conversation. He began by recalling the reason Tim DeLaughter had composed the piece. This was coded as both verbal and literal. Next, he made an observation of its instrumental texture. This section was noted as being literal because he described the events of the piece, and as reflective and creative because he explained his own thoughts through metaphor. Lastly, he reflected on the meaning of the piece by relating it to his feelings and understandings about death. During this section he made a statement that struck me as being profound:

I wish no one ever had to die. Dying is a very sad thing. You wish you could see their face in the sun or in the sky. You know, you can’t see people in heaven. ... You can feel them though.

This statement stood out for several reasons. First, this was an uncharacteristically long verbal response from Harper. Second, it had a distinct non-verbal character, because while talking, Harper physically froze. Third, it was coded as being critical because it was both verbal and non-verbal, as well as deeply reflective and emotional. This instance is considered to be an exemplar of the sub-theme, Glimmers.

### **Theme 3: Constant Composer**

Harper’s third and final theme is titled “Constant Composer.” This theme is derived from the observation of Harper’s frequent spontaneous music making, and his frequent observations, interpretations, and experimentations of environmental or imagined sounds. This theme has two sub-themes: Spontaneity, and Sound Sensing. The sub-theme spontaneity is derived from the pattern code, “Spontaneous Music.” This pattern code was observed so frequently, that it became a sub-theme in and of itself. The pattern code Spontaneous Music was defined any spontaneous musical expression on the

part of the child. This is an instance when the child voluntarily or unexpectedly created or performed music, and that music was not planned to occur as a part of our lesson. Spontaneous music may or may not have seemed related to lesson activity. In many instances Harper's spontaneous music making events were coded as having creative, associative or reflective features.

The second sub-theme, *sound sensing* is defined as direct verbal or musical responses to music, environmental sounds, or personal thoughts. These responses could have been intentionally or unintentionally communicative to the researcher, and may or may not have been intelligible. In the following two sections will include exemplar instances of each sub-theme.

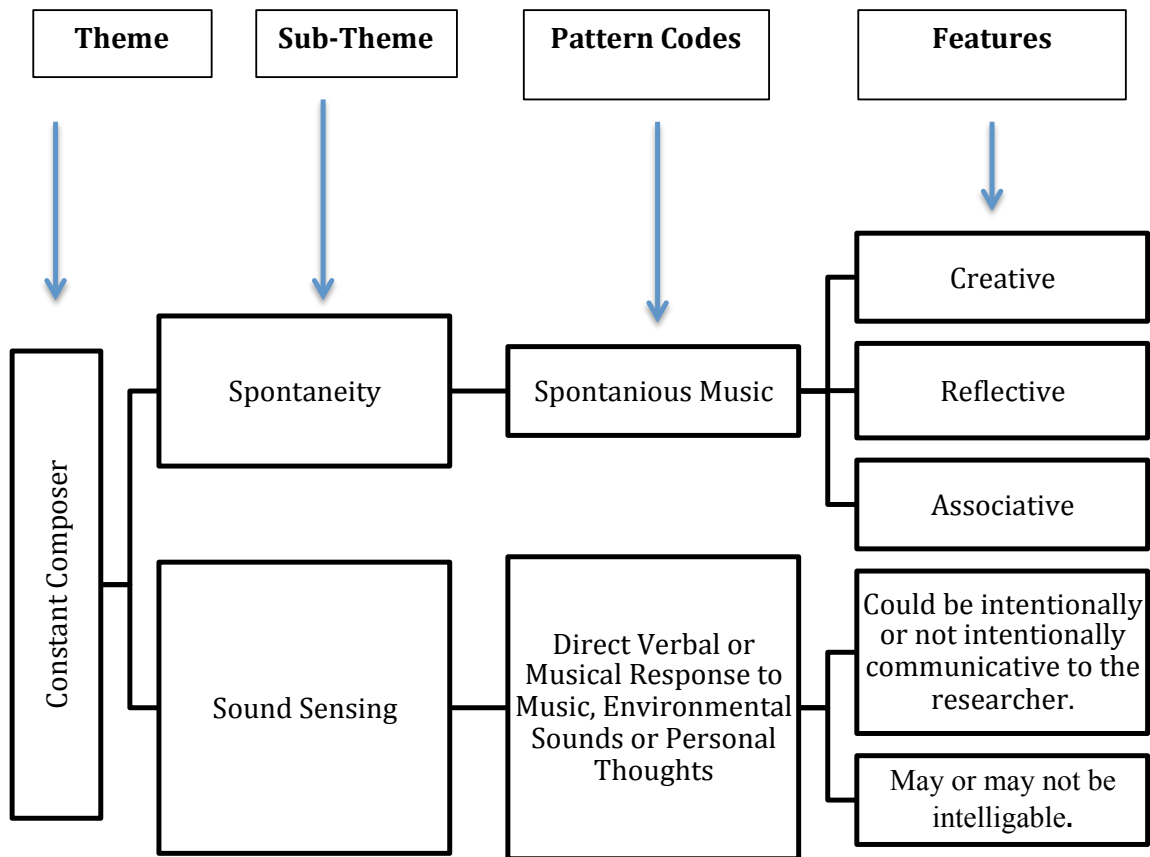


Figure 6.7. Derivation of Harper's Theme 3: Constant Composer.

### Spontaneity

Examples 1-4 show extended instances of spontaneous music. Harper also constantly tinkered with instruments when passing by them or sometimes vocalized during activities. Example 5 provides three examples of this pervasive behavior.

#### Example 1. "This is going to become more notes."

This example occurred during our first lesson.

*Harper spontaneously begins to play clusters in the lower register of the piano.*

Harper: Does this sound good?

*He looks at me while asking this question. I must not have responded quickly enough, because quickly he interjects.*

Harper: *(laughs)* No, no, no. Why don't I make up another song?

AW: Make up a song. Please, I would love it.

Harper: This one is going to get louder and then quieter.

AW: I am ready.

*Harper starts playing a lonely C#, on the fourth register of the piano.*

Harper: This is going to become more notes.

Harper proceeded by standing at the piano and staring deeply into the keys. He played a Db repetitively with his right hand, then added his left by playing an interval of a third in second register. Next, he modified his right hand to play a third as well. Then his hands played Db major chords. His elbows pointed out at sharp angles as he pressed on the keys. His face was calm and relaxed. At this point he used his right hand pinky to start adding melodic color tones. He looked at me with a pleased and gentle smile. At this, he softened his playing, and removed one note at a time from the mixture. His last gesture was a soft and simple melody with his left hand, ending with the lonely Db. His thought had been completed. As the song finished, and even before the last note had completely faded, he asked, "Can I go to the bathroom?" and he was gone.

### **Example 2. "What if there was an H in music?"**

During our third lesson, we were transitioning to a new activity, and Harper began invent new additions to the musical alphabet. Some were tones, but others were rhythmic or distinctly intentional noises.

Harper: What if there was an H in music?

AW: Then we would sing H. What do you think it would sound like?

Harper: But there isn't!

AW: What do you think it would sound like?

Harper: PF! *(Laughs)*

AW: Not just the H sound?

Harper: Nope! Or maybe, ptptptptpt

AW: That sounds more like P and T. Ptptptptpt.

*Harper laughs.*

Harper: AHhhhhh!! Does that sound more like H?

AW: Harper?

Harper: Ahhhhh!!! (*new tone*) That's L!  
*I stop talking and just listen for a moment.*

Harper: eerrrr – J! No... WHUP! J. WAH – K. Waaauuu...L.

AW: Hah! Harper, these are great, but we have to do our interview so we can go see your mom.

Harper: Sksksksss – M! Okay, lets do it!

### Example 3. Scary Scales

During our fourth lesson Harper and I began by playing scales in various keys on the piano. Harper and I often played scales together because he seemed to be motivated by the interaction. All of a sudden Harper stopped being so conventional. These scales were coded as being instances of spontaneity, because Harper voluntarily and unexpectedly took our scale playing in an undetermined and improvisational direction. In this example we were about to play the D scale.

AW: 1 2 here we go.

*Harper and Ms. Weishaar begin. Ms. Weishaar plays the scale conventionally, while Harper unexpectedly puts two hands on the piano and plays the scale in thirds.*

AW: That was cool!

*Harper laughs.*

AW: Let's do it again. 1 2 here we go.

*This time Harper plays his scale twice as fast as mine.*

Harper: No, lets do it fast. Let's do it the real way.

*So we begin again, this time Harper plays the notes short and choppy and adds a minor third.*

Harper: Like little finger prints!

AW: Aw yeah! Like little finger prints. Let's do a minor scale, and then do the next thing on the list – the cards.

Harper: Yeah. I like that a-minor.

AW: Okay, 1 2 a-minor (*said in tempo as part of the count-in*)

Harper: Da da da da da da da da (*singing along*) I think that is really cool. A-minor!

AW: It does sound good doesn't it.

Harper: Yeah – what about this?

*Harper makes up his own scale – a really interesting hybrid blues and a-minor combo.*

AW: WHAT! Where did that come from?

*Harper laughs.*

AW: What is that called?



Harper: I don't know... What about scary!  
*Harper invents a scary sounding scale. He just plays it once through. It is not constructed by guess and check, it is just shared as one musical thought. He smiles at me.*  
 AW: I like that flat two!  
*I try to copy him, but I don't get it right off the bat. Harper laughs at me.*  
 AW: How did you do that?  
 Harper: It's...(plays the scale quickly and laughs) How about a new one?  
*Harper plays a new scary scale.*  
 AW: Wow! I like these.  
*Harper rapidly plays a chromatic scale and then leaves the bench.*  
 Harper: Time for cards? Let's do cards.  
 AW: Okay, come on over.

#### **Example 4. "King of Anything"**

During Harper and Callie's shared lesson, Callie and I were about to perform "King of Anything," by Sara Bareilles (2010) for Harper. Harper, without ever having practiced the piece jumps in, and accompanies her.

Harper: King of Anything! My mom likes this song.  
 Callie: Really, your mom likes this song?  
 Harper: She LOVES it, not likes it, more than likes.  
*Harper gets up and starts playing the piano despite the fact that he is supposed to be our audience.*  
 Harper: Here is an intro. I am making up an intro.  
 Callie: Of King of Anything?  
 Harper: I am making up an intro for you to start.  
 AW: Harper, can you do the.. *(I play the actual introduction for him.)?*  
 Callie: Thank you, Ms. Weishaar.  
 Harper: That's the intro!  
 AW: Can you do the intro?  
 Harper: No.  
 Callie: Yeah Harper, let me hear you do it.  
 AW: Harper, let's do it for her.  
 Harper: I think it's in D. I don't know the notes, but I think I can play them though.  
 AW: Shall we let him, Callie?  
 Callie: Yeah, I think so.  
*Harper and I start to play the piece together. Callie breaks our laughing -- she can't believe it. While playing, I burst out laughing to.*  
 AW: Harper, this is SO FUN!!!  
 Harper: Alright!  
*Callie starts to sing.*

Harper: This is so fun!!

*When we get to an instrumental interlude. Callie and I are both curious if Harper can play it.*

AW: Harper, can you do the *do do do do* part? (The italicized notes are sung.)

Callie: *Do do do do.... (singing)*

*Harper does not play it perfectly, but is able to largely establish the semblance of the part.*

AW: Wow! That was so close! Great job! .... Alright, bridge, we have to skip to, "All my life..."

*Harper follows me. Callie continues singing as Harper and I continue, barely missing a beat. During the last chorus we all sing along. At the end we all cheer and clap.*

Callie: Harper, can I give you a high five? That was awesome!

Harper: I love that song!

Callie: You love that song? I love that song!

AW: That was so good! He just played it by ear for you!

### **Analysis of "King of Anything"**

This is an example of spontaneous music because Harper voluntarily and unexpectedly took the lesson in an undetermined direction. It was unknown to Callie, Harper, or myself that he could play that piece with a great deal of accuracy, without ever having rehearsed it. This instance of music making contains the element of surprise, and therefore supports the sub-theme, Spontaneity.

### **Example 5. Composite of Instances of Incidental Music**

Example 5 is a composite of several instances where I noted in the transcript that Harper played some incidental music while waiting to start an activity, or during an activity. I list just three instances, but these happened with great frequency, some times dozens of times per lesson. Each instance below is in italics because it is taken from my transcript notes.

1. Lesson 1: *Harper crosses over to the piano and starts playing a very abrupt sequence of melodic downward fifths in the lower register. As he plays, he starts ornamenting the upper note with turns, before dropping down to lower note.*

2. Lesson 4: *As Harper returned from his break in the keyboard room, he is toning. He sits down at the piano and plays a repetitive pattern, and then adds slight variations. It reminds me of a Phillip Glass piece.*
3. Lesson 5: *As we are doing flash cards, Harper beat boxes between each answer he gives.*

### **Sound Sensing**

For the purposes of this report Sound Sensing is a metaphorical construct designed to define instances when Harper either verbally or musically responded to musical sounds, environmental sounds, or personal thoughts. These responses could be intentionally or unintentionally communicative to the researcher, and they may or may not have been intelligible. These responses were coded as being Verbal or Musical, but were not in response to a lesson activity, rather these were responses to sounds that Harper heard, created, or imagined outside the scope of the planned lesson activities. Two examples are provided. The first example is a detailed description of an event taken from my researcher's journal, the second is a list of instances where Harper verbally or non-verbally engaged with, or showed interest in, his sonic environment.

#### **Example 1. Researcher Journal Entry, October 18**

*As I am about to analyze Harper's data, I am drawn to a behavioral or action pattern I observed in the videos. Harper is incredibly in tune with the world – literally. Everything around him is perceived by its sound, almost as much or more than it by its name, use, look, feel, or location. Harper can sing you the sound of any device in his world.*

*At the beginning of our lessons, Harper would charge back to the keyboard room and eagerly turn on the power. He would automatically start searching for the right sound effects and frequencies to imitate his world. During our study, the most common sound that Harper impersonated was his refrigerator humming. He found a whistle-like tone on one of the keyboards and realized that if he held 2 specific keys, one high and one low that he could mimic its eerie drone. Each time he would hold these two keys down for as long as he could – or until the keyboard stopped registering the sound and it dissipated away.*

*During this time his face would start off being intense, and focused, like he was on a very important mission. Then once the correct tones had stabilized at just the right volume, his face would melt into a smile. He would often giggle and abruptly stop, so he could go back to listening without being distracted by the sound of his own laughter. On some occasions he would hum along, with eyes open widely and his cheeks indicating a half smile. During his big open smiles, he would often turn his head quickly to look at me – very interested in whether I was enjoying this too, or if I knew what he was thinking or doing. Often he would abruptly ask me, “What? You don’t know what this is?” “You want this to stop?” “You like this?” If I knew the answer – “I think it’s a refrigerator,” his smile would grow. “You know that! You know that! That is right? Right?” It was as if he was checking with me to see if he was right. If I guessed wrong he might or might not tell me the right answer. Sometimes he seemed to enjoy keeping it to himself.*

*A few times I would try to enter his world, and take note of what and how he was playing. I might approach and try to add another tone to the mix, perhaps to produce a harmony or just to simply double a tone he was already playing. I guess I just wanted to see how he would respond to the intrusion. He consistently grabbed my hand to stop me. It was as if I was messing up his masterpiece. I was drawing him out of his mental place of joy. He may have sometimes said, “No!” or “Don’t” but mostly, he would just grab my hand and then stare deeply into the keyboard as if he was trying to regain his focus on his preferred tones as quickly as possible.*

## **Example 2. Examples of Harper’s Sonic Observations**

1. **The triangle.** This example is taken from lesson 1, during our interview.

Earlier in the lesson we had listened to Jimmy Fallon’s cover of Carly Ray Jepsen’s song, “Call Me Maybe.” During that song, Carly played the triangle too close to the microphone. This interview occurred about forty minutes after we heard the song, but the sound of the triangle was still distinct in Harper’s mind.

AW: Did you hear or do anything today that surprised you?

Harper: The triangle on the “Call Me Maybe” video!

AW: Oh my gosh, I totally forgot about that already. You still remember that?

Harper: Yeah, that was surprising, right?

AW: Yeah!

2. **The buzz.** This instance is similar to “the triangle.” In this case, Harper heard something buzz in the room while we were improvising on the piano at the beginning of a lesson. It was likely the sympathetic vibrations of a guitar string. Harper acknowledged it at the time by going, “Oh! Something buzzed!” During our interview, I asked Harper the same question.

AW: Did you hear anything today that surprised you?

Harper: I liked that buzz. Remember that?

AW: Wow! I hardly even noticed that!

3. **The refrigerator.** During lesson 4, Harper took a short break from our lesson and asked for permission to go play keyboard independently. After a period of time, I called him back to resume the lesson. He approached me making a high pitched sound.

Harper: Eeeeeeeeeeeeeeeeeeeee! (*toning*)

AW: So, hey. Harper?

Harper: Eeeeeeeeeeeeeeeeeeeee! (*toning*)

AW: Hey, that’s enough with the eeeeeeeeeeeeeeeee.

Harper: It’s a refrigerator.

AW: Yeah, but its time to get started, we have to stop that now.

*Harper pretends to unplug something through gestures. As he does so he makes the sound of a machine moaning as it is powering down.*

Harper: Eeeeerrrrrrrrrrmmmmmm.

AW: Is it off now?

Harper: Yes.

4. **Rubber band.** During lesson 1, Harper found a stray rubber band.

*Harper holds a rubber band close to his ear with two hands and plucks it with his thumbs.*

Harper: This rubber band makes a noise!

AW: Do it. Let me hear.

*Harper shows me, and then continues to play with it himself. He starts laughing as he continues to experiment with its possibilities.*

5. **The elevator.** On the way up to the music room for our first lesson, I noted this conversation in my researcher journal.

AW: Do you want to take the stairs or the elevator?

Harper: I want to take the elevator.

AW: Okay.

*We get on the elevator.*

Harper: I like the noise it makes.

AW: What noise?

Harper: EEEerrrrrr. ::*Gasp!*::

*Harper gasps, and holds his hand out to stop me from talking. I notice a faint sound of the elevator brakes gently sirening, gliding from a high pitch to a lower pitch.*

Harper: I love that Eeerrrrr!

AW: I never noticed that!

### **Summary of Harper's Themes**

In this section, I have explained the emergent themes of Harper's with-in case analysis in order to answer the question of how he responds to and reflects upon his musical experiences. Three themes emerged: (1) Attunement, and (2) "Good things," Glimpses and Glimmers, and (3) Constant Composer. The theme of Attunement described how Harper frequently and fluidly engaged in musical conversation with me throughout the course of his five lessons. The second theme, titled "Good Things," Glimmers and Glimpses explained how many of Harper's verbal responses were pure and non-descript, while others shared glimpses or glimmers into his interpretive abilities. The third theme, Constant Composer, acknowledged Harper's propensity to spontaneously create music, and his continuous responses to and reflections on the sounds of the environment, and his own personal thoughts.

## **CALLIE'S THEMES**

Two themes emerged from Callie's data: (a) Revealing Words, and (b) Exploration and Recursion. Each theme will be described in its own section. Within each thematic section, I will again provide (a) a hierarchy for how each theme was derived and organized, (b) a description of how the title of each theme was selected, (c) a summary of the data that led to the conceptualization of that theme, and (d) examples from the database to support my interpretations.

### **Theme 1: Revealing Words**

We come to terms as well as we can with our lifelong exposure to the world, and we use whatever devices we may need to survive. But eventually, of course, our knowledge depends upon the living relationship between what we see going on and ourselves. If exposure is essential, still more so is the reflection. Insight doesn't happen often on the click of the moment like a lucky snapshot, but comes in its own time and more slowly and from nowhere but within. The sharpest recognition is surely that which is charged with sympathy as well as shock - it is a form of human vision. ~ Eudora Welty

The title of this theme was selected because the coding of Callie's transcripts and work samples showed a high correspondence between her musical experiences and word-driven expression. Callie shared her responses and reflections through two types of words: written and spoken. Accordingly, this theme will be discussed in two sections: (1) Expressive Writing: The Power of the Pen, and (2) Expressive Discourse. Callie's written responses were analyzed holistically, and presented in entirety. Callie's spoken words are presented in three categories: (1) spoken reflections, (2) a sanguine outlook, (3) social recognition and belonging. Each section will include examples. The examples will be briefly summarized and analyzed.

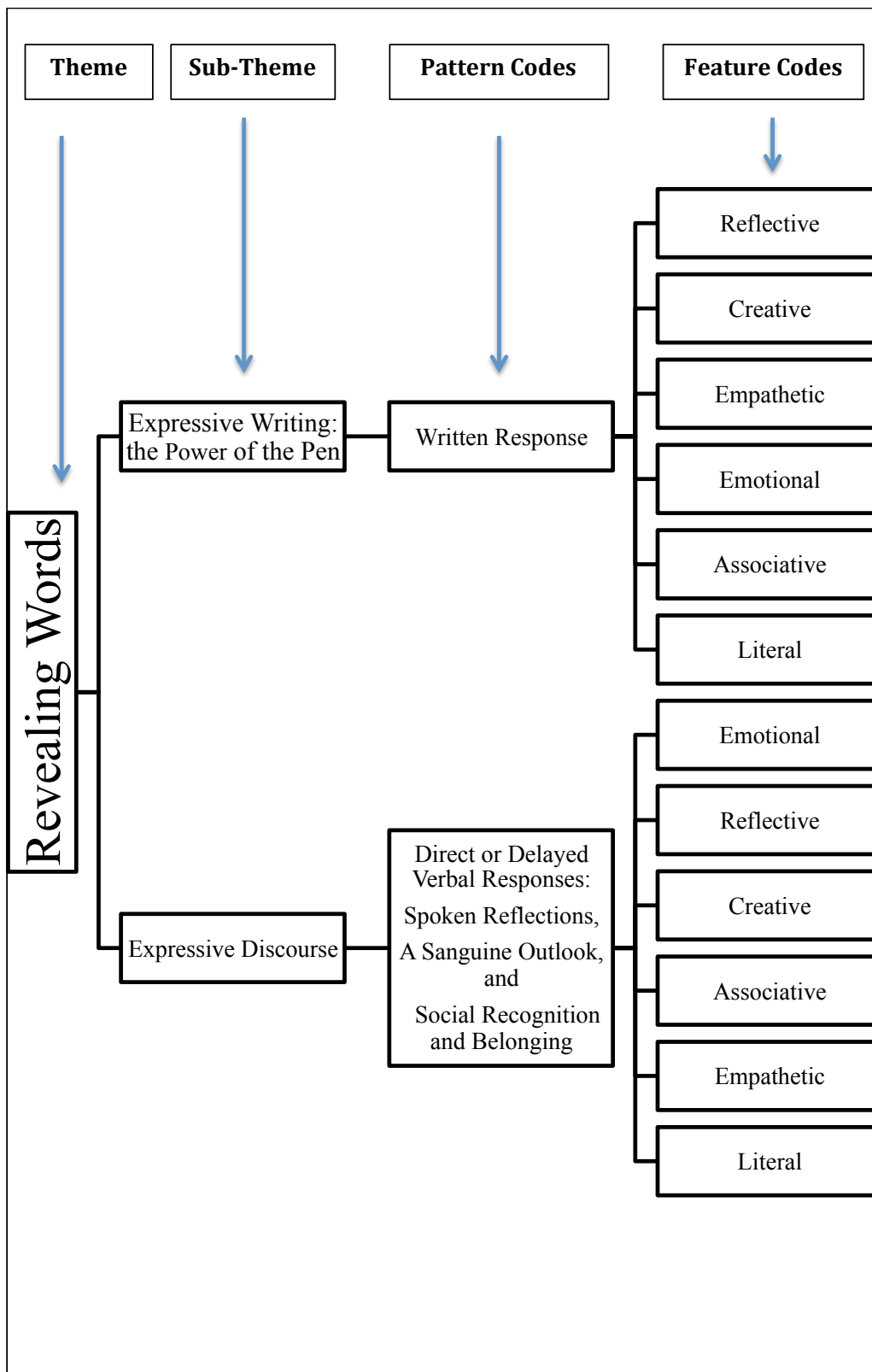


Figure 6.8. The Derivation of Callie’s Theme 1: Revealing Words.



### **Expressive Writing: The Power of the Pen**

During the course of our five lessons Callie elected to communicate her reflections to me twice through a handwritten document. I have chosen the metaphor of *expressive writing* to describe Callie's written communications because this is a term common to the fields of education and psychology to denote an instance where a person writes about their "very deepest thoughts and feelings about an extremely important emotional issue" (Canna, 2005; Francis & Pennebaker, 1992). Expressive writing is a style that allows the writer a chance to recount a personal experience, explore and express their personal feelings and attitudes, state opinions, and trace the connections between the objective and subjective nature of their lived observations (Campbell & Pennebaker, 2003). Expressive writing does not require the use of traditional writing conventions, rather, it allows one to write freely without regard for spelling, punctuation, and grammar, so they can attend more closely to the content of personal emotions and memories (Pennebaker & Evans, 2014). The style of the writing becomes what it will be during the process of writing, rather than in the predetermination of a specified product (Pennebaker & Evans, 2014).

In the two writing samples that follow, Callie divulges deep and personal feelings and thoughts about Big Mama Thornton and singing. When I asked her about how she came to be so descriptive in her writing she replied, "I love writing. When I write, I try to make people feel what I feel." This statement shows an intentional aim to be expressive. In the sections that follow, Callie's coded written expressions are shown with codes, and briefly analyzed so the reader can compare Callie's words and my interpretations.

**Example 1. “Big Momma Thornton”**

Figure 6.9 shows the transcription of Callie’s written reflection, “Big Mama Thornton,” with feature codes in bold typeface. In this sample, Callie reflected on hearing Big Mama Thornton sing the song, “Hound Dog,” and recollected numerous changes in her emotional, physical and mental states. For example the statement, “I wanted to have her voice; the power, the emotion, the ferocity, all of it. I felt this need to embody her and **BE** her,” presented an intense emotional desire. Responses such as, “heart pumping faster and faster,” and “goose bumps,” revealed details about her physical state of being. The passage, “Time seemed to be slow and sluggish; I was in a daze and trapped in a world where reality does not exist. But in the same way, time was exceptionally quick as well,” described an altered mental state. The act of succinctly connecting and sharing the multiple facets of her inner subjective thoughts and feelings led to a clustering of reflective, creative, empathetic, associative, and emotional feature codes. The density of feature coding, and the overall impact this experience had on Callie led me to label this as both Expressive Writing, and a Critical Response.

### Big Mama Thornton

Big Mama Thornton was a great soul artist who deserves to be heard more then she was way back when and now **(R.R.)**. Her voice is powerful and it rumbles like thunder **(A.R.)**; she has one of those voices that digs down deep in your soul and will eventually find a place to call its own in your heart and mind **(E.R.)**. Once it claims a spot, you ain't never going to be the same ever again **(R.R.)**. Soul changes you for the better, it really does **(E.R.)**.

When I heard Big Mama Thornton for the very first time, my heart stopped and stood still for a good while **(Ep.R., R.R.)**. Time seemed to be slow and sluggish; I was in a daze and trapped in a world where reality does not exist **(Ep.R., E.R.)**. But in the same way, time was exceptionally quick as well **(R.R., E.R.)**. When I came back down to reality, my eyes widened and I could feel my heart pumping faster and faster by the minute **(Ep.R., E.R.)**. It took all of my self-control to not sing as loud as her at that moment **(Ep.R., E.R.)**. Big Mama Thornton brought goosebumps to my arms and I felt this very strong longing in my chest **(Ep.R., E.R.)**. I wanted to have her voice; the power, the emotion, the ferocity, all of it **(Ep.R., E.R.)**. I felt this need to embody her and BE her **(Ep.R., E.R.)**. She is one of the greats in my eyes **(R.R.)**. The slightest sound of her uplifting voice just has this effect on me **(R.R., E.R., Ep.R.)**. Whenever I hear it, it takes me a few days to get her voice out of my head **(Ep.R.)**.

Big Mama's voice is very unique and it feels almost classic **(R.R.)**. It certainly is original that's for sure **(R.R.)**. She makes me feel free from every stress and problem I've ever had **(Ep.R., E.R.)**. Her voice takes me to happier days like when it's summertime and warm outside **(A.R., Ep.R., E.R.)**. She is very talented and I think everybody should have a listen to Big Mama at least once in their lives **(R.R.)**.

Feature Code Abbreviations	Feature Code
R.R.	Reflective Response
E.R.	Emotional Response
Ep.R.	Empathetic Response
C.R.	Creative Response
A.R.	Associative Response

*Figure 6.9.* Transcription of Callie's written document, "Big Mama Thornton," with feature codes.

**Example 2. “Singing”**

Figure 6.10 provides the transcription and feature coding of Callie’s written reflection, “Singing.” In this instance, Callie divulged vivid descriptions of her physical, mental, and emotional states while performing vocal music. This passage contains a clustering of reflective, emotive, associative, empathetic codes, which led to its categorization as a Critical Response. In this example, Callie also shared some new types of reflection. Callie shared her interest in social recognition in the statement, “One of my biggest goals...is to please the audience.” Another new facet is Callie’s explanation of her creative process while performing, when she shared,

If I feel that there is one part of the piece that could sound better than the original version of the piece, then I’ll immediately start improvising. When I say improvising, I mean, like adding a higher or a lower note to a certain word, put a riff at the end of a verse, and sometimes just really belt out parts of the song to give it more power and ferocity. But most importantly, make music to the listeners ears and really tug hard at their heart strings.

Callie’s ability to share such dense and rich reflections through writing brought this mode of communication to be seen as key theme in understanding Callie’s case.

Singing. It's one of my passions. I absolutely love doing it. When I am getting ready to go on stage and perform for my school, the butterflies start to flap in my stomach, but don't worry, these are good butterflies (**Ep.R., E.R.**). The kind that make you want to jump for joy and scream out loud, the ones that fill your heart all the way to the brim with happiness, excitement, joy, all those tingly feelings (**Ep.R., E.R.**). The weird thing is, I don't really get nervous when I am about to go on stage and sing (**Ep.R.**). I feel as if, I know the song well enough and I have been practicing everyday, why should I get nervous and scared? (**Ep.R., R.R.**) I don't know, but that's just me. I have been going to {School Name} since I have started the second grade (**L.R.**). In that time I have discovered that I am a singer, well, more like {teacher name omitted} told me, I never knew I had the talent until I came to this haven of a school (**R.R.**). I remember the last play of the year when I was in second grade. I believe we were doing the musical Annie, and I was picked for the main part, which was obviously Annie (**A.R., R.R.**). Ever since then, I have been picked for some of the main parts in the plays (**R.R.**). And every single year I sing for my school (**R.R.**). {Teacher name omitted} says I have this way of just wanting to pull at the heartstrings of everybody who hears me sing (**R.R.**). I guess it's a habit of mine (**R.R., Ep.R.**). One of my biggest goals while I'm singing is to please the audience (**Ep.R.**). If I don't do that, then I know I didn't do a good job, simple as that (**Ep.R., R.R.**). Also, I like to please myself, too (**Ep.R., R.R.**). When I am practicing a new song my class is going to sing for a show, I always seem to change up the song (**Ep.R., R.R.**). Not totally change it, but if I feel that there is one part of the piece that could sound better than the original version of the piece, then I'll immediately start improvising (**Ep.R., R.R.**). When I say improvising, I mean, like adding a higher or a lower note to a certain word, put a riff at the end of a verse, and sometimes just really belt out parts of the song to give it more power and ferocity (**R.R.**). But most importantly, make music to the listeners ears and really tug hard at their heart strings (**Ep.R., R.R.**). I have improvised with lots of songs that {school name} has done at different performances, not as much when I was younger, but as I have grown and matured, so has my voice (**R.R.**). I believe it is starting to get some character to it, it doesn't sound like a cute little 8 year old girls voice, it sounds like a more grown up and adult singing voice (**R.R.**). When I was younger, I never could belt out any lyrics the way Etta James or Aretha Franklin (**A.R.**) have, but now I am starting to realize that I can (**R.R.**). I am still a bit pitchy at times, but I just need to keep on practicing is all (**R.R.**). Singing makes my adrenaline pump as fast as the speed of sound (**Ep.R., E.R.**). Singing makes me feel emotional because I cry sometimes when I hear a certain song (**Ep.R., E.R.**). But most importantly, singing and music in general, makes me feel human (**Ep.R., R.R.**). All humans have emotions whether they show them or not (**Ep.R., R.R.**). All humans want some kind of adventure in their lives to make them feel goose bumps rise on their skin, and have enough energy to think confidently that they can run 1000 miles without stopping (**Ep.R., R.R.**). But in simplest terms, that energy that makes you think you can run 1000 miles is your adrenaline pumping (**R.R.**).

Feature Code Abbreviations	Feature Code
R.R.	Reflective Response
E.R.	Emotional Response
Ep.R.	Empathetic Response
C.R.	Creative Response
A.R.	Associative Response

Figure 6.10. Transcription of Callie's written document, "Singing," with feature codes.

## Expressive Discourse

As mentioned, the analysis of Callie's transcriptions revealed that she commonly shared her thoughts and feelings through spoken language, leading to the emergence of the theme, Expressive Discourse. Three categories of expressive discourse were found: (a) spoken reflections, (b) a sanguine outlook, (c) and a desire for social recognition and belonging. Examples of each will be provided, followed by brief summaries and analyses.

### Spoken Reflections

The category of Spoken Reflections aligns with the codes Direct Verbal Response, Delayed Verbal Response, and Reflective Response. This category was designed to encapsulate numerous instances when Callie verbally revisited a musical experience, and related the topic or event at hand to her own assumptions, judgments, values, attitudes, or feelings. These reflections may have also justified her actions, detailed her personal understandings, provided her own interpretation, or divulged her curiosities or inquiries.

#### **Example 1. "I feel beyond words when I am singing."**

AW: Did you hear or feel anything today that sort of surprised you?

Callie: Um, not really. The lesson went as expected. Except that, it went better than I expected. Which is a good thing!

AW: Good! You are so smart. If you could keep up with that lesson you are a pro. That was intense. A lot of information came at you and you just kept right up!

Callie: Just like in one hour! I can't believe it! That was a lot!

AW: All this information just poured into your brain! So, how did you feel today when you were singing or playing instruments?

Callie: I felt great. Honestly, I feel...just explaining music is just beyond words. I feel beyond words when I am singing. It's wonderful. And, I like all the praise that I get, and I honestly didn't think that I was musically gifted, and when you told me that like in 2<sup>nd</sup> grade I could pick out patterns and stuff, I didn't remember that, all I knew was that everybody liked my singing.

AW: That is lovely. You finally found out there is a reason they loved it all along.

Callie: I love it. And, I love getting praise.

This example was coded as a Spoken Reflection because Callie (a) shared her own assessment of how the lesson went, (b) reflected on her feelings when singing, (c) explained how her own understanding of her singing abilities has changed as a result of this project, and (d) expressed how receiving praise gives her a feeling of enjoyment.

**Example 2. “Life ain’t fair.”**

Callie: After today, I definitely want to write a blues.

AW: Sounds like a plan!

Callie: I mean, I have never written a blues before, but you will help me. And Muddy Waters and Big Momma Thornton were awesome! Off the chain! I mean, I didn’t know I would like them, but I LOVE THEM!

AW: Well I am so glad we finally found the right style of music for you!

Callie: I mean, the blues make me feel really cool. It’s like... it’s like a type of music that has the ability to be both dark, and uplifting at the same time. It has the ability to be cool, dangerous, and awesome. I mean... those songs just really made my heart stop.

AW: Well, it sounds like we have a plan.

Callie: Yeah, I just hope I can actually do this! I have never done this before.

AW: Don’t you worry. It’s easier than you think.

Callie: I am definitely going to need your help, but I think you can do it.

AW: All those blues songs use the 1, 4 and 5 chords.

Callie: So, it’s pretty basic once you get it down?

AW: Yeah. So, what do you think your blues might be about?

Callie: I honestly really do not know. I am stuck on that.

AW: So, what would a song by you be about, or what, in the eyes of Callie, is something people need to learn?

Callie: That life ain’t fair.

AW: That will make an awesome blue actually!

*Callie and AW improvise singing the words “Life Ain’t Fair.”.*

Callie and AW: Life ain’t fair!

*Callie belts the words out at full volume then gets embarrassed and stops.*

AW: That was great actually! I loved it!

Callie: I think I sound like Big Momma Thornton! Or, at least I want to.

AW: Yeah, you do! Oh my gosh, you do! You want to do it again?

Callie: Sure!

This section was categorized as a Spoken Reflection for numerous reasons. Callie (a) shared her feelings about the two blues selections we listened to, (b) chose a course of action based on those listening experiences, (c) evaluated her own readiness for the challenge, (d) asked for help, (e) presented a potential song topic, (f) improvised how the piece might sound based on her own interpretation of Big Momma Thornton's sound, and (g) expressed her desire to recreate Big Momma Thornton's sound. In summary, this display of shared feelings, plans, attitudes, and justifications for action all align with the defined parameters of the category Spoken Reflection.

**Example 3. "King of Nothing."**

Callie: You know why I was drawn to that song ["King of Anything," by Sara Bareilles]?

AW: No, why?

Callie: I don't think it was because of the words. Like, when I first listened to it, I was actually drawn to the chord progression. Like it was because of the way she played the piano, because of the notes she chose. I don't know... I guess that just drew me in.

AW: Yeah?

Callie: It was just something about the way it sounded.

AW: It's great that you get to do one of your favorite songs, right?

Callie: Yes, I love this song! You know what? I was reading about her, and I think she just wrote a new album, and she is living in New York. It is called, the Blessed Unrest. I think she wrote the songs by looking at her surroundings, and that's how she gets ideas. Like, in another song, she wrote a melody about Manhattan.

AW: So, what do you think she wrote this song about?

Callie: Well, it sort of has this feeling that she has had enough. She is saying that she wants people to stop being so opinionated, especially if no one asks for your opinion. She also wants whoever to listen to what she has to say, too. And, see where she is coming from. And, stop criticizing her. So, I guess she is telling the King of Anything that he is actually the King of Nothing.

AW: Hah! I like that. Sometimes opinions can be hurtful.

Callie: Yeah, definitely! She is saying "Back off. Don't judge me!" I think everyone has felt that way. I know I have.



During this conversation Callie (a) revealed her thoughts and feelings about the song, “King of Anything,” by Sara Bareilles (2010), (b) described how she was first engaged by sound of the chords, (c) recalled published information about Sara Bareilles’s life and creative process, and (d) deciphered a plausible meaning for the piece. In summary, Callie showed an awareness of how her own feelings and interpretations effect her musical likes and dislikes. This evidence, again, aligns with parameters of the category Spoken Reflections.

**Example 4. “I think I should try to improvise more.”**

Callie: Well, like this morning, I was like, I think I should try to improvise more.

AW: You should!

Callie: I know all the great pianists do that when they are writing songs, and I tried it out and it was actually really fun! I was like in my own little world, just figuring out what fits best.

AW: Actually, that is probably the best thing you could do for yourself.

Callie: Really?

AW: Yeah, like the number one thing you can do for yourself sometimes is just forget everything in the world you ever learned, and just make something up, and just let it flow. Let the music go where it wants to go, and don’t think about the chords and the keys, just kind of be one with the sounds.

Callie: Just, maybe, be in my own little world, and just use my ears. Let my ears be my best friend!

AW: Yes.

Callie: So that I can really listen to everything.

AW: That was beautifully said.

Callie: Thank you!

This conversation is considered an instance of Spoken Reflection because Callie (a) verbally revisited a recent instance when she improvised out of her desire to become a better musician, (b) chose strategic actions based on her understanding that professional musicians improvise to improve, (c) shared how improvising gave her feelings of enjoyment, and (d) imparted how the process of improvising altered her mental state to one where she was in her “own little world.”

## A Sanguine Outlook

Callie's responses were frequently coded to be verbal with emotional features. When I revisited the data, I realized that a large number of these remarks were optimistic, hopeful, and showed a high level of motivation. Callie maintained this disposition throughout both easy and challenging lesson activities, leading to the conclusion that this was a pervasive outlook, not just a passing attitude. Four examples of this are provided.

### Example 1. "Fun times, fun fun fun!"

AW: Have I lost you? We have done a lot already.

Callie: Oh no! I am all right!

AW: You don't have to have any of this memorized, it's just kind of a good visual of how things are laid out, and then eventually everything will come together. Are you sure you are not overwhelmed?

Callie: I am not overwhelmed! I am ready! I am really excited about all of this!

AW: You are ready! I love your attitude. So, we are going to play the C scale, and once you get the hang of that, I'll show you how to mix up the notes to make up a song.

Callie: Okay! That sounds awesome.

AW: All right, lets do it.

Callie: If there is one thing I am good at, it's improvising. I am good at doing that.

AW: I know you are, I love it.

Callie: Fun times, fun fun fun!

### Example 2. "I really like playing the piano. I enjoy it. I enjoy it a lot!"

Callie: Yeah, it was just a fun day today!

AW: Good!

Callie: Time went by like (*snaps*) that!

AW: Our lessons do seem to fly.

Callie: They do, unfortunately.

AW: Yeah.

Callie: I am really proud of myself for learning the different scales today. It was really fun! I liked that part a lot. Just learning stuff on the piano is really fun. I like that now I can actually do something on the piano besides just banging on it!

AW: Yeah, and it is going to help you understand how songs work, and a lot of compositions work. What about "King of Anything"?

Callie: "King of Anything" was fun, but I just really liked those scales.

AW: We'll have to do more of them.

Callie: I am just surprised at how fast I learned them. I mean, it was like (*snap*) that. I am like wow! That surprised me! I thought that would have taken me a little while. Hopefully, I'll remember how to do them.

AW: Well, if you find time to practice them that will help. And I know them all by heart, so we can always review them.

Callie: Yes you do! You can play them so fast!

AW: Oh, thank you!

Callie: Yeah. I really like playing the piano, I enjoy it. I enjoy it a lot!

### **Example 3. "I am feeling very brave!"**

AW: Let's try to train your ears a little bit to see if you can tell the difference between these two things.

Callie: Okay, that sounds like it might be hard.

AW: How are you feeling about that?

Callie: I am feeling brave!

AW: All right! Let's do it!

### **Example 4. "I am enthusiastic to learn everything!"**

AW: I know this is challenging.

Callie: I have never written a song before, and I have never been to music school, like you. So, it is challenging, but I really want to do well at this. I think learning to write a song would be really cool.

AW: Well, you are doing super well so far, and even if it isn't super clear right now, I think at the end of a few weeks the picture will get clearer.

Callie: Well, I am enthusiastic to learn everything! And I definitely think that things will get clearer, because I'll be getting more experience and getting more into it!

AW: And you'll be asking more questions and testing ideas, and it will become clearer and clearer.

Callie: I know. It will be great.

## **Summary**

These examples represent numerous instances when Callie shared her enthusiasm for learning, and her confident and optimistic attitude toward challenges. Understanding her general perspective gave evidence that I should plan lessons that pushed her to her limit. Furthermore, creating a role for her responses and reflections in our learning process, I became aware of a wellspring of energy and joy. By allowing her to share

these feelings, and by expressively reciprocating, we became situated in a learning environment that was steeped in happiness, and optimal for learning.

### **Social Recognition and Belonging**

On several occasions, Callie was noted to have made comments describing her love of praise, and her desire to create social events for music making. Despite being on the autism spectrum, she is a very socially motivated adolescent. Three examples of this category are provided to clarify Callie's social interests.

#### **Example 1. "I want to show my ideas to my class."**

AW: So, has working together today helped you accomplish any of your musical goals?

Callie: Oh, definitely. I think we accomplished two of my goals. Well, you taught me how to do at least something that sounds good on the piano, which was the C scale, that was awesome! So we definitely accomplished that. And I started learning one of my favorite songs, "King of Anything."

AW: Yes! I knew "King of Anything" was one of your goals!

Callie: That was one, and well this just came to me. But I finally got to show you all my ideas to make that Bob Marley song better.

AW: Yeah! Alright, we have to work on the piece more, you love it.

Callie: That was so fun. I want to show my ideas to my class. That would be so cool. If we could do that same thing that we did today for my class, that would be awesome. I think they would love it.

AW: That would be awesome.

Callie: We could harmonize, and I could play those clusters of notes that I found.

#### **Example 2. "Maybe we could set up something after school."**

Callie: I am so excited about this! Like, honestly, I wish Reese was doing this too! That way you could help her with the piano, because I really want to do this.

AW: That sounds like it would be really fun.

Callie: Like maybe someday after school or at lunch we could set up something with our parents to stay after school with you! We could rock this!

AW: Well, maybe! We'd have to talk with your parents.

Callie: Yeah, totally! And what would be really cool is if we did it for one of the school performances. But, I think it would be awesome if we didn't put it in the program, if we left it as a surprise.

AW: Oh! A surprise! What a fun idea!

Callie: It would be like one year when we did the Harlem Shake. So my parents and Reese's parents would have to pretend they didn't know, and then all of a

sudden I would be singing and Reese would be playing the piano! It would be a little duet! It would be so cool!

**Example 3. “I show off a lot!”**

AW: Alright, so this is the question we have always ended with, and I know it’s our last lesson, but what would you want to do next time? If you had the choice, and you were going to come back again, what would it be?

Callie: Write more blues lyrics, and show off to my class!

AW: Hah!

Callie: I like to show off. I am not usually a show off, but when it comes to singing I am a big show off. I can’t help it.

AW: (*laughs*)

Callie: I show off a lot. I can’t help it. I just love to get praise!

AW: That’s good. You should. Singing is at talent for you.

### **Conclusion**

Theme One, Revealing Words, gave numerous examples of Callie’s ability to use both verbal and spoken words to express her thoughts, associations, desires, feelings, and goals. These collective instances show that Callie is aware of and responds to her own internal processes as well as the world around her. Her words were not difficult to discern, as one might expect from a student with autism. Rather, they were lucid and multi-dimensional. By my making space for Callie’s responses and reflections our educational program was mutually developed. Finally, through this interpersonal exchange, I could remove the mystery of what made our sessions meaningful to Callie, and focus on finding opportunities to develop and enhance those meanings.

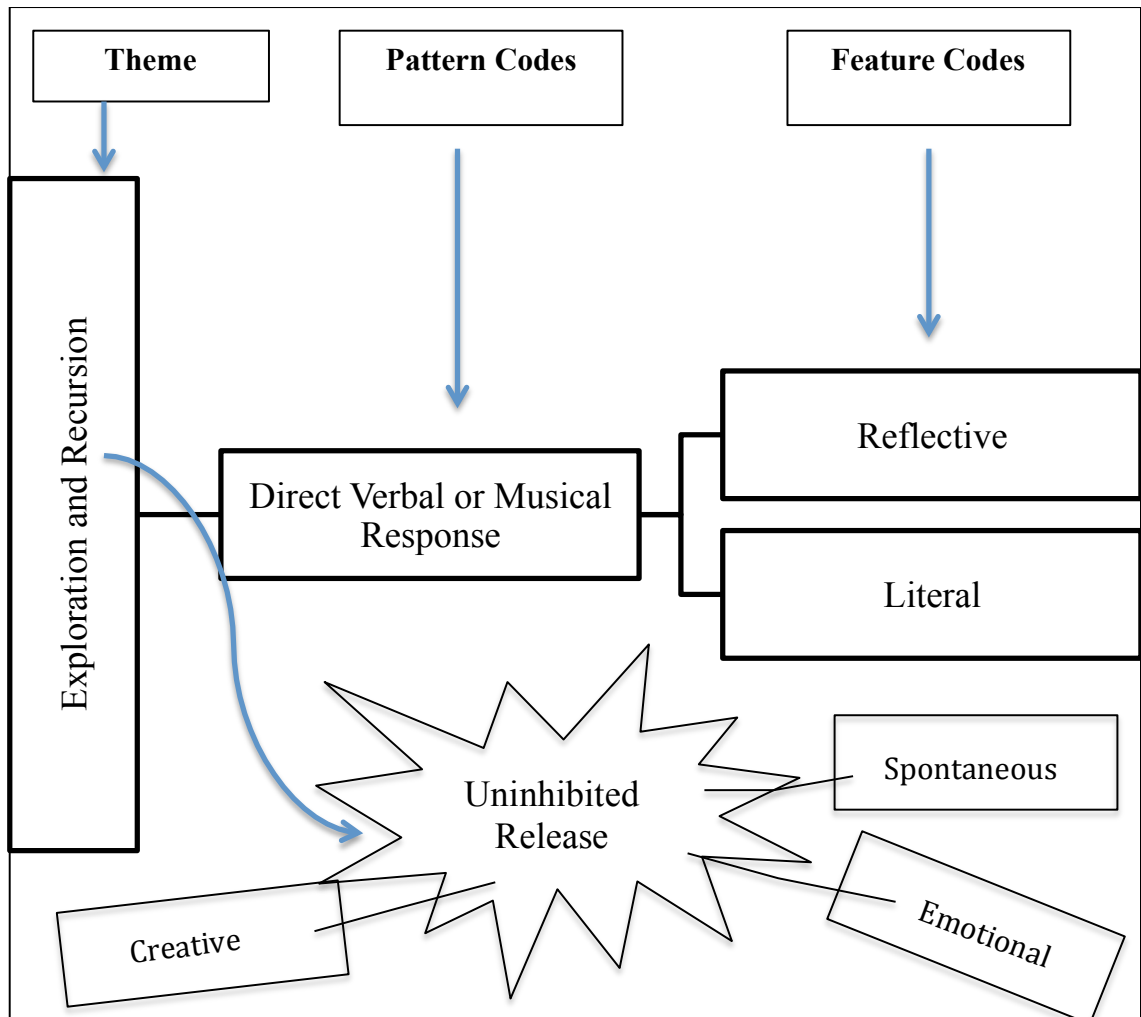
## Theme 2: Exploration and Recursion

Callie's second theme is Exploration and Recursion. These two words are used together, because they resemble a frequent configuration of pattern codes and feature codes found through analysis of Callie's case. Callie's transcripts contain a high frequency of direct verbal and musical responses. Many of these responses were noted to have either reflective or literal features (see Figure 6.11). After revisiting the data, I realized that Callie would often become curious about a concept and independently decide to take action to explore that concept further. This exploration involved a *recurring* display of inquiry, focus on the concept, finding how to replicate the concept, verbal or musical practice of the concept, and then further inquiry as relevant. Two examples of Exploration and Recursion will be described below.

This section will end with a description of Uninhibited Release. Uninhibited release is a category to encapsulate two instances when Callie's processes of Exploration and Recursion did not end with practice or further inquiry; rather, they resulted in an emotional and creative moment of musical expression. These instances did not occur frequently enough to substantiate their own theme, but because they fell outside the range of expectations, and happened in association with a theme, they do qualify as extreme cases worth careful attention (Miles et al., 2014).

Uninhibited Releases are instances when Callie musically responded during the process of creating or performing music in an emotional and creative way. During this time she freed herself from the technical aspects of the music and went into a mode of pure expression. These moments were identified through the musical characteristics of belting, ornamenting, the artistic use of dynamics, and the expressive use of articulation

and diction. The non-verbal responses such as, stomping feet, dancing, rhythmic gesture, making fists, squinting and becoming red in the face further characterized these instances.



*Figure 6.11.* The Derivation of Callie's Theme 2: Exploration and Recursion.

### **Example 1. “Can I try?”**

Lesson one included an activity to help Callie learn to identify the aural difference between major and minor chords and scales, but her curiosity led her to want to try and play the chords herself. She asked to try, and learned by imitating my model.

Callie: Can I try?  
AW: Sure!

Callie: So, I put my fingers right... *(placing her fingers)*  
 AW: So, for the C major chord you would do a C E G, a C. *(plays)*  
 Callie: C *(plays)*  
 AW: An E *(plays)*  
 Callie: An E *(plays)*  
 AW: And a G *(plays)*  
 Callie: And a G *(plays)*  
 AW: Correct, that is your C major.  
 Callie: C Major *(plays it again)*. And so C minor would be *(plays C minor)*  
 AW: That is C-minor. That's it.  
 Callie: That is pretty cool.  
 AW: And it really changes the whole mood of everything.  
 Callie: Yeah, it does. So exactly, this sounds more , wait give me a minute *(plays)* no no no, *(plays again)* okay umm *(plays)*  
 AW: You had it C ,E, G. *(shows her)* You were just one finger short.  
 Callie: *(plays)* Major. This is more light and I guess more powerful and I guess this is more...*(plays)* a lot more heavier and it just makes you want to like (droops body) want to drag yourself out of bed and go, ugh! Like you are a zombie or something.  
*Grace played the major and minor chord back and forth gently as we chatted.*  
 AW: *(laughs)* And they could be used very beautifully too, its like, well one very common song writing thing to do is to mix major and minor chords together.  
 Callie: And how do you do that?

### **Summary of “Can I try?”**

In this example, we see Callie began with inquiry through the question, “Can I try?” Next she focused on the concept, as demonstrated by her first independent attempt at placing her fingers correctly on the piano keyboard. Subsequently, I help her discover how to replicate the concept by breaking it down into steps. After this, Callie elects to practice the new skill. Then she reflected on the sound qualities through metaphor. At the end, she elected to inquire further, asking, “And how do you do that?”

### **Example 2. “I want to go figure this out.”**

This example is taken from lesson 4. In this instance Callie had just practiced aurally identifying the I, V, iv, IV pattern in “The Four Chord Song” by Axis of Awesome. Afterward, I asked Callie to analyze the chord progressions Sara Bareilles



used for her song. As we examined the sheet music, Callie was drawn to explore further. First, she played the bass line on the xylophone, and then moved to play the progression on the piano.

Callie: So, is this what Sara Bareillies does?

AW: Alright, let's look at what Sara Bareilles does because she may give you other ideas for songwriting. She may use the seven chords of D major in a different way.

Callie: Alright, so we are going to find out the answer to what she does?

AW: Yeah. My prediction is that she is going to do some things the same, and some things differently.

Callie: So, let's see. She does D major, b minor...

AW: So, for Axis of Awesome, we did D, A, G, B, but she is going from D to B.

Callie: D A G B...

AW: So, what scale degree number do we give B in the key of D major?

Callie: Let's see... *(Counting on her fingers)* D, E, F, G, A, B. Six I think.

AW: Yes!

Callie: So, then she goes to E.

AW: Yes! She goes to e-minor, which is actually the two chord.

Callie: So she goes 1, 6, 2,... I can see that. Let me try. So she goes...

*Callie plays this pattern on the xylophone as she does and continues to follow the sheet music, reading the subsequent chords.*

Callie: D, B, E, B, G, A *(playing each bass note on the xylophone)*

AW: Actually, I think you can skip the first B minor for now. She only plays it for one beat.

Callie: Okay.

AW: So, we should have D E B G A.

Callie: D E B G A, D E B G A. *(Callie is playing xylophone as she speaks)*

AW: So, do you see how she does this over and over again for the whole verse? And then, for the chorus she does something different. She starts on B.

Callie: B.

AW: What number chord is that?

Callie: That is the 6, then she does G... which I think is the um, D, E, F, G *(counting on her fingers)* four?

AW: Yes!

Callie: Then D, and A....

AW: So her new pattern is 6 4 1 5, 6 4 1 5.

Callie: 6 4 1 5.

AW: So she goes *(I play on the xylophone)* 6 4 1 5, 6 4 1 5.

Callie: Can I try? *(I hand her the mallet)* 6 4 1 5, 6 4 1 5.

*I start to sing the words along with Callie's bass line.*

AW: Who cares if you disagree, you are not me, who made you King of Anything...

Callie: 6 4 1 5, 6 4 1 5, 6 4 1 5, 6 4 1 5. That sounds sort of hypnotizing!

AW: Yeah! It is really relaxing.

Callie: So, those chords make the song go round!

AW: Yeah! And the only one that is different than Axis of Awesome is the e-minor.

Callie: She just switched it up a bit.

AW: Yeah, she just does it in her own little way. But, she uses the main chords that we were using!

Callie: That is awesome.

AW: So, do you want to go sing this for a little bit?

Callie: Actually can I take this for a little bit? (*Callie is showing me the sheet music*) I want to go figure this out on the piano!

AW: Yeah, take it! Actually, there is a binder on the piano that might be easier to look at.

*Callie goes over to the piano.*

Callie: Okay, so, it goes like this...

### **Summary of “I want to figure this out.”**

Fitting the thematic description, this example again uses Callie’s unique recursive exploration process: inquiry, focus on the concept, finding how to replicate the concept, self-initiated verbal or musical practice of the concept, and further inquiry. This example begins with Callie inquiring about Sara Bareilles’s chord progression. Next, we focus on the concept, and she and I begin to discuss it. As we do this, she elects to practice it both verbally and musically; she does this by repeating the chords back to me verbally, and simultaneously playing them on the xylophone. At this point, she reflects on the quality of the chords, noting that they are “hypnotizing.” Lastly, she asks a new question, “Can I take this for a little bit?” This question actually continues the recursive cycle. Following this conversation, I followed her to the piano and we focused, found, practiced, and inquired all over again.

## Uninhibited Release

While Callie normally responded to and reflected on her music learning experiences through revealing words, and exploration and recursion, there were two instances where Callie expressed herself musically in such a way that fell outside the usual well-ordered sequence. These are instances of uninhibited release. These are instances coded as being direct musical responses with intense creative and emotional features. These instances were found to occur after a certain amount of exploratory and recursive processes had passed.

This section will include two examples of how exploration and recursion led to uninhibited release. In both cases the recursive process occurred over the course of two or more lessons. To share this experience I will include snapshots, or short samples of the recursive processes in action. This will be followed with a description of the uninhibited release that followed.

### **Example 1. Three Little Birds**

**Phase 1. Exploration and recursion.** In the beginning of Chapter 5, Callie's first exploration of "Three Little Birds" is described. She began this exploration by saying, "Well, I have a few ideas to make this better." Following this, she showed me her ideas; I helped her develop them, and presented some new possibilities. This process continued at our next lesson. In this example, we start to blend one of Callie's ideas for ornamenting the piece in with the rest of the song.

AW: So, do you remember how to play the *do do do do do do do do*? (*singing the traditional keyboard intro to Three Little Birds*)

Callie: Mhm.

AW: Do you want to play them or should I play them?

Callie: I'll do them.

*Callie starts playing the pattern she made up, not the keyboard intro. To help her I start playing the intro in a higher register.*

AW: Those weren't the *do do do*'s I was talking about.

Callie: Oh! Right!

AW: Remember that sound? Do you want me to play that part?

Callie: How about I try to play it, and you sing the words?

AW: Well, at the beginning, there are no words – just a keyboard part. Let me show you.

*I play the intro.*

AW: Now, at this point, the words come in.

*Callie and I start singing. We both sing the piece as written.*

Callie: Yay! That was so awesome. I get it now.

AW: Okay, so now, do you want to add in the little glitter thing you wrote yesterday? Should we do that this time?

Callie: *(Callie starts practicing it)* Yeah, that'd be cool. Yeah.

*Both start playing, I help Callie realize how to place the "do do do's" rhythmically as we go along. This time Callie's singing is more confident, and sometimes she ornaments the last note of a phrase. I realize her confidence, and sometimes add in a harmony. At the end we both cheer and clap.*

Callie: That sounded awesome!

AW: How did you come up with those different melodic parts you added?

Callie: I just kind of went along with it during the song, and I didn't really plan it out. It just kind of *(snaps)* snapped into my brain. I just kind of thought that if I did this with my voice it would sound better.

AW: It did sound good! It sounds more like your own version now, rather than Bob Marley's.

Callie: Yeah, he sang it in a more simple way. I improvised a little.

**Phase 2. Uninhibited release.** As shown above, Callie went through the processes of inquiring about how to improve "Three Little Birds," by focusing on the construction of the song, finding ways to improve the piece through experimentation, practicing her arrangement, and inquiring further as needed. This process remained largely intact until during one rehearsal, Callie just let go. She broke free. All the conventions and techniques became secondary, and Callie just expressed herself through the song. These instances were coded as both direct and spontaneous musical responses. Various non-verbal responses were also noted. Both instances exhibited emotional and creative features.

***Description of event from transcript.***

*Callie and I both sit at the piano bench. Callie starts playing her tone cluster. We both start to sing. After a few bars, Callie takes over the singing, and I start to develop the accompaniment both rhythmically and harmonically. Callie's voice starts to open up on the second time through the opening chorus. She abandons the reggae style, and moves toward a more soulful-pop feel. Something perhaps reminiscent of Mariah Carey's singing style. While she has never had formal voice lessons, she is able to assume control of her voice very well. Her singing starts to come from an emotional place rather than a cognitive one. This is at first characterized by the use of her chest-voice. This gives her voice a rich depth characterized by a full tone. During the first chorus, she added a melisma to the word "worry," and allowed the word "thing" to be a very gentle ending to the phrase. As we move into the verse, Callie uses dynamics to emphasize each line uniquely, for example, she sang "woke up this morning," very gently, then grew momentarily stronger for "three little birds," only to soften again on "perched by my doorstep." As we continue, her tone acquires vibrato on the held notes. It is not a pervasive vibrato, but one that she seems to have some control over. Some notes remain straight, while others shimmer. As we move forward, I add harmonies above her melody. Callie uses her vocal tone and dynamics to creatively develop the phrasing. She has an intuitive sense of aesthetics as she does this.*

*As we get prepared for the last chorus, I expect to continue this way. But, Callie takes huge artistic liberties. Callie's eyes stare off distantly, and she holds her fists closed. She jumps up in register for the first "Don't worry, about a thing," and when she gets to the words "all right," she uses a turn to cadence. In response to this, I stop harmonizing, and just listen, adding in the accompaniment only as it is appropriate. I realize it is now my job to follow. For the next phrase, she closes her eyes and returns back to the original register and becomes soft again. In a low, rich tone, she slows down the words "every little thing," holding the word "thing" until it naturally starts to dissipate from her air supply being depleted and then she gently ends with a glottal "g." She takes a brief pause, then on the last phrase "is going to be alright," she sings the words "is going to be" steadily on the tonic note in preparation for her last dramatic melismatic gesture on "all right." She ends with a big smile and claps. When she looks at me, she is beaming, and she has red cheeks.*

AW: Wow! That was just beautiful. I think I was smiling the whole time.

Callie: That felt really good. That was a great improvisation.

AW: I agree. You came up with some really beautiful and creative ways of singing that song. How did you learn to do that?

Callie: I don't know.

AW: Have you ever heard any one do that before?

Callie: I don't know. I guess so. Maybe Adele, or Christina Aguilera or someone like that. But mostly, I just let the music tell me what to do. I just tried to get to the heart of it, and let the music do the talking.

AW: Wow. You certainly did.  
Callie: Thank you!

### **Example 1. Summary and Analysis**

In this example, we see that Callie moved through the processes her normal exploratory and recursive process of inquiry, focusing, finding, fixing, and practicing. She began by inquiring about how to perform “Three Little Birds,” shared some of her own ideas about how to improve the piece. Next, she and I focused our attention on the matter, and created a unique rendition of the piece on both days one and two. We experimented with different possibilities, and discussed issues that needed fixing. As we worked, we also gradually added embellishments (i.e., harmonies) and other expressive features (i.e., dynamics). We began to develop a working arrangement of the piece that we both knew. However, on the third day, Callie spontaneously took the song in an uncharted direction. She took ownership of the performance through the exhibition of confidence and strong vocalizations. Without a word, I observed her commanding presence, and as she stared off into the distance and clenched her fists, I automatically changed roles from teacher and director, to accompanist. As she performed the piece, her improvisations become more and more elaborate. At the last chorus, she closed her eyes, and her music making evidently became an emotional release rather than a planned series of events.

This event was coded as being rich with musical, non-verbal, creative and emotional responses. This particular clustering of codes led to this instance as being seen as a unique and modified extension of her normal exploratory and recursive process. Thus, this finding was classified as an outlying case of Uninhibited Release.

## Example 2. Life Ain't Fair

**Phase 1. Exploration and recursion.** During lesson 4, Callie heard Big Momma Thornton, and was inspired to try to write her own blues. During our fifth and final lesson, I helped Callie explore the blues style. First, we listened to, analyzed and sang Joe Turner's Blues as an example of the 12-bar blues form. Next, I taught her the blues scale, and 12-bar blues chord progression. We improvised using these two tools; Callie improvised a melody using the scale and I supported her with the chords. Next, Callie vocally improvised while I accompanied. Finally, we listened to Big Momma Thornton once more for inspiration, and started writing.

AW: Okay, let's try to at least get the first section done, the A A B. We already know that your B line is going to be "life ain't fair." So let's improvise, this verse, but always end with "life ain't fair," and see what happens.

Callie: I got one idea.

AW: For the first line?

Callie: My momma told me long ago (*sings*)

AW: I like that.

Callie: Thanks!

AW: So, that would be the first four bars.

Callie: Mhm.

AW: So, let's see, 1 2 3 ...

Callie: (*sings*) My momma told me long ago.

AW: Whoa wait! That is way slower than I thought. If you want that to last for four bars it will go something like this... (*I sing it to her*)

Callie: Oh! I just. I am trying my best.

AW: No, that was good, let's do it again.

Callie: Writing the blues is hard – I guess Big Momma was just really good at it.

AW: No no, it's easy..

Callie: Really?

AW: Yeah, let me sing it with you this time. We'll improvise it a couple of different times, and we'll try it a few different ways.

*Callie and AW sing*

AW: Let's try that again.

*Callie and AW sing the first two lines...*

AW: Then you add your last line, and I go bum bum bum bum – right? And we are back to the beginning for the next verse. Easy right?

Callie: Oh, it isn't it... I think I am getting this now.

AW: So, do you want to sing "my momma told me long ago" two times?

Callie: My momma told me long ago.

AW: So, it would be two times, and then “life ain’t fair”?

Callie: Okay, lets try it.

AW: That would be verse one if we kept with the 12 bar blues style.

**Phase 1. Summary and analysis.** On day one, Callie and I began to address her inquiry of how to write a blues song. We moved through several phases of exploration. The process of recursion began when we started writing. Callie and I experimented with lyrics, and went through a process of “finding” how to craft her words into a 12-bar blues. Our finding process involved improvisation, evaluation and fixing. We continued the finding process, and made decisions. We practiced as we went along, and revisited our previous decisions in relation to new developments. As we practiced re-evaluated, found possible weaknesses, inquired about possible solutions, and then tested our solutions. Solutions that worked were then practiced. This cycle of evaluation and practice over time created a time-tested composition.

**Phase 2. Uninhibited release.** Our sixth lesson was our shared lesson with Harper. This day was designed for sharing what we had learned, and functioned like a performance; each child took turns performing for the other. When Callie performed “Life Ain’t Fair” for Harper, this is what occurred.

*Callie stands facing me over the back of the upright piano, and Harper sits next to me in a chair by the piano bench. Callie reads the words to herself quietly.*

Callie: Harper, I just want to warn you that I do like to belt out. I do like to get loud.

*Harper does not respond to her.*

AW: I think its okay, you just do it your way. He will be fine. Should I play an intro first?

Callie: Yeah.

AW: *(I play my intro, and count her in for her first verse)* 1, 2 here you go!

Callie: AH!

AW: It’s okay, let’s try it again.

*I play the intro again, vamping on a D7 chord. Callie watches me closely. This time I just look at her when it is time to start. Callie starts right on time and*



*strong. She sings the entire piece in her belt voice. It is sung straight with no vibrato. There are lots of slides, and dips – she has discovered how to bend the notes like a blues musician. She freely performs the piece, being expressive both vocally and non-verbally. She seems uninhibited, free and focused on the music. She really appears to be enjoying herself.*

<b>Transcription of Lyrics as Performed</b>	<b>Performance Details and Non-Verbal Communication.</b>
My momma told me long ago.	<i>Her diction is hard. Mama has two distinct syllables, and the word go has a hard “g,” and slides up.</i>
There’s something that I have to know.	<i>She softens, still pronouncing every syllable clearly.</i>
That life ain’t always fair.	<i>She becomes somewhat matter of fact. She stops briefly between “life” and “aint” emphasizing the lesson she is teaching.</i>
Sometimes you think that everything is fine.	<i>Callie starts drumming on the piano with her fingers and dances as she sings. This verse is louder than the first. She swells on “sometimes” and “fine.”</i>
But then someone steals your last and only dime.	<i>She gets quieter, metaphorically suggesting that something not fair has happened. She squints and uses a side ways glance.</i>
I gotta say, that life ain’t always fair.	<i>Moves into a stronger belt beginning on the word “life,” and then ornaments the word “fair” with a turn.</i>
Sometimes you are gonna find yourself in situations like these,	<i>Softens slightly, dances slightly, moving her weight from foot to foot.</i>
But whether your like it or not your gonna have to deal with it	<i>Gives some attitude for “your gonna have to deal with it” by using a harsher tone. She punctually adds a foot stomp.</i>
Because life ain’t always fair.	<i>Callie maintains a mezzo forte volume until the last the word, “fair” - then belts for as long as possible while I tremolo on the last chord. Her hands are two fists at her side, and her face is red. She is looking slightly up, as if she is singing to corner where the ceiling meets the wall.</i>

**Phase 2. Summary and analysis.** After going through the processes of exploration and recursion, Callie once again ended with an instance of Uninhibited Release. It is important to know, that aside from the basic melody, and lyrics, I did not have time during our sessions to coach her on any of the expressive elements she displayed. This was all part of her own doing, and happened as part of her release. In this instance, Callie's musically responded to her own singing, in ways that were spontaneous to me; they were not part of our shared plan from the day before. Her responses seemed to be both emotional and creative expressions of how she believed the piece should best be delivered. Again, this created a cluster of musical, spontaneous, non-verbal creative, and emotional coding, and which led to this being labeled as a second instance of Uninhibited Release.

### **Summary of Callie's Themes**

In the last section, I have explained the emergent themes of Callie's with-in case analysis in order to answer the question of how she responds to and reflects upon her musical experiences. Two themes were discovered: (1) Revealing Words, and (2) and Exploration and Recursion. The theme Revealing Words described how Callie used both written and spoken expression to respond to and reflect on her musical experiences. The theme Exploration and Recursion described how many of Callie's responses and reflections contained a methodological pattern of inquiry and examination. While there were numerous instances of exploration and recursion noted, two cases resulted in Uninhibited Release. Uninhibited Release was a musical response that was coded as being spontaneous, emotional and creative.

The next section of this chapter will expound upon the ways that Harper and Callie's cases were not wholly idiosyncratic, through the form of a cross-case analysis. It was my intent that this procedure would help create a more well-rounded description of their responsive and reflective styles, and develop a broader and deeper understanding and explanation of what types of information were available through their responses and reflections. With this analysis, I hope to continue to support and respond to the research question: How do two students with autism respond to and reflect on their own experiences during a series of six lessons that require creating, performing and responding to music?

### **CROSS-CASE THEMES**

Miles et al. (2014) stated that the advantage of completing a cross-case analysis is to “increase generalizability, and to reassure...that the events and processes described in one well-described setting are not wholly idiosyncratic” (p. 101). Five cross-case themes emerged during the course of analysis: 1) Voluntarily Cooperative Learning Style, 2) Awareness of Popular Music Culture, 3) Sanguine Affects, and 4) Unique, but Functioning Responsive and Reflective Capacities. A summary of with-in case and cross-case themes is provided in Figure 6.12 at the end of this chapter.

#### **Voluntary Cooperative Learning Style**

As the students progressed through their six lessons, it became increasingly evident that they demonstrated a voluntary cooperative learning style. This cooperation was seen on two levels: moment-to-moment classroom interactions, and through creating and sustaining an educational program based on interdependence and interaction. Following directions, willingness to participate, flexibility with the daily schedule,

sharing regular feedback, being attentive and on-task, putting forth an effort to complete tasks, and displaying a pleasant disposition were all evidence that a student was being cooperative from moment-to-moment. Sharing their goals, interest, ideas, feelings, needs, strengths and weaknesses with me were considered evidence of cooperating to interdependently and interactively develop an educational program. Both students demonstrated a high frequency of cooperative responses and reflections, as was depicted in their Communication Profiles.

Harper's moment-to-moment cooperative behaviors were displayed verbally, non-verbally and musically. By counting Harper's instances of inattention, and off-task behavior, I was able to determine that Harper required only 6 to 15 redirections per hour. None of these redirections were caused by deliberately defiant behavior, rather they were accommodations to help Harper succeed despite his attention deficits and impulsive behaviors as described in Chapter 4. Harper's attention and behavioral issues decreased dramatically, and were often non-existent when he was listening to, creating or performing music, rather than conversing through language. All of Harper's interactions were pleasant, and he had a joyful disposition. To support this, the coding of Harper's transcripts revealed that many of his non-verbal and emotional responses were smiles and laughter. On many occasions he would provide me with feedback like, "This is fun!" or "I like this!" He also would show eagerness to work hard through statements like, "I am going to focus this time!" or "Let's do it!" Harper was amenable to the schedule I provided him, and flexible if we needed to make changes during the course of a lesson. His disposition was almost always pleasant. Harper's disposition would sometimes become distant, to the point where he would be unresponsive for periods of time. These

instances, again, were not due to his lack of interest, or desire to participate, but were due to his attention and behavioral deficits. These needs were more severe during the course of this study, as a result of the unexpected complications. At the beginning of this study, Harper experienced an onset of uncharacteristic neurological symptoms that included sudden anxious and obsessive-compulsive thoughts and behaviors that greatly impacted his communicative abilities (also see Chapter 4, Unexpected Complications). These behaviors included grimacing, leg-slapping, vocal outbursts, and an impaired ability to remain focused and to communicate thoughts. These behaviors were easily distinguishable because they were atypical and markedly different from his behavior when he was initially selected for the study. Therefore, these behaviors did not result in him being marked uncooperative, but were rather dealt with therapeutically and patiently.

Harper was found to be very capable of cooperating in an interdependent and interactive learning environment. The content of his lessons were a direct result of his shared interests, thoughts, reflections and goals led the selection. For example, on the first day, he was asked to either volunteer an idea for a performance piece, or select a song from a list I had created based the interests I learned about from he and his mother during their interviews. He quickly chose, "Light and Day," by Tim DeLaughter (2002). When I asked him why he chose that piece, he said, because "I already know the other songs [on the list], and I wanted to learn a new song. I had never even heard of "Light and Day," and learning new things is a good thing to do! Right?" Another instance occurred after we listened to "The Four Chord Song," by Axis of Awesome. I presented him with the challenge of writing his own song, and he optimistically replied, "I think maybe I can do that, if I try."

After listening to “In C” by Terry Riley (2009), Harper exclaimed his feelings for the piece many times, making statements such as, “I really like that In C!” “I love hearing all the Cs!” “Can we listen to it again?” This strong reaction led me to use it as the impetus for a composition project. During all four of Harper’s post-lesson interviews he mentioned wanting to improvise more, “Today, my favorite accomplishment was improvising.” “I want to improvise more,” “I want to work on improvising.” This answer changed after we completed the “In C” composition during lesson four, to “I want to learn how to compose pieces.”

One final example was when we were listening to various rock songs during our first lesson to identify the various patterns in each. When I showed him a video of U2, he said, “I don’t like this one very much, what is the next one?” In contrast, his response to “Call Me Maybe,” by Carly Rae Jepsen was, “Carly Rae! This song is really great! Right?” These types of responses indicated to me which songs to focus on, and which to abandon very quickly and easily.

Callie was pervasively cooperative for all of her lessons. There were no instances noted in her transcripts of uncooperative behaviors. She displayed a pleasant affect during her lessons, and often made comments like, “This is fun!” “I feel so lucky to get to do this with you!” “I love the piano!” and “I am eager to learn everything!” intermittently during her lessons, and consistently during each interview. Callie actually took being compliant and flexible one step further; she was also curious. She displayed intense interest and enthusiasm for learning. She often made comments like “Can I try that?” “How did you do that?” “I wish I could do that!” which signaled to me that she was engaged and ready to learn. Callie was easily amenable to the schedule, and very flexible

with any changes. When I suggested changes, she simply said, “No problem!” or “I think that is a good idea actually.”

Callie was also found to be capable of interdependently and interactively creating an educational program. When asked to select a performance piece she quickly chose, “King of Anything,” by Sara Bareilles. Following this decision, she said “Oh my god! I love that song!” and later, “It is going to be really fun to learn this, this song is awesome!” Moreover, the song “Three Little Birds,” was brought into our sessions through Callie’s own initiation. She asked me during our first lesson to help her improve the piece, and shared some of her ideas for doing so. In my own efforts to create lessons interdependently, I agreed.

When I initially began working with Callie, I had thought of her primarily as a vocalist, but early on in our lessons she began to show an interest in the piano. After I showed her how to play the C scale, she fell in love, “That is the first thing that I have ever played that actually sounds good on the piano!” Later, during our interview, “I learned that I like the piano. I didn’t actually know that I liked it, but it is really fun,” and then, “I just really liked that C scale!” This sharing led me to incorporate more piano playing into her sessions.

Callie also demonstrated cooperative feedback when confronted with a challenge. During her fifth lesson, it was time to finally write her original song, we had the following exchange:

AW: So, you think we can write a blues song really quick? I bet you it doesn’t take much time.

Callie: Well I am definitely going to need your help, but I think I can do it.

AW: You got me! I am not going anywhere. I don’t really think you do though. I think you kind of need me and kind of don’t. I bet you know more than you realize.

Callie: I have just never done this before, I am nervous.

This feedback showed that she was both willing, but nervous about the challenge before her. Having this knowledge prepared me to provide her with lots of encouragement and structure as she proceeded. As a result, I had her work from a model, Joe Turner's Blues, which gave her an exemplar of a 12-bar blues, and provided a simple lyric and rhyme structure to follow.

In summary, both students were completely cooperative. From moment-to-moment they followed directions, displayed a pleasant affect, remained flexible, and were almost always attentive and on-task. Both students also displayed responses and reflections that contributed to the success of our interdependent and interactive teaching program. While I set out with certain goals, including both composing an original piece of music, and performing a piece of already existing music, the students' feedback led to the selection content, and helped me adopt objectives for our educational program that would mutually support the students' needs and interests.

### **Awareness of Popular Music Culture**

As I progressed through the analysis of each of the students six lessons, I realized that both students did exhibit several verbal and a few musical responses that were coded to have associative features. After revisiting the transcripts, I realized a large proportion of these associative codes had coded as examples of "cultural awareness" during the first exploratory cycle of coding. After making these realizations, I grouped each incidence under the theme name, "Awareness of Popular Music Culture."

**Harper's popular culture references.** During the course of this study Harper identified numerous musical artists instantaneously, without any previous guidance from



me, as part of this project. The artists he identified include: The Roots, Elvis, Sara Barielles, Owl City, Carley Rae Jepsen, Mackelmore & Ryan Lewis, Bruno Mars, Maroon 5, Imagine Dragons, Rusted Root, The Beatles, Elton John, Lady Gaga, and Rhianna. He also identified a few songs by name such as “Forever Young” by Alphaville, “You Got Me” by The Roots, “Send Me on My Way” by Rusted Root, and “Auld Lang Syne.” In the following example, Harper made two cultural associations brought on by one word, “roots,” demonstrating one instance of larger cultural awareness. During this conversation, Harper and I are watching “Call Me Maybe,” being performed on the Tonight Show by Carly Rae Jepsen, Jimmy Fallon, and The Roots.

Harper: They are all having a performance, right?

AW: They are! They are all having a performance.

Harper: It is a little loud.

AW: This is the band The Roots, they actually are a band, and make their own music.

Harper: Oh! The Rusted Roots?

AW: Huh?

Harper: “Send Me on My Way”?

AW: No, just The Roots. Just R-o-o-t-s.

Harper: Oh, I know them. The Roots, what do they sing?

AW: Oh, they sing hip-hop songs.

Harper: Like, “You Got Me”?

AW: I am not sure, that might be the name of one of their songs.

Harper: Off the “Things Fall Apart Album”?

AW: Is that by The Roots?

Harper: Yeah.

AW: How did you know that! You are so smart about songs!

Harper: They are all guys, right?

AW: Yeah, and his name is Questlove.

Harper: Questlove! (*laughs*)

While Harper was unable to identify the band visually, he was able to provide the names of two bands that had the word “roots” in their title. He also mentioned popular songs recorded by both groups, and named an associated album. This comment was

labeled as associative and culturally aware, which supported the creation of the theme Pop Music Culture Awareness.

**Callie's popular culture references.** Callie also identified numerous artists without my assistance. These artists include Jimi Hendrix, Adele, Sara Bareilles, Queen, Carly Rae Jepsen, Jimmy Fallon, U2, Katy Perry, Lady Gaga, The Spice Girls, and Bon Jovi. She also identified a number of songs: "Forever Young" by Alphaville, "Where is the Love?" by The Black Eyed Peas, "I'm Yours," by Jason Mraz, "Let It Be," by the Beatles, "Roar" by Katy Perry, "Brave" and "King of Anything" by Sara Bareilles, and "Don't Stop Believing," by Journey. The following conversation provides an instance of Callie making associative and culturally aware statements.

AW: So, let's do the math. There are only seven chords to choose from, and there are a million songwriters out there.

Callie: Which really stinks!

AW: So chances are these chords have been reused, right?

Callie Of course they have been reused, I mean...

AW: In the same orders, the same patterns, sometimes even the same rhythms.

Callie: That SO happens. It is like how Katy Perry totally copied the rhythm of Sara Bareilles's song, "Brave."

AW: Did she really?

Callie: Oh my gosh! If you listen to "Brave," and then you listen to Katy Perry's song, "Roar," you can totally hear the same rhythm! But, I mean, you can tell which one is "Brave," and which one is "Roar," but she totally copied it though!

AW: I am so glad you noticed that. You have such good ears!

### **Summary**

These lists and examples show evidence that both students were aware of popular music culture. This provides evidence that they are affected by the world that they live in, in similar ways to each other. This also shows that when the time is appropriate, they can readily make associations between their in and out of school experiences. These these associations helped me, as both a teacher and a researcher, learn more about their

current musical understandings, and consider how these understandings might be utilized to enhance their leaning process, and effect their meaning-making processes.

### **Sanguine Affects**

After examining both students' with-in case analyses, I realized a congruency between Harper's category, "Sanguine Responses," under the sub-theme, "Good Things," and Callie's category, "A Sanguine Outlook," under the sub-theme, "Expressive Discourse." Both of these categories provide numerous instances of each child displaying cheerful, positive, optimistic, verbal and non-verbal responses. In light of combining these two categories, I have chosen a new title, "A Sanguine Affect." Sanguine was chosen because it was previously used in both students' within-case analyses, and now will be used mutually, to show its existence on multiple levels of analysis. The term *affect* was chosen because of its versatile and broad reference to the various ways and manners by which a person can display their natural inclinations and disposition. This term helped me to examine and explain Callie and Harper simultaneously.

Harper's most common non-verbal responses during the course of this study were smiling and laughing. Harper was noted to have smiled or laughed almost every five minutes according to the transcript notes and time markers. This endless display of joyful facial and vocal expression provided supporting evidence of his sanguine affect.

A second way Harper displayed his general positive state of mind was during the discussion of the sub-theme "Good Things," where Harper was noted to have described numerous musical experiences as giving him "good thoughts," or "good feelings." He was also quoted as providing numerous other positive expressions of happiness and

optimism such as: “I really like me lesson so far!” “I think everything was great!” “Let’s do it! Let’s get crackin’!” and “I LOVED EVERYTHING WE DID TODAY!”

Likewise, Callie displayed a generally calm and positive affect. She always appeared alert and ready, her posture was always tall, and her facial expression was always pleasant. Many instances of Callie’s sanguine verbal commentary were described previously in the section, “A Sanguine Outlook.” Such expressions included, “I am really excited about all of this!” “Fun times, fun, fun, fun!” “I am feeling brave!” and, “Well, I am enthusiastic to learn everything!” Callie’s written reflections also exude a sanguine affect. For example in the written response, “Big Momma Thorton,” when she shared, “The slightest sound of her uplifting voice just has this effect on me,” and later, “She makes me feel free from every stress and problem I’ve ever had. Her voice takes me to happier days like when it’s summertime and warm outside.”

In general, both participants displayed a sanguine affect in the context of our music lessons, and toward specific music experiences. Furthermore, both participants displayed this affect verbally (for Callie verbally includes written) and non-verbally. While the children first needed to be understood on their own terms, this theme emerged at the cross-case level as well, and helps develop a more well-rounded picture of the outcomes of this study.

### **Unique, but Functioning Responsive and Reflective Capacities**

Harper and Callie’s modes of communicating their responses and reflections had similar and dissimilar traits. Harper communicated many ideas non-verbally and through music itself, as shown through theme of Attunement, and through varied levels of language, as shown through “Good Things,” Glimpses and Glimmers. Third, Harper

spontaneously created music throughout our lessons that was coded as having creative, associative or reflective features, without any prompt from the teacher. He constantly composed whether asked to or not; in a sense, musical play was an omnipresent part of his behavior.

On the other hand, Callie's richest responses and reflections were delivered through writing and speech. These instances were densely coded as having reflective, associative, empathetic, emotional, and creative features. Callie would also frequently show curiosity. In many instances, this curiosity led to inquiry, and a methodological recursive exploration process. Finally, after having thoroughly examined a piece of music, or having carefully written a song, Callie let go of her inhibitions, giving way to a well-spring of creativity and expression.

When looking at these children comparatively, it becomes evident that both students were capable of initiating interactions with myself and with the music at hand. Both students could access and express their own thoughts and emotions. These expressions were sometimes profound. Beyond these expressions, both students were also capable of generating new ideas, developing concepts, and designing musical works. These responses and reflections were shown, through the coding processes, to be imbued with multiple levels of meaning. The responses and reflections were sometimes extensive (i.e., Harper's improvisation, "The Clock"), and other times spontaneous (i.e., Callie's Uninhibited Releases). Both students, regardless of their diagnosis and known communicative weaknesses, also had domains of communicative strength, through which their cognitive and reflective capacities could be observed to be fully in-kilter.

### **Summary of Cross-Case Analysis**

In the last portion of this chapter, I presented a cross-case analysis to further explore the research question: How do two students with autism respond to and reflect on their own experiences during a series of six lessons that require creating, performing, and responding to music? This analysis brought forth emergent themes that describe how the responsive and reflective capacities of both children are comparable. In looking across both cases, four themes emerged: (1) Voluntarily Cooperative Learning Style, (2) Awareness of Popular Music Culture, (3) Sanguine Affects, and (4) Unique, but Functioning Responsive and Reflective Capacities. In the last chapter of this report, I will summarize this study, discuss the findings in terms of the literature, and provide implications for teachers and future research.

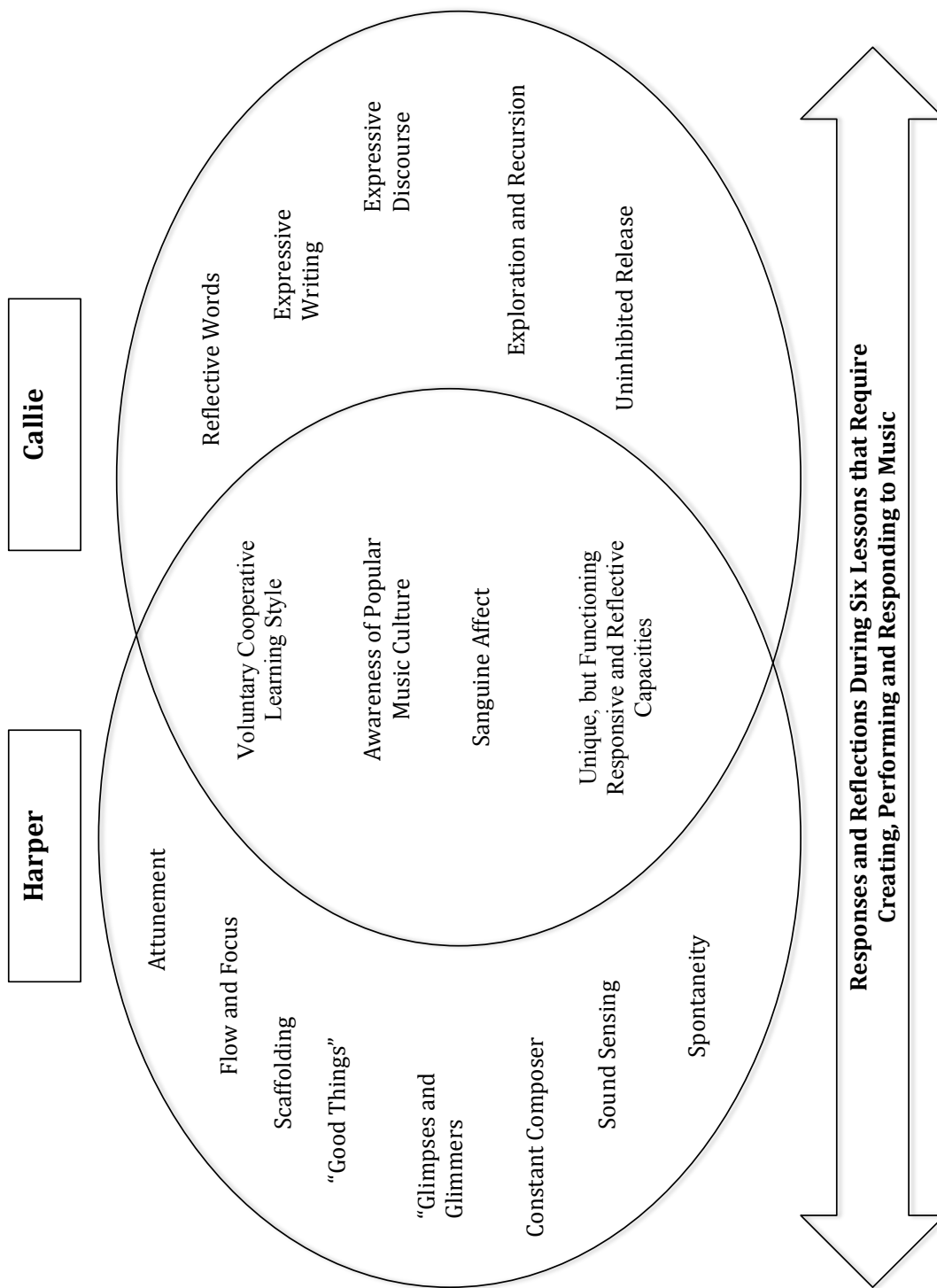


Figure 6.12. Summary of students' responses and reflections while creating, performing and responding to music.

## CHAPTER VII

### CONCLUSION

In this chapter, I provide a summary of this study, followed by a discussion of the primary themes. This chapter will conclude with implications for teaching music to students with autism, and suggestions for future research.

#### **Summary: A Recapitulation**

Autism is becoming more common with an average of 1 in 68 children diagnosed in the United States in the past year (CDC, 2014). As the number continues to rise, it becomes increasingly important that music educators have access to curricular strategies, information and tools that will enable them to provide students with autism with exceptional music experiences. This is especially true in light of the fact that music educators have a moral and legal responsibility under the Individuals with Disabilities Act (IDEA) to provide each student, regardless of disability, with an inclusive and normalized educational experience that is, to the greatest extent possible, equal to that of their non-disabled peers (Adamek & Darrow, 2010). This implies that students with autism should have access to the full range of educational opportunities offered to neuro-typical public school students (Adamek & Darrow, 2010).

Despite the prevalence of autism, music educators' legal responsibility to develop inclusive classrooms, and the extraordinary relationship between music and autism, very few studies have analyzed first hand accounts of students with autism in regards to their music education experience. The missing voices of student's on the autism spectrum in music education research presented a need for further investigation. Based on these findings and deficits, I decided to explore the verbal and non-verbal responses and



reflections of two students with autism in the context of six lessons based on the National Standards of Music Education. My goal was to provide music educators with more information about what types and qualities of responses and reflections individuals on the spectrum might exhibit, and to contribute to the currently limited research discourse focused on the autistic voice.

To align with this purpose, the research question was, “how do two students with autism respond to and reflect on their own experiences during a series of six lessons that require creating, performing and responding to music?” This study was completed using a multiple case study design. An inductive analysis of the children’s communicative behaviors was described in terms of two prominent stages: Second cycle coding involving the use of pattern codes and simultaneous feature codes, and then theming which involved a use of multiple tactics, and a meticulous interpretive and reflective process. Both within-case and cross-case themes emerged.

### **Discussion**

This section will involve a discussion the findings in this study as they relate to (a) the theoretical framework, (b) the operational construct, and (c) the research literature that informed this study, as described in Chapter 2. With this, I hope to demonstrate how this research contributed to the current body of work in my field and related fields. Subsequently, I will conclude with implications for practice and for future research.

### **Revisiting the Theoretical Framework**

This investigation was grounded, guided, planed and executed through the work of (1) John Dewey who defined reflective thinking as the process by which a person intentionally interacts with their environment to co-construct new meanings through

active, and mindful inquiry, and (2) Bennett Reimer who described how individuals outwardly respond to music through both language and music, and that those responses can yield information about what each individual conceives music to mean. These philosophers' views took on a particular meaning as I studied the responses and reflections of the two participants.

Dewey's theory was realized through the fact that both students acted intentionally and responsively to co-create a unique and individualized educational program with their teacher. When challenged to compose a piece, write an original song, and perform an existing song, both students responded through a succession of connected and mindful actions toward those ends. Both students used their previous knowledge, identified relevant facts, examined their assumptions, understandings, and skills, made decisions, expressed doubts and uncertainties, sought out new information and clarity through questioning, imagined possible outcomes, generated and tested solutions, and ultimately, deliberately finalized those solutions through reflective critiques that considered aspects of what was most justifiable, and also what was most satisfying.

Congruent to Reimer's philosophy, both students in this study utilized language-think and sound-think to share their responses and reflections of the music at hand. Furthermore, both student's responses and reflections revealed several aspects of their thinking and knowing that went well beyond the simple recitation or reiteration of basic information. This was first observed through the fact that a great number of communications contained some suggestion of that child's selfhood (or autobiographical self) that indicated how their feelings had changed during and after musical experiences. Moreover, these aspects of their thinking and knowing consistently affected their attitude,

engagement, level of curiosity, and decision-making. This was especially true when an event was coded as being critical. Secondly, this was observed in the fact that each child made numerous cultural and historical associations in regards to the various forms of music presented. Thirdly, both students were able to utilize their *feelings*, and knowledge *about* each piece as evidence to form an idea of *how to* successfully create and perform various pieces of music from popular styles.

In summary, the responses and reflections shared by each student were observed to be an active, dynamic, and fluid amalgamation of the way they viewed themselves, associations they were realizing, and the feelings were experiencing. This outward manifestation of a complex internal interplay of self, association, and feeling, deeply resembles and supports the ideas of Dewey and Reimer. These findings support that a fuller, more significant life resides within individuals with autism than is currently depicted in research literature, and that further investigation of this life cannot be examined through the narrow gate of sense perception, motor activity, or controlled verbal response, but rather, must be assessed through the multiple modes of self-expression used by each individual, and all of the distinct ways that those modes blend into one another to forge intentional and meaningful messages.

### **Revisiting the Operational Construct**

In order to answer the question of *how* two children responded and reflected to their music making experiences, an expansive definition of communication was required. This expansive definition allowed for me to holistically observe all forms of communication the children used, and inductively generate themes. By using this construct, I was able to determine that both children used multiple modalities to express

their needs, thoughts, ideas and feelings. The results showed that each child had their own complex mixture of musical, verbal and non-verbal communication styles. Neither child elected to draw or dramatize their feelings. Without this broad construct of communication, many of these children's thinking processes would not have been "visible" through the lens of this study.

### **Responding to the Research Question**

The research question driving this study was: How do two students with autism respond to and reflect on their own experiences during a series of six lessons that require creating, performing and responding to music? The within-case analyses revealed that both children displayed their responses and reflections primarily through three modalities: musical, verbal, and non-verbal. The within-case analysis of Harper's data revealed that he most frequently communicated through a combination of musical and non-verbal modes, leading to the theme of "Attunement." Musical responses that were spontaneous, and/or unintentionally communicative, led to the theme "Constant Composer." Harper's use of broad use verbal communication led to the formation of the theme, "Good Things, Glimpses and Glimmers." Throughout each of these themes Harper was noted to have shown the capacity to share literal, emotional, empathetic, associative, reflective, creative information with the researcher. These features varied based on activity, with his most profound responses and reflections being spontaneous and observed during or directly following a musical activity. Harper's least remarkable responses were observed following a teacher provided language prompt.

The analysis of Callie's data led to the emergence of two themes: Revealing Words, and Exploration and Recursion. Revealing Words was derived from evidence

that Callie's most reflective responses were delivered through either written or orally communicated words. Exploration and Recursion was derived from a pattern of direct verbal and musical responses that stemmed from a Callie's personal curiosity. This pattern occasionally ended with a creative and emotional musical response, leading to the sub-theme of Uninhibited Release. Callie's responses and reflections were also rich with a variety of literal, emotional, associative, reflective and creative features. Callie's responses to music and language prompts were found to be equally profound.

Through the coding process four cross-case themes emerged: (1) Voluntary Cooperative Learning Style, (2) Awareness of Popular Music Culture, (3) Sanguine Affects, and (4) Unique, but Functioning Responsive and Reflective Capacities. The cross-case themes provided further insight into how these two students respond to and reflect on music, and showed that while both student's responsive and reflective styles were very distinct, they were not entirely idiosyncratic.

### **Revisiting the Literature**

After analyzing the data, it was possible to draw several comparisons between my findings and those in existing literature. To remain consistent, I will discuss these comparisons in the following five categories: (1) The extraordinary relationships between music and autism, (2) alexithymia and the recognition of musical emotions, (3) communication and the Zygonic Theory, (4) qualitative studies of the responses and reflections of children and adolescents with autism to music education experiences, and (5) qualitative studies of the responses and reflections of neuro-typical children and adolescents to music education experiences.

**The extraordinary relationship between music and autism.** The findings in this study were found to be both similar and dissimilar to those mentioned in the literature review. Earlier in this study, I referenced an abundant number of studies that investigated the relationship between musical sensitivity and skill, and autism. The studies indicated that individuals with autism often had heightened sound sensitivity (e.g., Boddaert et al., 2004; Rimland & Edelson, 1995; Siegal & Blades, 2003), exceptional pitch identification and discrimination (e.g., Bonnel et al., 2003) and exceptional short and long term pitch memory, (e.g., Heaton et al., 1998). Appelbaum et al. (1979) found that children with ASD had an enhanced capacity for reproducing musical stimuli, over that of their neurotypical counterparts.

These studies are supported by the findings related to Harper's case. Harper, his mother, and his school records all indicated that Harper had perfect pitch, and possibly synesthesia. Furthermore, Harper's data analysis revealed that he had an extreme interest, memory, and sensitivity to environmental sounds which he enjoyed recreating whenever possible. Furthermore, Harper composed the piece "In-Different," and learned the piece, "Light and Day" (DeLaughter, 2002) by ear; music notation was only used afterwards for record keeping and accuracy checking.

Callie's findings do not support the findings in the literature as strongly. Callie's learning process did involve the use of her ears, but was more of a gradual process of trial and error. She used the sheet music more often, and was sometimes very focused on the music notation. Callie learned her music through a process of exploration and recursion. Her findings are better explained by the processes of *exploration* and *discovery* as described by Reimer (2003). Interestingly, our mutual selection of the term *exploration*

is coincidence, but we use it in a similar connotation. Reimer postulates that musical creation requires some “searching out,” or “exploration of the expressive possibilities of the sounds the musician is using” (Reimer, 2003, p. 137). Reimer posits that this music occur because “a certain level of skill must be attained before creative thinking and doing can occur,” (p. 130). As the musician works they discover new meanings, and this further informs their practice. Reimer clarifies this by saying that while the “musician works on the sounds and the sounds work on the musician,” (Reimer, p.138). He claimed that “the thing created contains its profundity and quality and intensity *because of the interaction* between the musician and the sounds (emphasis in original),” (Reimer, p. 138). This moment of creativity and profundity is supported by Callie’s moments of Uninhibited Release – when, after much exploration and recursion, she performed music that displayed intense emotion and a high level of aesthetic creativity.

**Alexithymia and the recognition of musical emotions.** Alexithymia is a disorder characterized by a reduced affective or absent affective response. A number of studies have been completed that show that the empathy deficit widely observed in individuals with ASD may be explained by the extent of their alexithymic traits. Recent studies suggest that many individuals with autism can detect emotions, especially when an emotion is presented through music. In a number of controlled studies, individuals with autism could match emotive faces or pictures with similarly emotive musical excerpts (e.g., Heaton et al., 2008). In one scenario it was found that students with ASD were able to perceive and integrate musical soundtracks with visual displays in ways equivalent to their neurotypical peers (Bhartara, 2008). Galvanic skin tests, and word association tests

also revealed no significant differences, aside from the fact that individuals with ASD selected fewer words than the neurotypical controls (eg., Allen, et al., 2010).

Callie's written and verbal responses greatly support these studies. In this study, rather than being given a controlled scenario, Callie was asked to reflect on her lesson experiences through open-ended questioning. Callie's reflections were deeply emotional. Furthermore, her emotional interpretations were appropriate and detailed; not only was she receiving the "correct" emotive message according to my own assessment, but she was able to explain it at great length. The length of her responses might contest the finding by Allen et al., (2010), because she used a great number of words, rather than the few his participants selected.

Harper's musical and verbal and non-verbal responses also support these studies. During our improvisations, Harper was noted to appropriately respond to the emotive character of music we improvised, and also recognized and described the emotion of the piece, "Light and Day" (DeLaughter, 2002) with accuracy (again, according to my own interpretation) and with great clarity. Furthermore, Harper demonstrated the ability to share his feelings and thoughts about music verbally in his own time, and when it was natural to him, though he often provided brief and non-interpretive responses when prompted. This shows some congruency with Allen et al., (2010) again, because Harper could identify the mood and feelings, but often provided very few words when directly questioned. However, this could also be attributed to what Reimer calls "sound-think," or "musical thinking." These words describe a type of thinking that is characterized by thinking in sound and music. These ways of thinking are not easily, or even impossible, to translate into words. Reimer explained how through this process we may notice



thoughts without naming them because we are “perceptually structuring” sounds without explaining. Reimer clarified that “language need not be and typically is not applied to the sounds we are engaged with in musical experience,” (2005, p. 143). It is possible that Harper could only supply pure emotive words, because when he was making music he was not thinking in language, did not see the connection to language, or did not have the language skills to describe this experience. Harper may have experienced music in ways his language skills did not permit him to share. This would be likely considering that his diagnosis and Chapter 4 divulged certain social and speech deficits.

**Communication and the Zygonic Theory.** The Zygonic Theory, developed by Adam Ockelford (2002, 2004; Ockelford, Welch, Zimmerman & Himonides, 2005) provided a model of how players can share influence, interact, and even converse as they improvise music together. Ockelford (2007, 2008, 2010, 2012) applied this theory to instances where students with autism improvised with their teachers. From these studies he discovered that the children, despite their autism, could be very empathetic and competent improvisation partners. He found that their musical interactions ranged from simple to highly sophisticated. Furthermore, for some children who had limited verbal ability, it served as a proxy-language. The students he encountered were able to influence the music being created, start and stop improvisations at their own will, provide emotive feedback, deliver musical anecdotes, and even convey wishes through their control of the musical material at hand.

These findings are deeply congruent to what I observed and experienced while teaching Harper. As Harper and I improvised pieces, he would often react both musically and non-verbally. We often worked in a reciprocal turn-taking fashion. Harper, just as

Ockelford's students, proved to be both an empathetic and competent musical partner. These findings also align with the philosophy of Bennett Reimer. Reimer (2005) believed that music could communicate in two ways. It could communicate in such a way to designate things, ideas, and emotions, just as language might, but could also communicate in ways that "go beyond" the explicability of language. He believed that music could represent ways of thinking that did not require, or benefit, from language. In fact, through a process Reimer called "perceptual structuring," he believed music could exist to create and share meanings unavailable through language. This process involves insightfully, mindfully and intelligently recognizing phenomena through the act of perception and "actively structuring our experiences in all sorts of complex ways that often never become named by symbols," (Reimer, p. 144). Perhaps this notion is most clear in Reimer's statement,

We hear and feel the musical gestures, we are conscious of them, we "know" and "understand" them, we "grasp their meaning," but we can't say what that meaning is because it is "sensory-perceptual" or felt in nature and hence not communicable by language. (Reimer p. 159)

Callie's findings did not reveal the same kind of interactive music making. Even Callie's instances of Uninhibited Response seemed more personally communicative, than interactive. When Callie performed she seemed to be channeling the music from somewhere internal, and I, the accompanist, was just supplying a backdrop. That is not to say that she did not have communicative desires. Her desires to impress the audience, and "pull at their heartstrings" were shared many times. This desire represents a performer-to-listener, rather than performer-to-performer relationship, and therefore does not directly support the zygonic theory.

**Qualitative studies of the responses and reflections of children and adolescents with autism to music education experiences.** There were only two qualitative studies that investigated the responses and reflections of students with autism to music education experiences. Fang (2009) examined the communication of children with autism in regards to their music experiences at home, in school, and in piano lessons. Her findings indicate that music enabled the students to interact with other humans in their environment in a positive way. She found that music study also helped them with routine, memory, mood regulation, and motor skills. Furthermore, she found that music study increased their self-esteem, and most obviously, helped them develop musical skills. In the second study completed by Halliday (2012), the student's responses and reflections were gathered only in their music education classroom. She found that the students had the capacity to critically reflect on their own experiences, to self-correct, and to evaluate their own performances. The findings in this study support some aspects of these studies. Both Harper and Callie showed the ability to self-correct, showed the ability to evaluate their own performances, and critically reflect on their own work. This study did not investigate how music effected mood regulation, self-esteem, or motor skills, so a comparison cannot be made.

**Qualitative studies of the responses and reflections of neuro-typical children and adolescents to their music education experiences.** A broad survey of literature was used found that qualitatively explored children's responses to and reflections on their music and music education experiences. There were no stark contrasts, rather, just varying levels of congruency. The studies that are the most strongly supported by my findings are those by Barrettt (1996, 1999), Burnard (1999, 2000, 2000b), Biklen (1991),

and Rodriguez and Webster (1997). DeLorenzo (1989) and Silverman (2013) show a more specific relationship my cross-case analysis.

Barrett (1996, 1999) discovered that children could share their musical thought processes, interpretations, and understandings when they are given the opportunity to do so, but their modes of sharing were heterogeneous (i.e., verbal vs. non-verbal), and had to be observed throughout the completion of a variety of tasks. With this she found that children's musical actions and discourse provided direct access to their musical and aesthetic thinking processes. The participants in this study would contribute to this finding because their preferred modes of communication were unique, and did vary based on task. With this flexibility, both Callie and Harper were able to share a great deal of information regarding their thought processes and aesthetic sensibility. This provides some evidence that the heterogeneity found among children with autism, is just an extension of the heterogeneity found among neurotypical students, and that the responses and reflections of students with autism can yield similar information to those of normally developing children.

Burnard (2000, 2000b) synthesized many studies that of children's discourse on music and musical experiences. She found that children can talk eloquently on their musical experiences and that child composers and improvisers can and do meta-cognitively explore and contextualize the meaning related qualities in their own music and music making. My findings support these findings, because both Harper and Callie were able to use verbal communication in their own way to share explore and contextualize their understandings.

Burnard (1999) found that when children were engaged in student-directed improvisation and composition activities they not only used past experiences to solve problems, but also discovered they had a “knowing body,” meaning that when they were freed to experiment they gained access to a previously untapped body of existing ideas and movement patterns encoded in their memory. As Harper and I improvised he was able to continually draw forth musical responses that were both original and stylistically appropriate. The sophistication of these responses often exceeded the skills and techniques he had learned through his formal education. This was also true when Callie spontaneously, creatively, and emotionally interpreted her performances pieces during our final lessons. In other words, with opportunities to respond to their own music making in creative ways, both students were able to produce results that exceeded the expectations of their training. Without these opportunities these abilities may have gone unrealized.

Biklen (1991) found that the self-reports of 7<sup>th</sup> and 8<sup>th</sup> grade students provided information pertaining to six basic dimensions of their music understanding: technical, affect, extra-musical (e.g., creative, imaginative), connections to other experiences and knowledge, comparisons to other music, and speculative. Callie and Harper both shared their technical (e.g., literal), affective (e.g., emotional), extra musical (e.g., creative), connections to other experiences (e.g., associative), and comparisons to other music (e.g., associative), and speculative (e.g., reflective) dimensions of understanding through their own unique modes of communication.

Rodriguez and Webster (1997) found that by listening to children’s interpretive responses he could draw connections between children’s perceptions of musical elements

amid other contrasting forces, such as their feelings and cultural knowledge. The two participants in this study both shared interpretations at different points during the lesson process that connected their feelings and cultural knowledge with the music at hand.

The studies by DeLorenzo (1989) and Silverman (2013) both found that children's learning can be more effective when they are afforded the power to make content decisions, and given creative opportunities. The children in this study both responded very well to the task of choosing content, and creating original pieces. Their motivation stayed high through out the project, and they successfully accomplished all of their goals.

These key connections between my study and the existing literature draw new meaning to this study because they reveal potential similarities in the ways students with autism and neurotypical students respond and reflect. When provided a broad range of musical activities and opportunities, and when allowed to share their thoughts through numerous modes of communication, they were able to share a number of insightful responses and reflections that gave indication to their learning and creative process, as well as to their associations, feelings, understandings and empathetic capacities.

### **New Connections**

Harper's theme of Attunement brought me to investigate new connections between my findings and other current literature. Three studies were found to be particularly relevant. His process of communicating through attunement supports the work of Oldfield (2006) who states that non-verbal improvised musical exchanges were the main focus of her therapy approach with children with autism, not simply one aspect of it. Kim et al. (2008) found that musical attunement opened and increased the

communication and attention of children with autism over time. Barnes (2010) found that attunement was critical to the communicative development of preschool students with autism. The findings in this study indicate that attunement may also have benefits for certain students with autism if recognized and implemented in music classrooms.

### **Concluding Remarks**

In this final section, I conclude with my own interpretations of this study that bear particular significance, and provide implications for teaching professionals and future researchers.

### **Significance and Implications**

Campbell (2010) stated that music “exists in children’s lives because of their biological abilities to discern it, feel it, and express it” (p. 271). This multiple case study does not provide the same type of evidence that is available through a statistical analysis of a larger body of individuals, rather, this is an in-depth analysis of the responses and reflections of two children. Through a combination of conversations and observations, I searched for all possible ways that their thinking was made visible, and described what I believed these observations revealed about their understandings and meaning structures. While the views of these two children cannot give way to all the broad views of all children with autism, I do not believe these cases can be considered wholly idiosyncratic. I argue that on some level, each individual can be considered a part of what John-Paul Sartre called the “universal singular” (1981), and believe that on some level the reflections herein do extend beyond the borders of this field work, and can, in some way, be prescriptive as well as descriptive.

John Sloboda (1985) claimed, “music is not a closed sub-system...there is some ‘leakage.’ Musical experience is translated into other representational modes” (p. 59). This study revealed evidence that both children expressed their musical experience in various communicational modes. Instead of being able to understand their thoughts through one form of communication -- language, it was necessary to recognize and integrate a complex interplay of words, music, facial expression, and gesture, and to realize how these signs may be indicative of thoughts, feelings, and associations.

Furthermore, the meanings of these symbols were deeply connected to the disposition of the student and music at hand. The words, notes, and movements that each child made were replete with their own phonemes and structures; their responses were imbedded with melodies, rhythms, and messages with ideas both concrete and abstract. In their own unique way each child used particular modes of communication at particular times to share information about their underlying beliefs, sentiments, knowledge, understandings, and feelings.

Lastly, the various modes of communication that revealed these different mental organizations, and multiple levels of meaning were not channeled through one means of musical instruction. This educational program was designed to include music that the children produced, preferred, heard, played, sang, and imagined. It was a program that considered the various things children should “know and be able to do” as a part of the National Standards of Music Education, which were written in hopes of benefitting both abled and disabled children, and to build “bridges to things we can scarcely describe, but respond to deeply” (MENC, 1994, pg. 7).



From the experience of working with each of these children I believe music educators can generate stronger communicative practices with individuals with autism, and create more inclusive classrooms through the following interventions:

1. *Investigate what interests and motivates each student.* If one tactic fails, trying something else. Interview the child and/or their parent, and learn as much about their background as possible. As I learned more about these two students and gradually drew connections between our classroom activities and the rest of their world, I adjusted. The most critical and profound responses and reflections flowed naturally in response to a musical event that was in some way true to their personal world view. These critical moments became the launch pad for further development. My prompts and pleads for Callie to choose a song topic was rather ineffective in comparison to the overwhelming inspiration of Big Mama Thorton's voice. The pedagogical choice to allow the continual transactions between the students' interests, my expertise, and the music at hand influence the educational program may have created an environment where responses and reflections were not only valued, but needed, and thus, bountiful.
2. *Provide students with a broad spectrum of musical experiences in a variety of contexts.* Callie and Harper did not respond deeply to all activities all the time. Nor did they respond to the same activity in the same way in all cases. For example, as we listened to numerous popular songs during our first lessons, some songs caused a reflective response, while others did not. When Harper and I improvised, some musical material led to extended responses,

while others did not. The most successful instances came as a result of experimenting with various mixtures of activity and context. Improvising on piano might yield different results than improvising on drums; composing electronically might yield different results than composing on paper; listening to current popular songs might yield different results than listening to popular songs of the 90's (i.e., Harper loved Carly Rae Jepsen, but was not impressed with U2). Keep experimenting with modes and motivations until something captivates your learner, and then move forward.

3. *Define language expansively.* Music may affect several thinking and feeling domains within the mind and body of each student. Music may hold many and various meanings to each student and trigger a variety of responses and reflections. Observe all aspects of a child's behavior. Learn to interpret a child's symbolic use of music, words, gesture, facial expression, and sign in relation to their mood, energy level, and emotion. Determine what environmental stimuli caused the student to use such a symbol. As you develop these skills you may also begin to understand certain associations they are making as they compose, or the sentiments they hear conveyed through musical sonorities, or realize what they are expressing when they are musically thinking in a spontaneous improvisation.
4. *Responsive and reflective relationships are key.* No two students on the autism spectrum are alike. They are each a "mosaic of sorts, with colorful pieces contributing in complex ways to form the whole of {their} physical, social, intellectual and emotional selfhood" (Campbell, 2010, p. 273). Just as

the multiple aspects of their disabilities are often well analyzed and well documented, so should the more personal aspects of who they are. Getting to know each student, and spending time with them individually can enable teachers to more holistically assess each student's strengths and weaknesses. Establishing a relationship where each child feels that their ideas and idiosyncrasies are valued, understood, and enjoyed can help them feel safe, inspired, and enabled. Perhaps the greatest challenge for teachers in developing strong relationships with students with special needs is learning to see past their differences, and into their human qualities, and then, helping them see those aspects in themselves. It is here, in this space that they are free to see themselves for who and what they are. It is here that their true individuality and personhood lies. It is here that they can feel balanced, feel that their give-and-take matters, and have access to the full meaning of their musical experiences. These relationships create a responsive and reflective environment where teachers have access to what music children have known in their pasts, and what they want to know. By having such information teachers can thoughtfully create lessons plans and design instruction that will help students, with and without autism, fully realize their capacities as musically expressive individuals.

### **Limitations and Future Directions**

As mentioned, the significance of this study is limited in certain ways. While the participants I studied do add to the current body of literature, they do not alone confirm that these results would be applicable to a broader population of children with autism, or without. Autism is known to be a heterogeneous disorder which effects each diagnosed individual differently from the next. Each case has its own display of diagnostic features and each feature varies in severity.

Furthermore, this study was also completed in a progressive school specifically for children with special needs and learning differences by a teacher-researcher who had training and experience working in inclusive and special needs classrooms. This situation likely had an effect on the outcomes.

The findings and limitations of this study suggest that more research needs to be done to understand how individuals with autism respond and reflect when creating, performing and responding to music. I believe further research could duplicate this study with similar students, students of different ages, or students with different diagnostic features and severities (i.e., less verbal) in search for cross-case connections. This may lead to more informed generalizations and possibly to grounded theories. New studies could also compare responses and reflections of students with and without autism in inclusive classrooms. Future investigations may also explore how students with autism respond to and reflect on tasks that require collaborating with peers. It may also be advantageous for future researchers to allow students to watch and interpret their own responses and reflections from video recordings. Finally, there may be certain benefits if

future researchers use different methodologies or analytical approaches, such as discourse analysis or phenomenology.

### **Final Thoughts**

The world is full of different people, “very different, all good, each of value,” (Smith, 1994). So many contextual features play a part in understanding and interpreting the responses and reflections of children with autism, that the task can be daunting. However, it is, perhaps, in the very act of learning how to hear and attune to their unique voices, and in truly listening, that we can receive the greatest insights into how they learn. In this study, I pursued this challenge and learned that both students, in similar and different ways, reflected upon themselves, their past, their culture, their experiences, and their feelings. They demonstrated the capacity to respond creatively, willingly, spontaneously, and empathetically. By bringing the voices of more students with autism into higher academic discourse, we may be able to develop more inclusive strategies that enable these individuals to thrive in music classrooms. It is my hope that studies like this one will illuminate the messages embedded in the each child’s unique form of self-expression, and bring each child to feel noticed, intelligent and valued. Harper clarified this sentiment perfectly when he was asked why he wanted to write a song about being funny, smart and talented. He sweetly replied, “Because I am, and people need to know that about me.”

## APPENDIX A

### Harper's Lesson Plans

**Student: Harper**

**Date: September 6, 2013**

**Lesson 1 of 5**

**Goal:** The goal of this lesson is to introduce the student to improvisation, song writing tools (rhythmic, melodic, and harmonic patterns, and major and minor chords), and a performance piece of his choice. This lesson will include opportunities for the student to create music, respond to music, and begin preparation for a performance.

**Objectives:**

1. The student will practice several major and minor scales on the piano.
2. The student will improvise vocally and on the piano, at first freely, and then within specified guidelines from the teacher.
3. The student will listen analytically to song examples to identify rhythmic, melodic and harmonic patterns.
4. The student will aurally identify major and minor chords.
5. The student will play the standard major and minor chords in the key of C major.
6. The student will visually analyze, discuss and experiment with the standard major and minor chords in the keys of C and D major.
7. The student will listen to and examine the score of "Light and Day," by Tim DeLaughter.
8. The student will identify repeated melodic patterns and rhythmic patterns.

**National Standards:**

1. Singing, alone and with others, a varied repertoire of music.
2. Performing on instruments, alone and with others, a varied repertoire of music.
3. Improvising melodies, variations and accompaniments.
5. Reading and notating music.
6. Listening to, analyzing, and describing music.
9. Understanding music in relation to history and culture.

**Materials:**

1. Powerpoint presentation containing agenda, visuals, and listening examples.
2. Scores of possible performance pieces.
3. Piano
4. Interview protocol.

**Procedure:**

1. **Entrance Routine:** Meet the student and show him the two keywords of the unit we will be exploring over the 6 sessions: Improvisation and Composition. Show him the condensed schedule for the hour on the Powerpoint.
2. **Engagement:** Invite the student to improvise freely at the piano. Next, ask the student to review several scales, making sure to play C major and D major. Allow the student to improvise a few short melodies using scales while the teacher plays a series of standard pop and folk song chord progressions.
3. **Explore:** The student will listen for and imitate the various melodic, rhythmic and chord patterns in “We Will Rock You,” by Queen, “Fire” by Jimi Hendrix, “Sunday, Bloody Sunday,” by U2, “Iron Man” by Black Sabbath, and “Call Me Maybe,” by Carly Rae Jepsen.
4. **Explanation:** The student and teacher will discuss how chord progressions are a crucial pattern found in music. The teacher will explain how the scales played earlier have an associated set of major and minor chords. Each major and minor chord is given a number depending on the scale degree it is built on.
  - a. **Guided Practice:** The teacher will play a series of chords, scales and short melodies, asking the student to identify whether the quality of the example is major or minor.
  - b. **Modeling:** Teacher will demonstrate how to use the major and minor chords, referencing the chord numbers, to improvise a song. She will begin by demonstrating a chord progression in her left hand, and then show how a melody can be added using the corresponding scale.
  - c. **Guided Practice and Exploration:** Student will join the teacher at the piano. The student will improvise melodies to compliment chord progressions being supplied by the teacher. The teacher will identify and label the chords visually.
5. **Engagement:** Teacher allows student to choose own performance piece from a list. Student and teacher watch and listen to the music video together.
6. **Explore:** Student and teacher examine the score and make note of important sections related to rhythmic, harmonic, and melodic patterns, as well as major and minor chords. . We may form generalizations about the piece, reflect on its challenges.
7. **Expand:** If time allows, make decisions together about how to start the piece, and apply previous knowledge and skills toward the next rehearsal.

**Assessment:** Student’s work will be informally but fluidly assessed throughout the session. Corrections, accommodations and instructional directions will be given in response to the student’s perceived level of understanding and readiness to progress. This lesson will be formally analyzed after the session using the video recording.

**Closure:** The researcher will use her observational notes and the student’s work samples to conduct the interview described in the protocol.

**Student: Harper**  
**Date: September 20, 2013**  
**Lesson 2 of 5**

**Goal:** The goal of this lesson is to continue to explore improvisation and composition through the process of song writing, as well as rehearse the performance piece, “Light and Day.”

**Objectives:**

1. The student will perform the C major, D major, G major and A minor scales on the piano from memory.
2. The student will practice aurally identifying the I, V, IV, and vi chords of a major key.
3. The student will play the bass line (I, V, IV, vi) of “The Four Chord Song” by Axis of Awesome while listening to the song.
4. The student will rehearse for his performance of “Light and Day,” with particular attention to the introduction, and the solo section.
5. The student will suggest possible topics for an original song.
6. The student will work with the teacher to choose possible chord progressions for his original song.

**National Standards:**

1. Singing, alone and with others, a varied repertoire of music
2. Performing on instruments, along and with others, a varied repertoire of music.
3. Improvising melodies, variations and accompaniments.
4. Composing and arranging music according to specified guidelines.
5. Reading and notating music.
6. Listening to analyzing and describing music.

**Materials:**

1. Piano
2. Powerpoint presentation containing agenda, visuals, and listening examples.
3. Bass Xylophone
4. Sheet music for “Light and Day” by Tim DeLaughter (2002).
5. Blank staff paper, loose leaf and pencils for drafting song.
6. Interview protocol.

**Procedure:**

1. **Entrance Routine:** Meet student at door and share the keywords and agenda with him.
2. **Engagement and Chord Theory Review:** Play both free and guided improvisations on the piano, and review C and D major scale, as well as the chords in those keys.
  - a. **Expand:** Exchange Arabic numerals for Roman Numerals. Show how lower and upper case represents major and minor.



- b. **Guided Practice:** Practice playing chords in D major with Roman numerals as cues.
  - c. **Guided Practice:** Practice aurally identifying major and minor chords in the key of D by both number and quality.
  - d. **Guided Practice:** Axis of Awesome.
    - i. Watch the Axis of Awesome video, *Four Chord Song*.
    - ii. Listen for the four chord changes. Sing along with the changes.
    - iii. Play the bass line on xylophone with the video.
2. **Analyze and Rehearse: “Light and Day”**
- a. Using the concepts practiced above the student will analyze the chord progression of “Light and Day.”
  - b. The student will practice singing and playing the melody of the piece, while the teacher supports by playing the harmony.
3. **Compose: Write Our Own Song**
- a. The teacher will help the student select a topic to sing about.
  - b. The student will choose a chord progression with the support of the teacher, that suits the mood or message of the topic
  - c. The teacher and student will improvise using various chord progressions and melodies searching for appealing and appropriate combinations.
  - d. The student will choose a progression, if possible.
  - e. The teacher will support the student in drafting lyrics; also a form may also be decided.
4. **Closure: Interview**

**Student: Harper**  
**Date: October 11, 2013**  
**Lesson 3 of 5**

**Goal:** The goal of this lesson is to continue to become more familiar with chord theory through the use of ear training, song analysis, and song writing, as well as explore a new style of composition through listening, as preparation for creation at the next session. The three main projects of this lesson series will now have all been introduced, and move into execution or completion phases.

**Objectives:**

1. The student will rehearse “Light and Day” by slowing the tempo of each section of the piece to check for accuracy and stability before adding further expression.
2. The student will improvise and experiment with chord patterns and lyric ideas for his original song.
3. The student will read a brief passage describing Terry Riley, and his piece “In C.”
4. The student will examine, analyze and sight-sing sections of the score for this piece in preparation for listening.
5. The student will listen to and discuss Terry Riley’s “In C” as being both a composition and an improvisation.

**National Standards:**

1. Singing, along and with others, a varied repertoire of music
2. Performing on instruments, alone and with others a varied repertoire of music.
3. Improvising melodies, variations, and accompaniments.
4. Composing and arranging music within specified guidelines.
5. Reading and notating music.
6. Listening to, analyzing, and describing music.
7. Evaluating music and music performances.
9. Understanding music in relation to history and culture.

**Materials:**

1. Piano
2. Score of “Light and Day” (DeLaughter, 2002).
3. Harper’s Lyrics and Chord progressions.
4. Score of “In C” (Riley, 1964).
5. Short informative text describing Terry Riley.

**Procedure:**

1. **Entrance Routine:** Meet Harper at the door, show him the schedule for the day. Allow him to freely improvise for 2-3 minutes at the piano.
2. **Engagement:** Play the C, D and G major scale together to warm-up. Play a flash card game as an accommodation to help Harper relax due to his onset of OCD-like thoughts and behaviors mentioned in Chapter 4.
3. **Engage and Explore:** Examine the score of Terri Riley’s “In C” for things we are familiar with and things we need more information to understand. Give an

overview of the performance instructions. Sight-sing certain loops to help us know what to listen for in the music tomorrow. Allow student to question and observe freely.

4. **Explanation:** Read about Terry Riley; discuss and verbally check for comprehension throughout. Look at Terry Riley's score and directions for playing the piece. Explain how the piece is a composition that relies on improvisation. Introduce the task of composing a piece with similar traits using computer software.
5. **Critique, Plan, Execute:** Listen to "Light and Day" again if needed. Allow student to critique his own progress and make suggestions about the next steps in completing the piece. Help student progress by:
  - a. Breaking the introduction in to small chunks to practice
  - b. Alternating singing and playing the verses and choruses
  - c. Allowing student to start improvising his own instrumental solo
  - d. Playing through as much of the piece as we can – the teacher will fill in any "blanks" so the student can hear the piece in entirety.
  - e. Embed ear training and analysis by singing chord numbers aloud.
6. **Create, Critique, Expand:** Continue writing an original song. Have the student use the tools that he has been provided such as common chord progressions, improvisation, musical thinking, and testing possible hypotheses.
7. **Closure and Informal Assessment:** Complete the planned interview.

**Student: Harper**  
**Date: October 12<sup>th</sup>, 2013**  
**Lesson 4 of 5**

**Goal:** To prepare for our performance of “Light and Day,” continue to develop Harper’s original song, and compose an original piece inspired by “In C.”

**Objectives:**

1. The student will reexamine the score of “In C.”
2. The student will compose an original version of “In C.”
3. The student will rehearse challenging sections of “Light and Day” slowly, checking for accuracy, and then at normal pace to work on fluidity.
4. The student will make a plan to add expressive elements such as dynamics, tone color, mood, and articulation, to “Light and Day.”
5. The student will write an additional verse of his original song, “Life is Great.”
6. The student will choose a chord accompaniment style (i.e., arpeggiated, blocked, punctuated) of the song “Life is Great.”

**National Standards:**

1. Singing, alone and with others, a varied repertoire of music.
2. Performing on instruments, alone and with others a varied repertoire of music.
3. Improvising melodies, variations, and accompaniments.
4. Composing and arranging music within specified guidelines.
5. Reading and notating music.
6. Listening to, analyzing, and describing music.
7. Evaluating music and music performances.
9. Understanding music in relation to history and culture.

**Materials:**

1. Piano
2. Score of “Light and Day,” (DeLaughter, 2002).
3. Harper’s song in progress
4. Score and recording of “In C” (Riley, 1964).
5. Short informative text describing Terry Riley
6. Staff paper
7. MixCraft 6 recording software

**Procedure:**

1. **Entrance Routine:** Upon entering, Harper will be allowed to freely improvise at the piano or a keyboard for approximately three minutes. Then we will begin by playing the C major, D major, and A minor scale on the piano. We will also play a game with flash cards to help calm Harper if he is struggling with anxiety.
2. **Engagement and Explanation:** Examine the score of “In C.” Look for details we may have overlooked in our first glance yesterday.
3. **Exploration:** Sight-sing the loops of “In C” to help us identify them in the recording.

4. **Exploration and Elaboration:** Listen to the recording. Identify when certain loops enter. Identify instruments. Make overall judgments about the piece – is it music?
5. **Elaboration/Application:** Compose a new version of “In C.” The following steps will help guide the process.
  - a. Choose a tonality – do we want the piece to be “In C,” or do we want to compose in another key?
  - b. Provide the student with the time and resources to compose a minimum of 5 loops. This can be done on paper, or through the MixCraft software directly.
  - c. Have the student produce a recording of himself either singing or playing his piece using MixCraft software.
6. **Evaluation and Exploration:** We will practice “Light and Day” slowly and in small chunks to check for accuracy. Then we will review the piece again to add and attend to expressive elements as possible.
7. **Elaboration:** We will continue the songwriting process by writing at least one more verse of lyrics. We will also try playing the accompaniment in a variety of ways to determine what sound quality suits the piece best. We will also try to solidify a chord progression for the chorus.
8. **Evaluation:** We will informally evaluate the lesson through the interview provided in the protocol.

**Student: Harper**  
**Date: October 18<sup>th</sup>, 2013**  
**Lesson 5 of 5**

**Goal:** Complete songwriting and composition projects. Introduce the blues scale and improvise with it to prepare him for better understanding of Callie's presentation at the next lesson.

**Objectives:**

1. The student will rehearse the introduction and solo section of "Light and Day" slowly, allowing the fingers to learn the patterns securely.
2. The student will through rehearse "Light and Day," mimicking a performance.
3. The student will through rehearse "How Great Life Is," mimicking a performance.
4. The student will be introduced to the history and culture of the blues through interactive discussion, visuals, and recordings.
5. The student will learn to play the chords and scale of the 12 bar blues in C major.

**National Standards:**

1. Singing, alone and with others, a varied repertoire of music.
2. Performing on instruments, alone and with others a varied repertoire of music.
3. Improvising melodies, variations, and accompaniments.
4. Composing and arranging music within specified guidelines.
5. Reading and notating music.
6. Listening to, analyzing, and describing music.
7. Evaluating music and music performances
8. Understanding music in relation between music, the other arts, and disciplines outside the arts.
9. Understanding music in relation to history and culture.

**Materials:**

1. Piano
2. Score of "Light and Day," (DeLaughter, 2002).
3. Harper's Original Song
4. Blue's history and theory Powerpoint
5. Blues scale and chord progression handout
6. Score of "Joe Turner Blues"

**Procedure:**

1. **Entrance Routine:** Harper will enter the room, and be allowed to improvise freely on the keyboard or piano. After this, we will go over the schedule for the day and state our goals. To help Harper focus and relax we may also play a game with flash cards.
2. **Explore and Explain:** We usually also warm-up with scales, and so today a new scale will be introduced: the blues scale. Harper will review the function of a sharp and flat symbol, and then be shown the notation of a blues scale. We will practice playing the scale and maybe even try improvising with it if he is ready.

3. **Explore and Explain:** We will have an interactive discussion surrounding the visuals, recordings and short reading passages of a Powerpoint presentation on the blues.
4. **Elaborate:** We will begin to apply our basic understanding of the blues to playing the “Joe Turner Blues,” which is an example of a standard 12 bar blues. We will discuss the lyrics of this song as related to the struggle of African Americans at the turn of the 20<sup>th</sup> century.
5. **Guided Practice and Performance Preparation:** We will rehearse “Light and Day,” and “Good Things to Do I Life.” We will work together to critique the completeness of both pieces, and strategically make improvements before sharing the pieces at the next session.

## APPENDIX B

### Callie's Lesson Plans

**Student: Callie**

**Date: September 3<sup>rd</sup>, 2013**

**Lesson 1 of 5**

**Goal:** The goal of this lesson is to introduce the student to improvisation, song writing tools, and a performance piece of her choice. This lesson will include opportunities for the student to create music, respond to music, and begin preparation for a performance.

**Objectives:**

1. Improvise accompaniment to “Three Little Birds” by Bob Marley.
2. Introduce chord theory as it pertains to songwriting.
3. Practice aurally identifying major and minor chords.
4. Practice playing the C major scale.
5. Listen to, and begin learning the piece “King of Anything.”

**National Standards:**

1. Singing, alone and with others, a varied repertoire of music.
2. Performing on instruments, alone and with others, a varied repertoire of music.
3. Improvising melodies, variations and accompaniments.
5. Reading and notating music.
6. Listening to, analyzing, and describing music.
9. Understanding music in relation to history and culture.

**Materials:**

1. Piano
2. Powerpoint presentation containing agenda, visuals, and listening examples
3. Sheet music for “King of Anything,” by Sara Bareilles
4. Interview protocol

**Procedure:**

1. **Entrance Routine:** As Callie enters the space, she will be allowed to explore the piano freely. After a few minutes I will go over the schedule with her, and perhaps join her for some improvisation. Before the lesson, she was asking to show me an idea she had to improve “Three Little Birds” so this will be an opportune time or her to share.
2. **Engage and Explore :** Callie will be introduced to songwriting through an interactive Powerpoint presentation that reveals how many songs are built of patterns of various complexity.
  - a. Listen to several song examples:
    - i. Identify the patterns in each, be they melodic, harmonic or rhythmic.



- b. Introduce her to the most complex of the patterns: chord progressions. Allow her to share her impressions, then explore chords in terms of quality and key.
  - i. Quality of chords
    - 1. Major vs minor exploration
      - a. How to write chords for song writing using upper and lower case letters
      - b. An overview of the theoretical difference (intervals)
      - c. Identification of major and minor chords by ear
      - d. Playing various major and minor chords on the piano
    - 2. Key: Chord progressions are derived from keys, or tonalities.
      - a. Introduce the C scale, allow Callie to play the scale several times on her own.
      - b. Demonstrate how major and minor chords correspond with the scale, and also function to lead us toward the home note, C.
      - c. Illustrate and demonstrate the pattern of major and minor chords in C major.
      - d. Ear Training: start by challenging Callie to identify the I an iv chord by ear, if possible add the IV or V as well.
      - e. Illustrate how the major and minor chords can also be shown in Roman numerals.
- 3. **Exploration:** Choose a song to learn (King of Anything, by Sara Bareilles)
  - a. Listen analytically to the piece together. What draws you to the piece? What is the message? What does Sara Bareilles do expressively to make the piece work (i.e., dynamics, tempo, articulation, etc.)?
  - b. Examine the score, particularly at the chord symbols. What do we recognize that we learned earlier in the lesson? Do we see any patterns?
  - c. Also identify major events in the score (repeats, dal segno, coda, etc.)
  - d. Sing through the piece together to get an overview.
- 4. If time, brainstorm topics for an original song.
- 5. **Exit Routine:** We will close the lesson with the interview described in the protocol.

**Student: Callie**

**Date: September 10<sup>th</sup>, 2013**

**Lesson 2 of 5**

**Goal:** The goal of this lesson is to allow Callie to explore her interest in Reggae music more deeply through its history and culture, and to continue developing her own interpretation of the piece “Three Little Birds,” through improvisation and critique. This lesson is also designed to continue developing her understanding of chord functions and progressions so she can begin to write her own song.

**Objective:**

1. The student will improvise vocal melodies, vocal harmonies, and piano accompaniments for the song “Three Little Birds.”
2. The student will read about the history of Reggae music and listen to two songs that demonstrate its progression over time.
3. The student will prepare for writing her own piece by practicing scales and chord progressions on the piano.
4. The student will brainstorm topics for her original piece.

**National Standards:**

1. Singing, alone and with others, a varied repertoire of music.
2. Performing on instruments, alone and with others, a varied repertoire of music.
3. Improvising melodies, variations and accompaniments.
5. Reading and notating music.
6. Listening to, analyzing, and describing music.
8. Understanding the relationship between music, the other arts, and disciplines outside the arts.
9. Understanding music in relation to history and culture.

**Materials:**

1. Piano
2. Drums
3. Bass xylophone
4. Score of “Three Little Birds,” by Bob Marley and the Wailers
5. Score of “King of Anything”
6. Reggae history presentation
7. Songwriting presentation (from first lesson)

**Procedure:**

1. **Entrance Routine:** Free improvisation, share daily schedule.
2. **Engagement:** Begin by practicing “Three Little Birds” as we have played it previously.
3. **Elaboration:** Together, improvise new piano and vocal ornamentations, two-part harmonies, perhaps add percussion.
4. **Exploration and Explanation:** Provide an overview of the history of Reggae.

- a. Read WWII and Radios found at:  
<http://histclo.com/essay/war/ww2/cou/island/car/w2c-jam.html>
  - b. Listen to the original ska version of “One Love” by Bob Marley and the Wailers and then to the Reggae version of the same song.
    - i. Key Question: What are the differences between the pieces? What gives each its unique sound?
5. **Explanation:** Review C Scale and its respective chords to prepare for songwriting. Draw the C scale on the staff, learn to play it on the piano, improvise tunes using the C scale.
6. **Explanation:** Demonstrate how to create a song through improvising a piece for Callie, using the scale and chords she has just reviewed.
  - a. Use HookTheory.com for visual and interactive demonstrations of how chords and scales are combined in popular songs.
  - b. Re-examine the score of “King of Anything,” as another example.
7. **Elaboration:** Ask Callie to brainstorm some topics for her original song. To help guide her, show examples of different songs that:
  - a. Use poetry as a lyrical source (i.e., “Helpless,” by Neil Young).
  - b. Use prose and narrative as a lyrical source (i.e., “Boy Named Sue,” Shell Silverstein, or the adaptation by Johnny Cash).
  - c. Have a list of general topics that Callie can personalize.
8. **Exit Routine:** We will close the lesson with the interview described in the protocol.

**Student: Callie**

**Date: September 17<sup>th</sup>, 2013**

**Lesson 3 of 5**

**Goal:** This goal of this lesson is to provide Callie with a variety of activities that will prepare her for performing a piece, as well as for writing an original song.

**Objectives:**

1. The student will review the C scale, and learn the G and D scales.
2. The student will be introduced to whole and half steps through scale theory.
3. The student will receive an introductory voice lesson that focuses on producing a healthy tone, and vocalises the student can use for practicing.
4. The student will practice “King of Anything” by listening to the piece, carefully studying the score, with particular attention to the melody, and the meaning of the lyrics.
5. The student will identify and follow the Dal Segno, Coda and repeat signs after reviewing their definitions.
6. The student will aurally identify and notate major and minor chords.
7. The student will correctly play the bass line of “The Four Chord Song” by the Axis of Awesome.

**National Standards:**

1. Singing, alone and with others, a varied repertoire of music.
2. Performing on instruments, alone and with others, a varied repertoire of music.
5. Reading and notating music.
6. Listening to, analyzing and describing music.

**Materials:**

1. Piano
2. Video of “The Four Chord Song,” by Axis of Awesome
3. Score of “King of Anything,” by Sara Bareilles
4. Extra paper and pencils.
5. Interview protocol

**Procedure:**

1. **Entrance Routine:** Callie will be given time to freely improvise on an instrument of choice.
2. **Engagement:** We will play the C scale, and I will also introduce the G scale. The terms half-step and whole-step will be introduced and we will look at how both scales share the same pattern of half and whole steps.
3. **Examine:** We will examine the score of “King of Anything,” and identify the del segno, coda, and repeat signs.
4. **Explore and Explain:** The student will prepare to sing by exploring body alignment and technique as explained by the teacher. The student will then be led through a series of vocalises designed for the beginning voice student.

5. **Explore and Examine:** The student will begin to learn to sing the piece by examining the lyrics, exploring how the piece fits in their voice, and by studying the melodies of the vocal part both in the score and by hearing it played on the piano.
6. **Exploration and Examination:** We will continue with ear training exercises to recognize the differences between chords, but now also try to identify chords by their scale number, in addition to their quality. The process will begin by identifying the I and vi chords, and then if the student is ready, expand to include the IV and V chords in the key of C major.
7. **Exploration and Examination:** The student will listen to the I V vi IV progression in “The Four Chord Song” by Axis of Awesome. She will play the bass line of the progression on the bass xylophone to clarify the changes, and reinforce the auditory skill kinesthetically and visually.
8. **Closure:** We will close the lesson with the interview described in the protocol.

**Student: Callie**

**Date: September 24, 2013**

**Lesson 4 of 5**

**Goal:** The goal of this lesson is to find inspiration for Callie’s original song by exploring the blues through a variety of activities, and to rehearse “King of Anything.”

**Objectives:**

1. The student will practice the C and G Major scale, and add D major (key of “King of Anything”) with the teacher’s guidance.
2. The student will practice aurally identifying the 1 5 6 and 4 chords of a major key from examples provide on the piano by the teacher.
3. The student will analyze the chords used in the song “King of Anything.”
4. The student will be introduced to the blues style through listening examples, a slide presentation, and by performing the blues scale vocally and on the piano.
5. The student will improvise using the blues scale both on the piano and vocally.
6. The student will choose a topic for an original song.

**National Standards:**

1. Singing, alone and with others, a varied repertoire of music.
2. Performing on instruments, alone and with others, a varied repertoire of music.
3. Improvising melodies, accompaniments and variations.
5. Reading and notating music.
6. Listening to, analyzing and describing music.
8. Understanding the relationship between music, the other arts, and disciplines outside the arts.
9. Understanding music in relation to history and culture.

**Materials:**

1. Piano
2. Blues Powerpoint containing listening examples, visuals of scale and chords, and historical and cultural information
3. Score of “King of Anything” by Sara Bareilles
4. Paper and pencil for original composition

**Procedure:**

1. **Entrance Routine:** The student will be given time to free improvise for a few minutes, then we will go over the schedule together.
2. **Engage:** The student will warm-up with the teacher by reviewing the C and G major scales, and then trying the D major scale for the first time. The student will also then briefly review the scale degrees, and their corresponding chords.
3. **Engage:** The student will practice the bass line from the four chord song, to reinforce her understanding.
4. **Elaborate:** The student will play the bass line of “King of Anything” on the bass xylophone to expand her ear training experiences. The student will then be asked

to compare the bass line of “The Four Chord Song, and “King of Anything” to look for similarities and differences.

5. **Explore and Elaborate:** The student will build on her abilities to perform the piece “King of Anything” by working with the teacher on rhythmic accuracy, and by looking for ways to develop the piece expressively.
6. **Explore and Explain:** The student will be introduced to the Blues and the standard 12 bar blues progression to continue to develop songwriting tools, and also to look for inspiration. The blues presentation will involve listening to an example of the 12 bar blues, “Hound Dog,” as performed by Big Momma Thorton and Elvis.
7. **Elaborate:** The student will improvise lyrics and a melody about “Life Lessons” while accompanied by the teacher to begin developing an original piece. We will write down lyrics as possible.
8. **Closure:** We will close the lesson with the interview described in the protocol.

**Student: Callie**  
**Date: October 15<sup>th</sup>, 2013**  
**Lesson 5 of 5**

**Goal:** The goal of this lesson will be to write two to three verses of Callie's first original song as an application of her knowledge of songwriting and the blues.

**Objectives:**

1. The student will review the chord structure of a 12 bar blues.
2. The student will listen to three different versions of the "Joe Turner Blues."
3. The student will read about and discuss the historical and cultural issues that inspired the "Joe Turner Blues."
4. The student will identify the chords used in the "Joe Turner Blues."
5. The student will identify the lyrical form of the "Joe Turner Blues."
6. The student will practice and improvise melodically with the C blues scale.
7. The student will vocally improvise a melodic line for her own blues, and use these improvisations to make compositional decisions for her original song.
8. The student will write a minimum of two verses on a topic of her choice following the harmonic and lyrical structure of the "Joe Turner Blues."

**National Standards:**

1. Singing, alone and with others, a varied repertoire of music.
2. Performing on instruments, alone and with others, a varied repertoire of music.
3. Improvising melodies, accompaniments and variations.
4. Composing and arranging music within specified guidelines.
5. Reading and notating music.
6. Listening to, analyzing and describing music.
8. Understanding the relationship between music, the other arts, and disciplines outside the arts.
9. Understanding music in relation to history and culture.

**Procedure**

1. **Entrance Routine:** The student will enter the room and be allowed a few minutes to free improvise, and then we will play a few scales of her choice.
2. **Explain:** Review and practice the blues scale.
3. **Explain:** Examine the score of "Joe Turner Blues." Notice its rhyme scheme and chord progression. Map both visually.
  - a. AAB, CCB, DDB
  - b. C C C C, F F C C, G F C G, or C C C C, F F C C, G F C C
  - c. I I I I, IV IV II, V IV IV, or I I I I, IV IV II, V IV II
4. **Explain and Elaborate:** Listen to various versions of the "Joe Turner Blues" to show how these chords can be interrelated very differently, but also, keep their identity.
  - a. W.C. Handy
  - b. Eric Clapton and Wynton Marsalis
  - c. Big Band



5. **Elaborate:** Using the information gathered so far, the student will improvise vocally while the teacher plays the 12 bar blues pattern in search of a melody that fits, and resonates with the mood of her piece.
6. **Elaborate:** The student will determine what life lesson she would like to use, and then phrase that life lesson to become the “B” section of the rhyme scheme listed above--(Life Ain't Fair).
7. **Elaborate:** The student will be asked to draft two verses to suit the “A” and “C” sections of the rhyme scheme listed above. These should in some way support “B.”
8. **Elaborate and Evaluate:** The student and teacher will rehearse, critique and edit the piece fluidly as part of the writing process.
9. **Closure:** We will close the lesson with the interview described in the protocol.

## APPENDIX C

### Site Permission

University of Maryland College Park

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Initials \_\_\_\_\_ Date \_\_\_\_\_

#### Formal Permission to Access Research Site

<b>Project Title</b>	<p style="text-align: center;"><b>The Experiences of Two Students with Autism in a Series of General Music Lessons: A Multiple Case Study</b>  <b>Amy C. Weishaar</b>  <b>University of Maryland, College Park</b></p>
<b>Purpose of the Study</b>	<p>This research is being conducted by <b>Amy Weishaar</b>, a Graduate Student of the University of Maryland, College Park. I am asking your permission to collect data at the {School Name}, in {City Name}. I am conducting this research project because the perspectives of children with autism have not yet been adequately represented in music education research. The purpose of this project is to describe the observed experiences and reflections of two middle school students with autism in a series of six music lessons that require them to create, perform and respond to music. The student participants for this study were selected because (1) they have a known diagnosis of an autism spectrum disorder, (2) they have an exceptional music ability and interest in music, and (3) they are attending, or are rising to attend the middle school at the {School Name}. It is hoped that the descriptions of each student's experiences will provide insight into their music learning processes. This may ultimately lead to the availability of more informed music pedagogical practices for students with autism, and provide the foundation for future research that involves the voices of young individuals with autism.</p>
<b>Procedures</b>	<p>The procedures of this study involve:</p> <ol style="list-style-type: none"> <li>1. a review of the students school records and reports</li> <li>2. a parent interview lasting no more than 60 minutes,</li> <li>3. a student interview lasting no more than 45 minutes,</li> <li>4. 5 independent music lessons lasting no more than 1 hour,</li> <li>5. 1 shared music lesson with the other participant lasting no more than 1 hour,</li> <li>6. 6 brief reflection sessions following each lesson lasting no more than 15 minutes each.</li> </ol> <p>The students school records and reports will be reviewed with the purpose of (1) justifying their participation in the study based on the criteria above, (2) and as a source for data triangulation or fact checking when forming a narrative about the student.</p> <p>Interviews and lessons will take place at the {School Name} and be video taped and transcribed. Participants will work with the researcher to schedule all sessions at mutually convenient times.</p>

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	<p>Music lessons will involve a variety of activities in which student participants will have the chance to create, perform or respond to music. For example, one activity will be having the student participant listen to the piece “In C” by Terry Riley, and create his or her own piece of based on Terry Riley’s techniques and style using computer software.</p> <p>The initial interview will ask both parent and child participants to reflect upon your child’s history, their experiences and interpretations of autism, as well as their experiences and relationship with music. An example of a parent question is: When and how did you discover Johnny’s interest in music? An example of a student question is: Have others encouraged or discouraged you musically? Please note that you do not have to answer any question that makes you or your child feel uncomfortable.</p> <p>The reflection sessions will be brief to capture snap shots of what the student learned, their feelings about the lesson, and any connections they have made between their learning and outside life or previous knowledge and their goals for future lessons. One example question is: Listening to your work today, what are you most proud of? What would you like to change?</p> <p>I will analyze all videos, transcriptions and work samples until primary and secondary themes emerge. During this process I may ask students or parents to check my interpretation of the data for accuracy to ensure validity of the study.</p>
<b>Potential Risks and Discomforts</b>	<p>There are no direct risks or discomforts known to be involved with this study, however possible risks include: 1) the unlikely loss or breach of confidentiality; 2) the potential discomfort of being interviewed; 3) the potential discomfort of being video taped.</p>
<b>Potential Benefits</b>	<p>The benefits to the participants may include learning about music’s history and relationship to culture, learning how to respond to music through reflection or dictation, and learning new skills involving the creation or performance of music through a series of peer-reviewed lessons. We hope that, in the future, music teachers and researchers might benefit from this study through improved understanding of how children with autism learn and critically reflect on their music education experiences.</p>
<b>Confidentiality</b>	<p>Any potential loss of confidentiality will be minimized by</p> <ol style="list-style-type: none"> <li>1. Keeping school records and reports in the school building in a secure location determined by the school’s administration.</li> <li>2. Allowing only myself, the teacher-researcher, to access video</li> </ol>

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	<p>and audio data. Keeping the data saved on a password secured computer, and in a password secured computer file will enforce this.</p> <ol style="list-style-type: none"> <li>3. Assigning security codes and passwords to all computerized information. To minimize risk, all security codes will be kept in an unmarked notebook, stored in a locked cabinet separate from the computer itself.</li> <li>4. Encrypting identifiable data, such as names, and keeping the encryption codes in a separate locked cabinet.</li> <li>5. Removing identifiable information such as the names the children and school from all collected data.</li> <li>6. By destroying any audio or video recordings after the completion and final approval of this study by the selected advisory committee.</li> <li>7. Erasing sensitive files from the memory of the computer and any discs used after the completion and final approval of this study by the selected advisory committee.</li> <li>8. Physically destroying all sensitive paper data files after the completion and final approval of this study by the selected advisory committee.</li> </ol> <p>If we write a report or article about this research project participant identities will be protected to the maximum extent possible. Identification information may be shared with representatives of the University of Maryland, College Park or governmental authorities if you or someone else is in danger or if we are required to do so by law.</p>
<b>Right to Withdraw and Questions</b>	<p>Participation in this research is completely voluntary. Each participant may choose not to take part at all. If an individual decides to participate in this research, they may stop participating at any time. If an individual decides not to participate in this study or if they stop participating at any time, they will not be penalized or lose any benefits to which they would otherwise qualify.</p> <p>If you have questions, concerns, or complaints, or if you need to report an injury related to the research, please contact the investigators:</p> <p><b>Janet Montgomery</b> {Address Removed}</p> <p><b>OR</b></p> <p><b>Amy C. Weishaar</b> {Address Removed}</p>

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**Formal Permission to Access Research Site**

<p><b>Participant Rights</b></p>	<p>If you have questions about your rights as a research participant or wish to report a research-related injury, please contact:</p> <p align="center"> <b>University of Maryland College Park</b>  <b>Institutional Review Board Office</b>  <b>1204 Marie Mount Hall</b>  <b>College Park, Maryland, 20742</b>  <b>E-mail: <a href="mailto:irb@umd.edu">irb@umd.edu</a></b>  <b>Telephone: 301-405-0678</b> </p> <p>This research has been reviewed according to the University of Maryland, College Park IRB procedures for research involving human subjects.</p>	
<p><b>Statement of Permission to Access Site</b></p>	<p>Your signature indicates that you are an administrator of the {School Name}; you have read this site permission form; your questions have been answered to your satisfaction and you agree allow the researcher to complete the data collection portion of this study at the {School Name}. You will receive a copy of this signed permission form.</p> <p>If you agree to participate, please sign your name below.</p>	
<p><b>Signature and Date</b></p>	<p><b>NAME OF SCHOOL ADMINISTRATOR</b> [Please Print]</p>	
	<p><b>SIGNATURE SCHOOL ADMINISTRATOR</b></p>	
	<p><b>DATE</b></p>	

**APPENDIX D**

**Parental Consent Form**

University of Maryland College Park

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Initials \_\_\_\_\_ Date \_\_\_\_\_

**Parental Consent Form**

<b>Project Title</b>	<p><b>The Experiences of Two Students with Autism in a Series of General Music Lessons: A Multiple Case Study</b>  <b>Amy C. Weishaar</b>  <b>University of Maryland, College Park</b></p>
<b>Purpose of the Study</b>	<p>This research is being conducted by <b>Amy Weishaar</b>, a Graduate Student of the University of Maryland, College Park. Data will be collected at the {School Name} in {City Name}. I am inviting you and your child to participate in this research project because the perspectives of children with autism have not yet been adequately represented in music education research.</p> <p>The purpose of this research project is to describe the observed experiences and reflections of two middle school students with autism in a series of six music lessons that require them to create, perform and respond to music. You and your child are potential participants because (1) your son or daughter has a known diagnosis of an autism spectrum disorder, (2) your son or daughter has an exceptional music ability and interest in music, and (3) your son or daughter is attending, or is rising to attend the middle school at the {School Name}. It is hoped that the descriptions of each student’s experiences will provide insight into their music learning processes. This may ultimately lead to the availability of more informed music pedagogical practices for students with autism, and provide the foundation for future research that involves the voices of young individuals with autism.</p>
<b>Procedures</b>	<p>The procedures of this study involve:</p> <ol style="list-style-type: none"> <li>1. reviewing your child’s school records and reports</li> <li>2. a parent interview lasting no more than 60 minutes,</li> <li>3. a student interview lasting no more than 45 minutes,</li> <li>4. 5 independent music lessons with your child lasting no more than 1 hour,</li> <li>5. 1 shared music lesson with the other participant lasting no more than 1 hour,</li> <li>6. 6 brief reflection sessions with your child following each lesson lasting no more than 15 minutes each.</li> </ol> <p>Your child’s school records and reports will be reviewed for the sole purposes of (1) justifying his/her participation in the study based off the criteria above, (2) as a source for data triangulation or fact checking when forming a narrative about the student.</p>

**University of Maryland College Park**

**Parental Consent Form**

	<p>Interviews and lessons will take place at the {School Name} and be video taped and transcribed. Parents and students will work with the researcher to schedule all sessions at mutually convenient times.</p> <p>Music lessons will involve a variety of activities in which student participants will have the chance to create, perform or respond to music. For example, one activity will be having your child listen to the piece “In C” by Terry Riley, and create his or her own piece of based on Terry Riley’s techniques and style using computer software. Lesson plans can be provided to you previous to each lesson.</p> <p>The initial interview will ask you and your child to reflect upon your child’s history, their experiences and interpretations of autism, as well as their experiences and relationship with music. An example of a parent question is: When and how did you discover Johnny’s interest in music? An example of a student question is: Have others encouraged or discouraged you musically? Please note that you or your child do not have to answer any question that makes you or your child feel uncomfortable.</p> <p>The reflection sessions will be brief to capture snapshots of what the student has learned, their feelings about the lesson, and any connections they have made between their learning and outside life or previous knowledge and their goals for future lessons. One example question is: Listening to your work today, what are you most proud of? What would you like to change?</p> <p>I will analyze all videos, transcriptions and work samples until primary and secondary themes emerge. During this process I may ask students or parents to check my interpretation of the data for accuracy to ensure validity of the study.</p>
<p><b>Potential Risks and Discomforts</b></p>	<p>There are no direct risks or discomforts known to be involved with this study, however possible risks include: 1) the unlikely loss or breach of confidentiality; 2) the potential discomfort of being interviewed; 3) the potential discomfort of being video taped.</p>
<p><b>Potential Benefits</b></p>	<p>There are no direct benefits to the participants, however possible benefits include learning about music’s history and relationship to culture, learning how to respond to music through reflection or dictation, and learning new skills involving the creation or performance of music through a series of peer-reviewed lessons.</p>

**University of Maryland College Park**

Page 3 of 4

Initials \_\_\_\_\_ Date \_\_\_\_\_

**Parental Consent Form**

	<p>We hope that, in the future, music teachers and researchers might benefit from this study through improved understanding of how children with autism learn and critically reflect on their music education experiences.</p>
<b>Confidentiality</b>	<p>Any potential loss of confidentiality will be minimized by</p> <ol style="list-style-type: none"> <li>1. Keeping school records and reports in the school building in a secure location determined by the school's administration.</li> <li>2. Allowing only myself, the teacher-researcher, to access video and audio data. Keeping the data saved on a password secured computer, and in a password secured computer file will enforce this.</li> <li>3. Assigning security codes and passwords to all computerized information. To minimize risk, all security codes will be kept in an unmarked notebook, stored in a locked cabinet separate from the computer itself.</li> <li>4. Encrypting identifiable data, such as names, and keeping the encryption codes in a separate locked cabinet.</li> <li>5. Removing identifiable information such as the names the children and school from all collected data.</li> <li>6. By destroying any audio or video recordings after the completion and final approval of this study by the selected advisory committee.</li> <li>7. Erasing sensitive files from the memory of the computer and any discs used after the completion and final approval of this study by the selected advisory committee.</li> <li>8. Physically destroying all sensitive paper data files after the completion and final approval of this study by the selected advisory committee.</li> </ol> <p>If we write a report or article about this research project, your identity will be protected to the maximum extent possible. Your information may be shared with representatives of the University of Maryland, College Park or governmental authorities if you or someone else is in danger or if we are required to do so by law.</p>
<b>Right to Withdraw and Questions</b>	<p>Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise qualify.</p> <p>If you decide to stop taking part in the study, if you have questions, concerns, or complaints, or if you need to report an injury related to</p>



**University of Maryland College Park**

**Parental Consent Form**

	<p>the research, please contact the investigator:</p> <p><b>Janet Montgomery</b> {Address Removed}</p> <p><b>OR</b></p> <p><b>Amy C. Weishaar</b> {Address Removed}</p>	
<b>Participant Rights</b>	<p>If you have questions about your rights as a research participant or wish to report a research-related injury, please contact:</p> <p style="text-align: center;"><b>University of Maryland College Park Institutional Review Board Office 1204 Marie Mount Hall College Park, Maryland, 20742 E-mail: <a href="mailto:irb@umd.edu">irb@umd.edu</a> Telephone: 301-405-0678</b></p> <p>This research has been reviewed according to the University of Maryland, College Park IRB procedures for research involving human subjects.</p>	
<b>Statement of Consent</b>	<p>Your signature indicates that you are at least 18 years of age; you have read this consent form or have had it read to you; your questions have been answered to your satisfaction; you provide consent for your child to participate; and you voluntarily agree to participate in this research study. You will receive a copy of this signed consent form.</p> <p>If you agree to participate, please sign your name below.</p>	
<b>Signature and Date</b>	<b>NAME OF CHILD PARTICIPANT</b> [Please Print]	
	<b>NAME OF PARTICIPANT</b> [Please Print]	
	<b>SIGNATURE OF PARTICIPANT</b>	
	<b>DATE</b>	

## APPENDIX E

### Child's Assent Letter

Project Title:

**The Experiences of Two Students with Autism  
in a Series of General Music Lessons:  
A Multiple Case Study**

Investigator: **Amy C. Weishaar**

Dear (Student's Name),

My name is Amy Weishaar. I am in the process of working on my Masters Thesis in Music Education at the University of Maryland, College Park. To do this, I am completing a research study to learn more about people. My study is designed to learn about how students with autism or autism spectrum disorder learn about music. Students in this study are chosen because they (a) have exceptional musical talents, (2) attend or will attend the middle school of the {School Name}, (3) and have a known diagnosis of autism or an autism spectrum disorder.

If you decide that you want to be part of this study, you will be asked to participate in one interview, 5 individual music lessons, and one more lesson with another student. The lessons will last for one hour (or less) each. After each lesson we will sit and discuss your thoughts on the lesson for about 15 minutes. Each lesson and discussion will be video taped so that I can accurately remember what happened, and what was said.

This study may benefit you. A benefit means that something good happens to you. I believe the benefits might be learning new music skills that involve creating, performing and responding to music. Some things that may be uncomfortable are being interviewed or being videotaped. Please let me know if you feel uncomfortable at any time.

When we are finished with this study I will write a report about what was learned. This report will not include your name or that you were in the study.

You do not have to be in this study if you do not want to be. If you decide to stop after we begin, that's okay too.

Your parent(s) have already been asked about the study in advance and have given you permission to participate if you choose.

If you decide you want to be in this study, please sign your name.

I, \_\_\_\_\_, want to be in this research study.  
(print your name here)

\_\_\_\_\_  
(Sign your name here) Date: \_\_\_\_\_

## APPENDIX F

### Institutional Review Board Approval Letter



1204 Marie Mount Hall  
College Park, MD 20742-5125  
TEL 301.405.4212  
FAX 301.314.1475  
irb@umd.edu  
www.umresearch.umd.edu/IRB

DATE: July 22, 2013

TO: Janet Montgomery  
FROM: University of Maryland College Park (UMCP) IRB

PROJECT TITLE: [438589-1] Masters Thesis: Case Study  
REFERENCE #:  
SUBMISSION TYPE: New Project

ACTION: APPROVED  
APPROVAL DATE: July 22, 2013  
EXPIRATION DATE: July 21, 2014  
REVIEW TYPE: Expedited Review

REVIEW CATEGORY: Expedited review category # 7

Thank you for your submission of New Project materials for this project. The University of Maryland College Park (UMCP) IRB has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a project design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

This submission has received Expedited Review based on the applicable federal regulation.

Please remember that informed consent is a process beginning with a description of the project and insurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the project via a dialogue between the researcher and research participant. Federal regulations require each participant receive a copy of the signed consent document.

Please note that any revision to previously approved materials must be approved by this committee prior to initiation. Please use the appropriate revision forms for this procedure which are found on the IRBNet Forms and Templates Page.

All UNANTICIPATED PROBLEMS involving risks to subjects or others (UPIRSOs) and SERIOUS and UNEXPECTED adverse events must be reported promptly to this office. Please use the appropriate reporting forms for this procedure. All FDA and sponsor reporting requirements should also be followed.

All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to this office.

This project has been determined to be a Minimal Risk project. Based on the risks, this project requires continuing review by this committee on an annual basis. Please use the appropriate forms for this procedure. Your documentation for continuing review must be received with sufficient time for review and continued approval before the expiration date of July 21, 2014.

Please note that all research records must be retained for a minimum of three years after the completion of the project.

If you have any questions, please contact the IRB Office at 301-405-4212 or [irb@umd.edu](mailto:irb@umd.edu). Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within University of Maryland College Park (UMCP) IRB's records.

## APPENDIX G

### Initial Student Interview Protocol

The participant will be interviewed before the first lesson session for no more than 45 minutes. During the interviews the participants will be asked to describe themselves, their own impression of their disability, and their previous experiences with music. This reflection may be done through spoken dialogue or writing, or the participant may choose to draw a response. Speaking, drawing, and writing are different forms of sense making and thought representation and may provide more possibilities and clarity than only speaking. The investigator will employ semi-structured interviews in order to uncover the participant's language in his or her own terms, reducing the possibility of imposing preconceived constructions of meaning on the participant. Therefore, the open-ended questions may lead to unanticipated follow-up questions.

The following is a list of *possible* questions to be asked during the initial individual interviews:

1. Tell me about yourself: your name, how old you are, your grade, where you are from.
2. Tell me a little bit about your family. Who do you live with? Any pets?
3. Do any of your family members play a musical instrument or sing?
4. What are some of your biggest interests?
5. What are some things you are really good at - your strengths?
6. What are some things that are challenging for you?
7. What would you consider your biggest accomplishments?
8. What is school like from your perspective?
9. How do people treat you at school? Do you feel like they understand you?
10. What do you know about autism?
11. Does having autism make your school day different?
12. Has autism helped you in any way? Has it ever been an obstacle?
13. How has music been important in your life?
14. How long have you been playing music/singing?
15. Can you remember when you first became interested in music?
16. Have others encouraged or discouraged you musically?
17. What is your favorite kind of music or musician? Why?
18. What musical groups or classes have you participated in?
19. Do you participate in music outside of school? How so?
20. Is there anything about music that you would like to learn more about?
21. Is there anything else you would like to include about yourself or music?

## APPENDIX H

### Post-Lesson Student Interview Protocol

The participant will be interviewed after each session for no more than 15 minutes. During the interviews the participants will be asked to describe the lesson, their impression of the information conveyed, and their reflections on the experiences. This reflection may be done through spoken dialogue or writing, or the participant may be asked to draw a response. Speaking, drawing, and writing are different forms of sense making and thought representation and may provide more possibilities and clarity than only speaking. The investigator will employ semi-structured interviews in order to uncover the participant's language in his or her own terms, reducing the possibility of imposing preconceived constructions of meaning on the participant. Therefore, the open-ended questions may lead to unanticipated follow-up questions.

The following is a list of *possible* prompts and questions.:

1. What did you like/dislike about today's class? Why?
2. Did you feel, hear or do anything that surprised you?
3. How did you feel when you were singing/playing an instrument?
4. Did we accomplish our goals today?
5. What problems are left to solve?
6. Pick three words to describe today's lesson. Why did you choose \_\_\_\_\_?
7. Did the piece of music bring up any memories, or cause you to imagine anything?
8. Listening to your work today, what are you most proud of? What would you like to change?
9. What do you want to do next? Why?

## APPENDIX I

### Parent Interview Protocol

The participant will be interviewed before the first lesson session for no more than 60 minutes. During the interviews the participants will be asked to describe their child, their own impression of their child's disability, and their child's previous experiences with music. The investigator will employ open-ended questioning in order to uncover the participant's language in his or her own terms, reducing the possibility of imposing preconceived constructions of meaning on the participant. The open-ended questions may lead to unanticipated follow-up questions. The name *Johnny* is used as a place keeper for where the participant's child's name will be inserted.

1. Please tell me a little bit about yourself – where are you from?
2. Please describe *Johnny* for me.
3. What is a typical day like with *Johnny*?
4. When was *Johnny* diagnosed autistic? What was your reaction?
5. Has your perceptions or attitude toward autism changed since the birth of *Johnny*?
6. Has *Johnny* received any therapies? How did he respond to them?
7. Have you seen any changes in *Johnny* over the years? What do you think caused those changes?
8. How are *Johnny*'s communication skills? Speech ability?
9. How does *Johnny* best communicate? What advice you can give to someone trying to communicate with *Johnny*?
10. Are there things *Johnny* has a hard time understanding because of these difficulties? If *Johnny* had no problem understanding you, what is something you would you like to tell him?
11. Please tell me about *Johnny*'s sensory system. What senses are your child most reactive toward or completely insensitive toward?
12. What sort of things upset *Johnny*? How do you help your child focus again?
13. How independent is *Johnny*? How do you work on increasing his independence? What skills is he currently learning?
14. How do you help *Johnny* with routines and schedules? Do you ever use visuals, speak, sing, etc.?
15. What was your experience with finding a school for *Johnny*? Why did you choose this school?
16. Please share some experiences of success for *Johnny*. Stories of challenges?
17. When and how did you discover *Johnny*'s interest in music?
18. What steps have you taken to bring music into *Johnny*'s life since?
19. What would you say is the current role of music in *Johnny*'s life?
20. How does music fit into a typical day?
21. What music activities have or does *Johnny* participate in?
22. What is *Johnny* favorite music?
23. Have you noticed any changes in *Johnny* with the use of music?
24. Do you think music helps/benefits *Johnny*? If yes, in what ways?

25. Would you recommend that other parents use music to help/benefit their child?
26. Is there anything else you would like to share about your child, autism, or music?



**APPENDIX J**  
**Final Codebook**

<b>Pattern Codes</b>					
<b>Categories</b>	<b>Pattern Codes</b>	<b>Abbreviations</b>	<b>Definitions</b>	<b>Exemplar Quotes or Scenarios, and Descriptions</b>	<b>Associated First Cycle Codes (when applicable)</b>
Musical Responses	Direct Musical Responses	DMR	A musical response given immediately to a musical event, question or discussion. (Frick, 1999)	<p>Harper: I sing A LOT.            AW: Why do you sing a lot on your own?            Harper: Because that is what I like to do.            AW: Cool man. What kind of stuff do you sing?            Harper: Just, just songs.            AW: What kind of songs?            Harper: Rock songs, pop songs, made up songs.            AW: That sounds fun!            Harper: Alright, like <i>DA NA, da da do da do do!</i> (singing)            AW: Cool!            Harper: That was a good bass line, right?            AW: That is a good bass line – is that from a song?            Harper: No, I don't think so. That is just one that I made up.</p> <p>The italicized portion shows an example of Harper responding musically during a conversation about his music making. A Direct Music Response could have also occurred during a musical activity. For example, during a partner improvisation, one person might directly respond to the music performed by the other.</p>	Practice, Singing, Playing an Instrument Drumming, Beat-boxing, Imitating, Chanting, and Clapping.

Extended Musical Response	EMR	A musical creation that encompassed an extensive and uninterrupted series of direct musical responses.	Harper and I often collaboratively improvised for extended periods of time. As we did so, there were several observable instances when one person responded to the musical actions of the other, and visa versa. While this could also be coded as several sequential Direct Musical Responses, I opted to combine them under one code due to the nature of their unified conception.	
Delayed Musical Response	DeMR	A musical response made sometime after the musical event or activity had passed, but was still related to that event or activity. (Frick, 1999)	<p>While playing piano together before our initial interview, Harper had shown me that he knew how to play the introduction to a song by Macklemore and Ryan Lewis. Over a week later, at our first lesson, Harper replayed a segment of the piece to show me that he remembered and enjoyed it.</p> <p>AW: Let me see, can I move the bench up, Harper?  <i>Harper continued to play while I worked around him, but did stand up and move forward enough for me to move the bench into place. Harper then played the opening chords to the Macklemore song we played during his interview.</i>  Harper: Uh oh!  <i>He smiles and looks over at me, making eye contact. I look back.</i>  Harper: Uh! Macklemore, again! Right?  AW: Are you doing that again?  <i>Harper laughs and replays the segment.</i>  AW: I like that song, do you like that song?  Harper: Yeah. Look!  <i>Harper begins to improvise a new piece...</i></p>	This code was applied when any of the following first cycle codes pertained to a past event: Carry-over, Memory, Recall, Practice, Singing, Playing, Drumming, Imitating, Beat-boxing, Clapping, and Chanting.

	Spontaneous Music	SM	<p>Any voluntary, unprompted, or unexpected musical expression on the part of the child. This music may or may not seem related to lesson activity or event. Spontaneous music making occurred in the forms of unexpected presentation of pieces of music known by the participant, improvisations, and sub-songs. The term sub-song describes music that was intended to be heard only by the participant (Frick, 1999), and is an instance where the participant acts in his or her own self-interest. These moments of spontaneity occurred often during this study, and sometimes unintentionally communicated aspects of the students' inner thought processes to the researcher.</p>	<p>An instance of Spontaneous Music making occurred as Harper was transitioning from the piano, to the computer where I was waiting for him. On his way, he walked through the drum kit, and without sitting down, he spontaneously played.</p> <p>Harper: <i>Wanna here one that I made up? ::Boom dsh dsh boom boom dsh boom::</i></p> <p>AW: That is a great pattern!</p> <p>Harper: Here is another one. <i>::Boom boom dsh dsh boom boom boom dsh dsh::</i></p> <p>AW: Alright, the video is all ready. You are going to sit in that chair.</p> <p>Harper: <i>Ha ha he ha</i> (metrical vocal sounds)</p> <p>Alright, I am going to focus this time! <i>::Quickly walks over and takes chair::</i></p>	
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	Personal Verbalizations of Sounds	PVS	Any speech sound or noise that was not intended to be communicative, or that was unintelligible to the researcher. This also included instances of <i>toning</i> . Toning is any sustained vocalization, usually on a pitch, that lacked meaningful communicative elements (Bruscia, 1998).	Harper often made noises or toned during conversation.  Harper: Errrrrrr!!!! What?! You don't know what that is? (smiling) AW: No, what is it? Harper: Jhhjeeuuuu! You don't know that one?! (giggles) AW: No, I don't.	Noises, sub-song, toning, non-sense syllables, or unintelligible words.
Language Responses	Direct Verbal Response to A Question or Musical Event	DVR-Q or DVR-M	An intelligible verbal response given orally to a musical question, comment or event. This was observed through the use of intelligible words, phrases or sentences that shared information, ideas, or feelings.	In this instance, Callie Directly Verbally Responds to question.  AW: So, what did you want to ask me about? Callie: Well, I have a few ideas to make this better. Something like this maybe...I just have to get my fingers in the right places. I am still working on this a little bit.	Answer Right or Wrong, Educated Guess, Description, Extension, Think Aloud, Creative Idea, Suggestion, Decision, Interpretation, Association, or Question.
	Delayed Verbal Response to a Question or Musical Event	DeVR-Q or DeVR-M	An intelligible verbal response, given orally to a musical question, activity, or event sometime after the questioning or event had	During Callie's first lesson she gave a verbal answer to a question I had asked her in the initial interview.  Callie: And, you know what? I just remembered something. You know how you asked me if any	This code was applied when any of the following first cycle codes pertained to a

			passed, but still related to that question, activity, or event.	of my family members have ever played an instrument or whatever? Last Tuesday? AW: Yeah. Callie: Well, I just remembered that my aunt played flute for like a school band or something, and I think she still has it. Or maybe she took flute lessons, or something like that... AW: Well thanks for telling me. That is good to know!	past event: Description, Extension, Association, Reflection, Think Aloud, Decision Making, Connection making, Carryover, and Observation.
Non-Verbal Response	NVR	An intelligible non-verbal response to a musical or linguistic question, activity, or event, which involved any kind of gesture, dance, dramatization, or singing and had an apparent communicative purpose.		During our third lesson Harper and I played a flash card game to reinforce identifying notes on the treble and bass staves. Harper often created letters with his fingers to communicate his answer.	Answer Right or Wrong, Description, Extension, Interpretation, Decision Making.
Written Response	WR	A medium of communication that entails the use of written word. This is, in essence, a verbal response because it uses language, but the participant produced language through text by writing essays, letters, email, or work samples, rather than orally.		Callie produced two written reflections during the course of this study, full transcriptions are provided in Figures 6.9 and 6.10.	

Simultaneous Feature Codes				
Feature Codes	Abbreviations	Descriptions	Exemplar Quotes or Scenarios, and Descriptions	First-Cycle Codes (when applicable)
Non-interpretive Response	N.R.	A verbal or written response that was non-descript, non-interpretive, or pure. There is no evidence of association, critique, judgment, intention, or interpretation.	<p>In one instance, Harper produced a very rich improvisation constructed from a series of rich harmonies. It was like impressionistic jazz. During the conversation that followed I prompted Harper several times for a description of his mental state, and was met with a series of Non-Interpretive Responses.</p> <p>AW: I loved that Harper!  <i>Harper giggles.</i>  Harper: Oh, thank you.  AW: What kinds of thoughts were going through your head when you played that?  Harper: GOOD thoughts.  AW: What were you thinking of?  Harper: I don't know. Actually, I don't think I was thinking of anything. Dsh doosh dsh dsh. <i>::making percussive sounds::</i>  AW: Did you imagine anything during that improvisation?  Harper: Dsh doosh pfff kahhh <i>::smile::</i>  What? No, I did not imagine anything.  AW: Did any memories come into your head?  Harper: I think the... no they didn't.</p>	

Literal Response	L.R.	Any instance when the participant communicated a fact, made an objective identification, or provided an objective description.	As a warm up activity for song writing Callie was asked to identify chords by ear. Callie provided the answer “minor,” to the sound of a minor chord; this was considered a Literal Response.	Factual, Descriptive, Observation, Identification, Brief, and Recall.
Cooperative Response	Co.R.	Any verbalization or behavior that indicated the child was cooperating and engaged with the lesson. The opposite would be an Uncooperative Response.	Callie and Harper demonstrated cooperation by replying to the teacher’s requests by following directions, providing relevant feedback, being attentive, engaging with assignments, and by providing verbal statements such as, “Sure,” or “Let’s do it!”	Following directions, Flexible, Feedback, Engaging, Attentive, and Practicing.
Emotional Response	E.R.	A response that openly and clearly expressed an emotion or feeling. This type of response was communicated through gesture, facial expression, dramatization, words, and music.	When Callie sang, Harper’s eyes and mouth opened, he then got out of his chair, and began to move to the music, giggle, clap, and jump. He was noted to have had a Non-verbal Emotional Response. When Callie wrote, “Singing makes me feel emotional because I cry sometimes when I hear a certain song,” it was noted as being a Written Emotional Response.	Emotion, Motivation, Like, Dislike, Judgment, Self-praise, and Interpretation
Empathetic Response	Ep.R.	Any circumstance when the student attributed mental states – beliefs, intentions, desires, pretending, knowledge, etc.- to oneself or others. This might also denote an instance when the student understood that others have beliefs, desires or intentions that were	During our third lesson Callie was explaining the meaning of the lyrics of “King of Anything,” to me, and said, “When she says, ‘Who cares if you disagree?’ or when she says, ‘Let me hold your crown baby,’ it’s like saying you aren’t the king, you aren’t so special, your opinion isn’t the most	Empathy, Theory of Mind.

<p>Associative Response</p>	<p>A.R.</p>	<p>different from their own.</p> <p>Any instance when the student made a connection between a musical event or thought and subsequently remembered or imagined a feeling, emotion, idea, sensation, object, person, place or event.</p>	<p>important thing.” Callie’s interpretation of this song shows that she was aware of the artist’s intentions, and so this was coded as an Empathetic Response.</p> <p>In this instance Callie associated the rhythms in Sara Bareilles’s song “Brave,” with the rhythms in Katy Perry’s song, “Roar.”</p> <p>AW: So, let’s do the math. There are only seven chords to choose from, and there are a million songwriters out there.</p> <p>Callie: Which really stinks!</p> <p>AW: So chances are these chords have been reused, right?</p> <p>Callie: Of course they have been reused, I mean...</p> <p>AW: In the same orders, the same patterns, sometimes even the same rhythms.</p> <p>Callie: That SO happens. It is like how Katy Perry totally copied the rhythm of Sara Bareilles’s song, “Brave.”</p> <p>AW: Did she really?</p> <p>Callie: Oh my gosh! If you listen to “Brave,” and then you listen to Katy Perry’s song, “Roar,” you can totally hear the same rhythm! But, I mean, you can tell which one is “Brave,” and which one is “Roar,” but she totally copied it though!</p>	<p>Connection making, Culturally Aware, Metaphor, Association, Memory, Carry-over Response.</p>
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Creative Response	C.R.	<p>Creativity has been subject of a wide range of scholarly debates, in a great number of disciplines. To this end, Reimer and Wright (1992) state: “Composers, educators, and aesthetic theorists have written extensively about creativity and have done so using the three perspectives of person, process, and product” (p. 255). Following this description, the code Creative Response was applied when a student engaged in an innovative process and helped design, develop, adapt, or transform an idea, in turn, generating a new <i>product</i> in their own eyes (Balkin, 1990; Canfield, 1961; McLennon, 2002; Webster, 1992, 2003). In this study, creativity was noted to occur in very small ways, as simply as making a joke, or in grand ways, as to design an entire composition.</p>	<p>During one of our sessions Harper improvised two pieces, one depicting a broken clock, and one depicting a functional clock. The way he used the piano to metaphorically represent these clocks was noted to be Creative Responses to a musical challenge. Furthermore, the way he continuously and fluidly responded to the elements of his own creation as he progressed through his improvisation was also noted as containing numerous Creative Responses.</p>	Play, Humor, Creative Idea, Original Thought, Suggestion, and Problem Solving
Reflective Response	R.R.	<p>Any instance when the student shared that they had more deeply and seriously thought about a topic or event, and gave evidence that they made an effort to understand, explore, interpret, or draw meaning from it.</p>	<p>When Callie was first beginning to learn “King of Anything,” we had the following conversation:</p> <p>Callie: I think I am definitely better at other songs. But, this is a start. Like, I can definitely sing this, because my voice is like altering...  AW: Figuring it out?  Callie: It’s like I still need to, um... like I</p>	Critique, Culturally Aware, Reflective, Interpretation, Prediction, Extension, Think Aloud, Decision Making,

<p>still need to work on my pitch.          AW: What do you mean, your pitch? I don't think your pitches are wrong.          Callie: Well, I mean, like the way she sings it is different than the way I sing it, I mean... I just...          AW: Do you mean your voice quality?          Callie: Yes. Voice quality.          AW: Or, do you mean you have wrong notes? Pitches are notes.          Callie: Oh. Not the pitches. The voice quality.</p> <p>In this instance, Callie was listening critically to her own performance, comparing it to a model, making assessments, and searching for solutions to a problem. This indicated that she was practicing reflection.</p>	<p>Problem solving, and Self-initiated Practice.</p>
<p>Topics introduced by the student at an inappropriate time or that were of an inappropriate nature.</p>	<p>Perseverative Topic, Off-Topic, Time, Date, Doors, Maps, and Mom</p>
<p>Inappropriate Response</p>	<p>I.T.</p> <p>Harper often discussed his mother in an obsessive way, and needed to be redirected; he also sometimes redirected himself. During this conversation I was asking Harper to choose a song to learn.</p> <p>AW: Maybe we can choose one at the end, after you hear them all.          Harper: My mom smiles a lot, doesn't she?          AW: Uh oh.          Harper: Not talking about mom!</p>

<p>Critical Response</p>	<p>★</p>	<p>Any response that involved an extremely important decision or result, or an extremely intense emotion. These moments were also noted to impact the child's course of learning more than other responses or reflections. This was a super code that could be added to any other code or code combination when needed.</p>	<p>These responses were marked to be Critical in Harper's case:</p> <p><i>Harper is walking around the room. He stops and stands still, holds his arms away from his sides, and just freezes, talking to me, but not making eye contact.</i></p> <p>Harper: I wish no one ever had to die. Dying is a very sad thing. You wish you could see their face in the sun, or in the sky. ... You know, you can't see people in heaven. ... You can feel them though.</p> <p><i>With his last phrase, Harper closed his hands over his heart.</i></p>
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## References

- Adamek, M. S., & Darrow, A-A. (2010). *Music in special education*. Silver Spring, MD: American Music Therapy Association.
- Adderley, C., Kennedy, M., & Berz, W. (2003). "A home away from home": The world of the high school music classroom. *Journal of Research in Music Education, 51*, 190-205. doi: 10.2307/3345373
- Adolphs, R., Sears, L., & Piven, J. (2001). Abnormal processing of social information from faces in autism. *Journal of Cognitive Neuroscience, 13*, 232–240. doi:10.1162/089892901564289.
- Allen, R. (2010). *A comparative study of the effects of music on emotional state in the normal and high-functioning autistic population* (Doctoral dissertation). Goldsmiths College, University of London, United Kingdom.
- Allen, R., Hill, E., & Heaton, P. (2009). ‘Hath charms to soothe...’: An exploratory study of how high-functioning adults with ASD experience music. *Autism: International Journal of Research and Practice, 13*, 21–41. doi:10.1177/1362361307098511.
- American Psychiatric Association, Task Force on DSM-IV. (2000). *Diagnostic and statistical manual of psychological disorders* (4<sup>th</sup> Ed., Text Revision). Washington, DC : American Psychiatric Association.
- Appadurai, A. (1996). *Modernity at large: Cultural dimensions of globalization*. Minneapolis, MN.: University of Minnesota Press.
- Applebaum, E., Egel, A. L., Koegel, R. L., & Imhoff, B. (1979). Measuring musical abilities of autistic children. *Journal of Autism and Developmental Disorders, 9*, 279–285. doi:10.1007/BF01531742.
- Atterbury, B. W. (1990). Speaking the "gifted and talented" language: The key to program success. *Music Educators Journal, 76*(7), 46-49. doi:10.2307/3401037
- Auker, P. (1991). Pupil talk, musical learning and creativity. *British Journal of Music Education, 8*, 2. doi:10.1017/S0265061700008263
- Austin, J. R., & Berg, M. H. (2006). Exploring music practice among sixth-grade band and orchestra students. *Psychology of Music, 34*, 535-558. doi:10.1177/0305735606067170
- Austin, J. R., & Vispoel, W. P. (1998). How American adolescents interpret success and failure in classroom music: Relationships among attributional beliefs, self concept

and achievement. *Psychology of Music*, 26, 26-45.  
doi:10.1177/0305735698261004

- Autism Society for America. (2010). *Facts and Statistics*. Retrieved from <http://www.autism-society.org/>
- Babbie, E. R. (2012). *The practice of social research*. Belmont, CA: Wadsworth, Cengage Learning.
- Baio, J. (2012). *Prevalence of Autism Spectrum Disorders — Autism and Developmental Disabilities Monitoring Network, 14 Sites, United States, 2008* [Surveillance Summary, 61(SS03);1-19]. Retrieved from: <http://www.cdc.gov>
- Baird, G., Charman, T., Baron-Cohen, S., Cox, A., Swettenham, J., Wheelwright, S., & Drew, A. (2000). A screening instrument for autism at 18 months of age: A 6-year follow-up study. *Journal of the American Academy of Child & Adolescent Psychiatry*, 39, 694-702.
- Balkin, A. (1990). What is creativity? What is not? *Music Educators Journal*, 76(9), 29-32. doi: 10.2307/3401074
- Bamberger, J. (1991). *The mind behind the musical ear*. Cambridge, MA: Harvard University Press.
- Bamberger, J. (1982). Revisiting children's descriptions of simple rhythms: A function for reflection-in-action. In S. Strauss (Ed.), *U-shaped behavioral growth* (pp. 191-226). New York Academic Press.
- Bamberger, J. (2003). The development of intuitive musical understanding: A natural experiment. *Psychology of Music*, 31, 7-36.
- Bareilles, S. (2010). King of anything. On *Kaleidoscope heart* [CD]. Los Angeles, CA: The Village Recorder.
- Barnes, G. P. (2010). *Moments of meeting: Difficulties and developments in shared attention, interaction, and communication with children with autism during two years of music therapy in a public preschool class* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses Full Text. (3449507)
- Baron-Cohen, S. (2006). The hyper-systemizing, assortative mating theory of autism. *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, 30, 865-872. doi: 10.1016/j.pnpbp.2006.01.010.
- Baron-Cohen, S. (2008). *Autism and Asperger syndrome: The facts*. New York: Oxford University Press.

- Baron-Cohen, S., Ashwin, E., Ashwin, C., Tavassoli, T., & Chakrabarti, C. (2009). Talent in autism: Hyper-systemizing, hyper-attention to detail and sensory hypersensitivity. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 364, 1377–1383.
- Baron-Cohen, S., Cox, A., Baird, G., Swettenham, J., Nightingale, N., Morgan, K., Drew, A., & Charman, T. (1996). Psychological markers in the detection of autism in infancy in a large population. *The British Journal of Psychiatry: The Journal of Mental Science*, 168, 158-63.
- Baron-Cohen, S., & Hammer, J. (1997). Parents of children with Asperger syndrome: What is the cognitive phenotype? *Journal of Cognitive Neuroscience*, 9, 548-554. doi: 10.1162/jocn.1997.9.4.548
- Baron-Cohen, S., Leslie, A. M., & Frith, U. (1985). Does the autistic child have a “theory of mind”? *Cognition*, 21, 37-46.
- Baron-Cohen, S., Ring, H. A., Wheelwright, S., Bullmore, E. T., Brammer, M. J., Simmons, A., & Williams, S. C. (1999). Social intelligence in the normal and autistic brain: An fMRI study. *European Journal of Neuroscience*, 11, 1891–1898. doi:10.1046/j.1460-9568.1999.00621.x.
- Baron-Cohen, S., Spitz, A., & Cross, P. (1993). Do children with autism recognize surprise: A research note. *Cognition and Emotion*, 7, 507-516. doi: 10.1080/02699939308409202
- Barrett, J. R. (2005). Planning for understanding: A reconceptualized view of the music curriculum. *Music Educators Journal*, 91(4), 21-25. doi: 10.2307/3400154
- Barrett, M. S. (1995). Children composing: What have we learnt? In H. Lee & M Barrett (Eds.), *Honing the craft: improving the quality of music education: conference proceedings of the Australian Society for music education, 10<sup>th</sup> national conference*, (pp.36-45). Hobart, Tas: Arternis Publishing.
- Barrett, M. S. (1996). Children’s aesthetic decision-making: An analysis of children’s musical discourse as composers. *International Journal of Music Education*, 28, 37–62. doi: 10.1177/025576149602800104
- Barrett, M. S. (1997). Invented notations: A view of young children’s musical thinking, *Research Studies in Music Education*, 8, 2–14. doi:10.1177/1321103X9700800102
- Barrett, M. S. (1999). Modal dissonance: An analysis of children’s invented notations of known songs, original songs, and instrumental compositions. *Bulletin of the Council for Research in Music Education*, 141, 14–22.

- Barrett, M. S. (2000). Windows, mirrors and reflections: A case study of adult constructions of children's musical thinking. *Bulletin of the Council for Research in Music Education* 142, 43–75.
- Barrett, M. S. (2001). Constructing a view of children's meaning-making as notators: A case-study of a five-year-old's descriptions and explanations of invented Notations. *Research Studies in Music Education* 16, 33–45.  
doi:10.1177/1321103X010160010401
- Barrett, M. S. (2002). Invented notations and mediated memory: A case-study of two children's use of invented notations. *Bulletin of the Council for Research in Music Education* 153/154, 55–62.
- Barrett, M. S. (2003). Freedoms and constraints: Constructing musical worlds through the dialogue of composition. In M. Hickey (Ed.), *Composition in the Schools: A New Horizon for Music Education* (pp. 3–30). Reston, VA: MENC.
- Barrett, M. S. (2006). Creative collaboration: An eminence study of teaching and learning in music composition. *Psychology of Music*, 34, 195-218.  
doi:10.1177/0305735606061852
- Barrett, M. S., & Gromko, J. E. (2001). *Scaffolding the creative process: Provoking the "muse that sings."* Paper presented at the Ninth International Conference on Thinking, Auckland, New Zealand.
- Bell, A. (1986). *Diagnostic teaching: Teaching for long term learning*. Nottingham, United Kingdom: Shell Centre for Mathematical Education.
- Bell, A. (1993). Some experiments in diagnostic teaching. *Educational Studies in Mathematics*, 24, 115-137. doi:10.1007/BF01273297
- Bennett, E., & Heaton, P. (2012). Is talent in autism spectrum disorders associated with a specific cognitive and behavioral phenotype? *Journal of Autism and Developmental Disorders*, 42, 2739-2753. doi: 10.1007/s10803-012-1533-9
- Benson, B. (1997). Scaffolding (Coming to terms). *English Journal*, 86, 126-127
- Beteta, L. (2009). *A phenomenological study of the lived experiences of adolescent female with Asperger syndrome* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database. (AAT 3342492)
- Bettison, S. (1996). The long-term effects of auditory training on children with autism. *Journal of Autism and Developmental Disorders*, 26, 362-374.

- Bhatara, A. K. (2008). *Music as a means of investigating perception of emotion and social attribution in typical development and in autism spectrum disorders* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses Full Text. (NR66631)
- Bhatara, A., Quintin, E., Heaton, P., Fombonne, E., & Levitin, D. (2009). The effect of music on social attribution in adolescents with autism spectrum disorders. *Child Neuropsychology, 15*, 375–396. doi:10.1080/09297040802603653.
- Bhatt, R. S., Rovee-Collier, C., & Shyi, G. C. W. (1994). Global and local processing of incidental information and memory retrieval at 6 months. *Journal of Experimental Child Psychology, 57*, 141-162. doi: 10.1006/jecp.1994.1007
- Bickel, M. E. (1991). *The "constructive" listener: verbalization as a cognitive component of the music listening response* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses Full Text. (9210701)
- Bird, H. C. (2010). *Long-term outcomes of an early intervention program for children with an autism spectrum condition* (Unpublished dissertation). University of Manchester, UK.
- Blair, R. J. R. (1999). Psychophysiological responsiveness to the distress of others in children with autism. *Personality and Individual Differences, 26*, 477–485. doi:10.1016/S0191-8869(98)00154-8
- Bloom, B. S. (1976). *Human characteristics and school learning*. New York: McGraw-Hill.
- Bloom, B. S., Krathwohl, D. R., & Masia, B. B. (1956). *Taxonomy of educational objectives: the classification of educational goals*. New York: D. McKay.
- Bloom, B. S., Madaus, G. F., & Hastings, J. T. (1981). *Evaluation to improve learning*. New York: McGraw-Hill.
- Boddaert, N., Chabane, N., Gervais, H., Good, C.D., Bourgeois, M., Plumet, M-H., Barthelemy, C., Mouren, M-C., Artiges, E., Samson, Y., Brunelle, F., Frackowiak, R.S.J., & Zilbovicious, M. (2004). Superior temporal sulcus anatomical abnormalities in childhood autism: a voxel-based morphometry MRI study. *Neuroimage, 23*, 364-369. doi: 10.1016/j.neuroimage.2004.06.016
- Bolte, S., & Pouka, F. (2004). Comparing the intelligence profiles of savant and nonsavant individuals with autistic disorder. *Intelligence, 32*, 121–131.



- Bonnell, A., Mottron, L., Peretz, I., Trudel, M., Gallun, E., & Bonnell, A-M. (2003). Enhanced pitch sensitivity in individuals with autism: A signal detection analysis. *Journal of Cognitive Neuroscience*, *15*, 226–235. doi:10.1162/089892903321208169.
- Botting, N. (2002). Narrative as a tool for the assessment of linguistic and pragmatic impairments. *Child Language Teaching & Therapy*, *18*, 1-21. doi:10.1191/0265659002ct224oa
- Brace, H. (2009). *Lived experience: diverse perspectives on raising a child with autism* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database. (AAT 3420465)
- Bresler, L., & Stake, R. E. (2006). *Qualitative research methodology in music education*. In R. Colwell (Ed.), *MENC handbook of research methodologies*, (pp. 270-311). New York, NY: Oxford University Press, Inc.
- Brown, W. A., Cammuso, K., Sachs, H., Winklosky, B., Mullane, J., Berier, R., Svenson, S., Arin, D., Rosen-Sheidley, B., & Folstien, S. E. (2003). Autism-related language, personality, and cognition in people with absolute pitch: results of a preliminary study. *Journal of Autism and Developmental Disorders*, *33*, 163-167.
- Bruner, J. (1990). *Acts of meaning*. United States of America: Harvard University Press.
- Bruner, J. (1996). *The culture of education*. United States of America: President and Fellows of Harvard College.
- Brusica, K. E. (1998). *Defining music therapy* (2<sup>nd</sup> ed.). Gilsum, NH: Barcelona Publishers.
- Bunting, R. (1988). Composing music: Case studies in the teaching and learning process. *British Journal of Music Education*, *5*, 269–310. doi:10.1017/S0265051700005714
- Burnard, P. (1999). Bodily intention in children's improvisation and composition, *Psychology of Music*, *27*, 159–74. doi: 10.1177/0305735699272007
- Burnard, P. (2000a). Examining experiential differences between improvisation and composition in children's music-making. *British Journal of Music Education*, *17*, 227–45.
- Burnard, P. (2000b). Making a piece you don't play and forget: Children composing and the role of context. *Australian Journal of Music Education*, *1*, 30–39.
- Burnard, P., & Hennessey, S. (Eds.). (2006). *Reflective practices in arts education*. Dordrecht: Springer.

- Burnard, P., & Younker, B. A. (2002). Mapping pathways: Fostering creativity in composition. *Music Education Research, 4*, 245–61. doi:10.1080/1461380022000011948
- Burnard, P., & Younker, B. A. (2004). Problem-solving and creativity: Insights from students. *Individual Composing Pathways, International Journal of Music Education, 22*, 59–76. doi: 10.1177/0255761404042375
- Byrnes, S. R. (1994). *Elementary school, middle school, high school, and trainable mentally handicapped students' response to four western art music selections* (Unpublished doctoral dissertation). Florida State University, Tallahassee, FL.
- Byrnes, S. R. (1997). Different-age and mentally handicapped listeners' response to western art music selections. *Journal of Research in Music Education, 45*, 568-579. doi: 10.2307/3345423
- Campbell, P. (1998). *Songs in their heads: Music and meaning in children's lives*. Oxford, England: Oxford University Press.
- Campbell, P. (1999). The many-splendored worlds of our musical children. *Update: Applications of Research in Music Education, 18*, 7-14.
- Campbell, P. (2000a). How musical we are: John Blacking on music, education, and cultural understanding. *Journal of Research in Music Education, 48*, 336-359. doi: 10.2307/3345368
- Campbell, P. (2000b). What music really means to children. *Music Educators Journal, 86*(5), 32-36.
- Campbell, P. (2002) The musical culture of children. In L. Bresler & C. M. Thompson (Eds.), *Art in children's lives* (pp. 57-70). Norwell, MA: Kluwer Academic Publishers.
- Campbell, P. (2004). *Teaching music globally: Experiencing music, expressing culture*. United States of America: Oxford University Press.
- Campbell, P. (2010). *Songs in their heads: Music and meaning in children's lives* (2<sup>nd</sup> ed.). Oxford, England: Oxford University Press.
- Campbell, P. S., Connell, C., & Beegle, A. (2007). Adolescents' expressed meanings of music in and out of school. *Journal of Research in Music Education, 55*, 220-236. doi: 10.1177/002242940705500304

- Campbell, R. S., & Pennebaker, J. W. (2003) The secret life of pronouns: Flexibility in writing style and physical health. *Psychological Science, 14*, 60-65. doi: 10.1111/1467-9280.01419
- Canfield, S. T. (1961). Creativity in music education. *Music Educators Journal, 48*(2), 51-52, 54, 56. doi: 10.2307/3389680
- Canna, M. A. (2005). *Controlled evaluation of the effects of expressive writing on subsequent cognitive behavioral group treatment with an anxious/depressed sample* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses Full Text. (3183895)
- Carlow, R. (2004). *Hearing others' voices: An exploration of the musical experiences of immigrant students who sing in high school choir*. College Park, MD: University of Maryland.
- Carter, B. (2008). *A qualitative examination of undergraduate music students' compositional identity* (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses Full Text. (3303535).
- Centers for Disease Control and Prevention (CDC). (2011). *Autism spectrum disorders*. Retrieved <http://www.cdc.gov/ncbddd/autism/research.html>
- Centers for Disease Control and Prevention (CDC). (2014). *Data and statistics*. Retrieved from <http://www.cdc.gov/ncbddd/autism/data.html>
- Charman, T., Pickles, A., Simonoff, E., Chandler, S., Loucas, T., & Baird, G. (2010). IQ in children with autism spectrum disorders: Data from the special needs and autism project (SNAP). *Psychological Medicine, 41*, 619–627. doi:10.1017/S0033291710000991
- Christensen, C. (1992). *Music composition, invented notation and reflection: Tools for music learning and assessment* (Unpublished Doctoral dissertation). Rutgers, State University of New Jersey, New Jersey.
- Clift, R. T., Houston, W. R., & Pugach, M. C. (1990). *Encouraging reflective practice in education: An analysis of issues and programs*. New York, NY: Teachers College Press.
- Cohen, D. J., & Volkmar, F. R. (1997). *Handbook of autism and pervasive developmental disorders*. New York: J. Wiley.
- Cole, V., & Scribner, E. (1978). In M. Cole, V. John-Steiner, S. Scribner, E. Souberman (Eds.) *Mind in society: the development of higher psychological processes*. Connecticut: The President and Fellows of Harvard College.

- Copeland, M. (2005). *Socratic circles: fostering critical and creative thinking in middle and high school*. Portland, ME: Stenhouse Publishers.
- Coren, S., & Enns, J. T. (1993). Size contrast as a function of conceptual similarity between test and inducers. *Perception & Psychophysics*, *54*, 579-588. doi: 10.3758/BF03211782
- Countryman, J. (2008). *Missing voices in music education: Music students and music teachers explore the nature of the high school music experience* (Doctoral Dissertation). Retrieved from ProQuest Dissertations and Theses Full Text. (NR39801)
- Crafts, S. D., Cavicchi, D., Keil, C., & Music in Daily Life Project. (1993). *My music: Explorations of music in daily life*. Middletown, CT: Wesleyan University Press.
- Creamer, C. A., Menges, R. A., Ittleson, J. C., La, R. M., Lockwood, P., Critical Mass Media, & Northwestern University. (1979). *Using questions to stimulate discussion*. Evanston, Ill.: The Center.
- Creamer, M., & Lorentz, J. L. (1979). *Effect of teacher structure, teacher affect, cognitive level of questions, group size and student social status on reading achievement*. Washington: ERIC.
- Creswell, J. W. (2008). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (3<sup>rd</sup> ed.). Upper Saddle River, NJ: Pearson Education, Inc.
- Crotty, M. J. (1998). *The foundations of social research: Meaning and perspective in the research process*. Thousand Oaks, CA.: SAGE Publications.
- Custodero, L. (2010). Meaning and experience: The musical learner. In H. Abeles, & L. Custodero (Eds.), *Critical issues in music education* (pp. 61-86). Oxford, England: Oxford University Press.
- Damasio, A. (1998). Investigating the biology of consciousness. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *353*, 1879-1882. doi: 10.1098/rstb.1998.0339
- Damasio, A. (1999). *The feeling of what happens: Body and emotion in the making of consciousness*. Orlando, FL.: Harcourt, Inc.
- Dapretto, M., Davies, M. S., Pfeifer, J. H., Scott, A. A., Sigman, M., Bookheimer, S. Y., & Iacoboni, M. (2006). Understanding emotions in others: Mirror neuron dysfunction in children with autism spectrum disorders. *Nature Neuroscience*, *9*, 28-30. doi:10.1038/nn1611

- Darrow, A-A., & Armstrong, T. (1999). Research on music and autism: Implications for music educators. *Update: Applications of Research in Music Education*, 18, 15-20. doi: 10.1177/875512339901800103
- Data Accountability Center. (2011). *Individuals with Disabilities Education Act (IDEA) Data*. Retrieved from [www.ideadata.org](http://www.ideadata.org)
- Davidson, L., & Scripp, L. (1988). Young children's musical representations: Windows on cognition. In J. A. Sloboda (Ed.), *Generative processes in music: The psychology of performance, improvisation, and composition* (pp. 195-230). Oxford: Clarendon Press.
- Davidson, L., & Scripp, L. (1990). Tracing reflective thinking in the performance ensemble. *The Quarterly*, 1, 49-62. Retrieved from <http://www-usr.rider.edu/~vrme/v16n1/visions/spring7>
- Davidson, L., & Scripp, L. (1992). Surveying the coordinates of cognitive skills in music. In R. Colwell (Ed.), *Handbook of research on music teaching and learning* (pp. 392-413). New York: Schirmer Books.
- Davies, C. (1992). Listen to my song: a study of songs invented by children aged 5-7 years. *British Journal of Music Education*, 9, 19-48. doi:10.1017/S0265051700008676
- Davis, S. (2010). Metaphorical process and the birth of meaningful musical rationality in beginning instrumentalists. *Research Studies in Music Education*, 32, 3-21. doi:10.1177/1321103X10373055
- Dawson, G., Munson, J., Estes, A., Osterling, J., McPartland, J., Toth, K., Carver, L., & Abbott, R. (2002). Neurocognitive function and joint attention ability in young children with Autism Spectrum Disorder versus developmental delay. *Child Development*, 73, 345-358. doi: 10.1111/1467-8624.00411
- Dawson, G., Webb, S. J., & McPartland, J. (2005). Understanding the nature of face processing impairment in autism: Insights from behavioral and electrophysiological studies. *Developmental Neuropsychology*, 27, 403-24. doi:10.1207/s15326942dn2703\_6
- DeLaughter, T. (2002). Light and day. On *The beginning stages of...* [CD]. USA: Hornall Brothers Music Limited.
- De L'Etoile, S. K. (2005). Teaching music to special learners: Children with disruptive behavior disorders. *Music Educators Journal*, 91(5), 37-43.
- DeLoache, J. S., Simcock, G., & Macari, S. (2007). Planes, trains, automobiles - and tea sets: extremely intense interests in very young children. *Developmental Psychology*, 43, 1579-1586. doi: 10.1037/0012-1649.43.6.1579

- DeLorenzo, L. C. (1989). A field study of sixth-grade students' creative music problem-solving processes. *Journal of Research in Music Education*, 37, 188–200. doi: 10.2307/3344669
- Dempsey, N. (2010). Stimulated recall interviews in ethnography. *Qualitative Sociology*, 33, 349-367. doi:10.1007/s11133-010-9157-x.
- DeVito, D. (2003). *The communicative function of behavioral responses to music by public school students with autism spectrum disorder* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses Full Text. (AAT 3224531)
- de Vries, V. P. (2011). An 8-year-old's engagement with preferred music: A case study. *Research Studies in Music Education*, 33, 161-177. doi:10.1177/1321103X11424195
- Dewey, J. (1933). *How we think: A restatement of the relation of reflective thinking to the educative process*. Boston: D.C. Heath and Co.
- Dewey, J. (1934/1980). *Art as experience*. New York, New York: The Berkley Publishing Group.
- Duckworth, E. (1987). *Having wonderful ideas: And other essays on teaching and learning*. New York: Teachers College Press.
- Duncan, J. (1994). *Adults with autism and their constructed identities: A qualitative study* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses Full Text. (AAT 9522520)
- Durrant, C. (2005). Shaping Identity Through Choral Activity: Singers' And Conductors' Perceptions. *Research Studies in Education*, 24, 88-98. doi:10.1177/1321103X050240010701
- Eagleman, D. M., Kagan, A. D., Nelson, S. S., Sagaram, D., & Sarma, A. K. (2007). A standardized test battery for the study of synesthesia. *Journal of Neuroscience Methods*, 159, 139-145. doi: 10.1016/j.jneumeth.2006.07.012
- Ebie, B. D. (2005). An investigation of secondary school students' self-reported reasons for extracurricular musical and athletic activities. *Research & Issues in Music Education*, 3(1). Retrieved from <http://www.stthomas.edu>
- Edgerton, C. L. (1994). The effect of improvisational music therapy on the communicative behaviors of autistic children. *Journal of Music Therapy*, 31, 31–62.

- Elliott, D. (1995). *Music matters: A new philosophy of music education*. New York: Oxford University Press.
- Engestrom, Y. (1995). Polycontextuality and boundary crossing in expert cognition: Learning and problem solving in complex work activities. *Learning and Instruction, 5*, 319-36. doi: 10.1016/0959-4752(95)00021-6
- Engestrom, Y. (1996). Interobjectivity, ideality, and dialectics. *Mind, Culture, and Activity, 3*, 259-265. doi: 10.1207/s15327884mca0304\_5
- Engestrom, Y. (1999). Communication, discourse and activity. *The Communication Review, 3*, 1-2. doi: 10.1080/10714429909368577
- Engeström, Y. (2006). From well-bounded ethnographies to intervening in mycorrhizae activities. *Organization Studies, 27*, 1783-1793. doi: 10.1177/0170840606071898
- Engeström, Y. (2007). From stabilization knowledge to possibility knowledge in organizational learning. *Management Learning, 38*, 271-275. doi:10.1177/1350507607079026
- Engeström, Y., Kerosuo, H., & Kajamaa, A. (2007). Beyond discontinuity: Expansive organizational learning remembered. *Management Learning, 38*, 319-336. doi:10.1177/1350507607079032
- Ennis, R. H. (1996). *Critical thinking*. Upper Saddle River, NJ: Prentice Hall.
- Eppink, J. (2002) *The effect of web-based portfolio assessment strategies on the attitudes and self-perceived growth in music learning of non-music elementary general classroom teachers in a basics of music course* (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses Full Text. (3057046)
- Fang, E. R. (2009). *Music in the lives of two children with autism: A case study* (Doctoral dissertation). San Jose, CA.: San Jose State University.
- Fink-Jensen, K. (2007). Attunement and bodily dialogues in music education. *Philosophy of Music Education Review, 15*, 53-68.
- Finnigan, E., & Starr, E. (2010). Increasing social responsiveness in a child with autism. *Autism, 14*, 321-348. doi: 10.1177/1362361309357747
- Fiske, H. E. (1993). *Music cognition and aesthetic attitudes*. Lewiston, NY: E. Mellen Press.
- Fiske, H. E. (1996). *Selected theories of music perception*. Lewiston, NY: E. Mellen Press.

- Fliegler, C. M. (2005) *The therapy of music: Technique more common in treating those with physical and other disabilities*. Retrieved from: <http://www.autismtoday.com>
- Flowers, P. J. (1984). Attention to elements of music and effect of instruction in vocabulary on written descriptions of music by children and undergraduates. *Psychology of Music, 12*, 17-24. doi: 10.1177/0305735684121002
- Flowers, P. J. (1987). The effect of written descriptions on memory of fifth graders and undergraduates for orchestral excerpts. In C. K. Madsen, & C. A. Prickett (Eds.), *Applications of research in music behavior* (pp. 32-42). Tuscaloosa, AL: University of Alabama Press.
- Flowers, P. J. (1996, August). *Uniqueness and redundancy in written descriptions of music excerpts by children and undergraduates*. Paper presented at the 4th International Conference on Music Perception and Cognition, McGill University, Montreal, Canada.
- Flowers, P. J., & Wang, C. (2002). Matching verbal description to music excerpt: The use of language by blind and sighted children. *Journal of Research in Music Education, 50*, 202-214. doi: 10.2307/3345798
- Francis, M. E., & Pennebaker, J. W. (1992). Putting stress into words: the impact of writing on physiological, absentee and self-reported emotional well-being measures. *American Journal of Health Promotion, 6*, 280-287. doi: 10.4278/0890-1171-6.4.280
- Freed-Garrod, J. (1999). A framework for investigating self-described decisions and value judgments for composing music: An illustrative case study. *Bulletin of the Council for Research in Music Education, 141*, 41-46.
- Freeman, M., & Mathison, S. (2009). *Researching children's experiences*. New York, New York: The Guilford Press.
- Freer, P. (2009). Boys' descriptions of their experiences in choral music. *Research Studies in Music Education, 31*, 142-160. doi: 10.1177/1321103X09344382
- French, J. N., & Rhoder, C. (1992). *Teaching thinking skills: Theory and practice*. New York: Garland Pub.
- Frick, J. (1999). *A qualitative study of music and communication in a musically rich early childhood special education classroom* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses Full Text. (AAT 9940757)
- Frith, U. (1989). *Autism: explaining the enigma*. Oxford: Basil Blackwell.



- Gage, N. M., Siegel, B., Callen, B., & Roberts, T. P. L. (2003). Cortical sound processing in children with autism disorder: An MEG investigation. *NeuroReport*, *14*, 2047-2051.
- Gallas, K. (1994). *The languages of learning: how children talk, write, dance, draw, and sing their understanding of the world*. New York, NY: Teachers College, Columbia University.
- Gardner, H. (1973). Children's sensitivity to musical styles. *Merrill-Palmer Quarterly*, *19*, 67-77.
- Gardner, H., Kornhaber, M. L., & Wake, W. K. (1996). *Intelligence: multiple perspectives*. Fort Worth, TX: Harcourt Brace Publishers.
- Glock, M. D. (1971). *Guiding learning: Readings in educational psychology*. New York: Wiley.
- Gomot, M., Giard, M. H., Adrien, J. L., Barthelemy, C., & Bruneau, N. (2002). Hypersensitivity to acoustic change in children with autism: Electrophysiological evidence of left frontal cortex dysfunctioning. *Psychophysiology*, *39*, 577-584.
- Grandin, T. (2011). *The way I see it: a personal look at autism & Asperger's*. Arlington, TX: Future Horizons Inc.
- Grandin, T., & Panek, R. (2012). *The autistic brain: Thinking across the spectrum*. New York, NY: Houghton Mifflin Harcourt Publishing Company.
- Green, L. (2002). *How popular musicians learn: A way ahead for music education*. Burlington, VT: Ashgate.
- Green, L. (2005). The music curriculum as lived experience: Children's "natural" music-learning processes. *Music Educators Journal*, *91*(4), 27-32. doi:10.2307/3400155
- Green, L. (2008). *Music, informal learning and the school : a new classroom pedagogy*. Burlington, VT: Ashgate.
- Green, L. (Ed.). (2011). *Learning, teaching and musical identity: Voices across cultures*. Bloomington, IN: Indiana University Press.
- Greenspan, S., & Weider, S. (2006). *Engaging autism: Using the Floortime approach to help children relate, communicate and think*. Philadelphia, PA: Da Capo Press.
- Griffin, S. M. (2009). Listening to children's music perspectives: In- and out-of-school thoughts. *Research Studies in Music Education*, *31*, 161-177. doi:10.1177/1321103X09344383

- Griffin, S. M. (2010). Inquiring into children's music experiences: Groundings in literature. *UPDATE: Applications Of Research In Music Education*, 28(2), 42-49.
- Gromko, J. E. (1996). In a child's voice: An interpretive interaction with young composers. *Bulletin of the Council for Research in Music Education*, 128, 37-51.
- Hacking, I. (2009). How we have been learning to talk about autism: A role for stories. *Metaphilosophy*, 40, 499-516. doi: 10.1111/j.1467-9973.2009.01607.x
- Hahn, K. R. (2010). *Inclusion of students with disabilities: Preparation and practices of music educators* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses Full Text. (3420149)
- Hair, H. I. (1977). Discrimination of tonal direction on verbal and nonverbal tasks by first grade children. *Journal of Research in Music Education*, 25, 197-210. doi:10.2307/3345304
- Hair, H. I. (1981). Verbal identification of music concepts. *Journal of Research in Music Education*, 29, 11-21. doi: 10.2307/3344675
- Hair, H. I. (1987a). Children's responses to music stimuli: Verbal/nonverbal, aural/visual modes. In C. K. Madsen & C. A. Prickett (Eds.), *Applications of research in music behavior* (pp. 59-70). Tuscaloosa, AL: University of Alabama Press.
- Hair, H. I. (1987b). Descriptive vocabulary and visual choices: Children's responses to conceptual changes in music. *Bulletin of the Council for Research in Music Education*, 91, 59-64.
- Hair, H. I. (1993/1994). Children's descriptions and representations of music. *Bulletin of the Council for Research in Music Education*, 119, 41-48.
- Hair, H. I. (1995/1996). Mood categories of lines, colors, words, and music. *Bulletin of the Council for Research in Music Education*, 127, 99-105.
- Hair, H. I. (2000-2001). Children's descriptions of music: Overview of research. *Bulletin of the Council for Research in Music Education*, 147, 66-71.
- Halliday, A. R. B. (2012). *Interpretations of student engagement in the context of the Orff-Schulwerk music classroom at the DuBard School for Language Disorders* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses Full Text. (3530729)
- Hammel, A. M. (2001). Preparation for teaching special learners: Twenty years of practice. *Journal of Music Teacher Education* 11(1), 5-11. doi:10.1177/105708370101100103

- Hammel, A. M., & Hourigan, R. M. (2011). *Teaching music to students with special needs: A label-free approach*. New York, NY: Oxford University Press.
- Hancock, D. R., & Algozzine, B. (2006). *Doing case study research: A practical guide for beginning researchers*. New York, NY: Teachers College Press.
- Handy, W. C. (n.d.). *Joe Turner's blues*. Retrieved from <http://www.youtube.com/watch?v=ZIXrP9s3WcU>
- Happé, F. (1999). Autism: cognitive deficit or cognitive style? *Trends in Cognitive Sciences*, 3, 216–222. doi:10.1016/S1364-6613(99)01318-2
- Happé, F., & Frith, U. (2006). The weak coherence account: Detail-focused cognitive style in autism spectrum disorders. *Journal of Autism and Developmental Disorders*, 36, 5-25. doi: 10.1007/s10803-005-0039-0
- Hardiman, M. (2012). *The brain-targeted teaching model for 21<sup>st</sup>-century schools*. Thousand Oaks, CA.: Corwin.
- Heaton, P. (2003). Pitch memory, labeling and disembedding in autism. *Journal of Child Psychology and Psychiatry*, 44, 543–551. doi:10.1111/1469-7610.00143
- Heaton, P. (2005) Interval and contour processing in autism. *Journal of Autism and Developmental Disorders*, 3, 787-793. doi:10:1007/s10803-005-0024-7.
- Heaton, P., Allen, R., Williams, K., Cummins, O., & Happé, F. (2008). Do social and cognitive deficits curtail musical understanding? Evidence from autism and Down syndrome. *British Journal of Developmental Psychology*, 26, 171-182. doi:10.1348/026151007X206776
- Heaton, P., Hermelin, B., & Pring, L. (1998). Autism and pitch processing: A precursor for savant musical ability? *Music Perception*, 15, 291–305.
- Heaton, P., Hermelin, B., & Pring, L. (1999). Can children with autistic spectrum disorders perceive affect in music? An experimental investigation. *Psychological Medicine*, 29, 1405-10.
- Heaton, P., & Wallace, G. L. (2004). Annotation: The savant syndrome. *Journal of Child Psychology and Psychiatry*, 45, 899–911. doi:10.1111/j.1469-7610.2004.t01-1-00284.x
- Heaton, P., Williams, K., Cummins, O., & Happé, F. (2007). Beyond perception: Musical representation and on-line processing in autism. *Journal of Autism and Developmental Disorders*, 37,1355-1360. doi:10.1007/s10803-006-0283-y

- Heavey, L., Pring, L., & Hermelin, B. (1999). A date to remember: The nature of memory in savant calendrical calculators. *Psychological Medicine*, *29*, 145–160. doi: 10.1017/S0033291798007776
- Hennessey, S. (2006). The conditions and consequences of reflective practices in arts education. In P. Burnard & S. Hennessey (Eds.), *Reflective practices in arts education* (pp. 183-192). Retrieved from <http://link.springer.com/>
- Hermelin, B., & O'Connor, N. (1990). Art and accuracy: The drawing ability of idiot-savants. *Journal of Child Psychology and Psychiatry*, *31*, 217–228. doi:10.1111/j.1469-7610.1990.tb01563.x
- Hill, E., Berthoz, S., & Frith, U. (2004). Brief report: Cognitive processing of own emotions in individuals with autism spectrum disorder and in their relatives. *Journal of Autism and Developmental Disorders*, *34*, 229-235. doi: 10.1023/B:JADD.0000022613.41399.14
- Hobson, R. P. (1986). The autistic child's appraisal of expressions of emotion. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, *27*, 321-42. doi: 10.1111/j.1469-7610.1986.tb01836.x
- Hodson, D., & Hodson, J. (1998). From constructivism to social constructivism : A Vygotskian perspective on teaching and learning science. *School Science Review*, *79*, 33-41.
- Holroyd, S., & Baron-Cohen, S. (1993). Brief report: How far can people with autism go in developing a theory of mind? *Journal of Autism Developmental Disorders* *23*, 379-385. doi: 10.1007/BF01046226
- Horwitz, W., Deming, W., & Winter, R. (1969). A further account of the idiot savants, experts with the calendar. *American Journal of Psychiatry*, *126*, 1075–1079.
- Houtveen, J. H., Bermond, B., & Elton, M.R. (1997). Alexithymia: A disruption in a cortical network? An EEG power and coherence analysis. *Journal of Psychophysiology*, *11*, 147-157.
- Howlin, P., Goode, S., Hutton, J., & Rutter, M. (2009). Savant skills in autism: Psychometric approaches and parental reports. *Philosophical Transactions of The Royal Society B: Biological Sciences*, *364*, 1359–1367. doi:10.1098/rstb.2008.0328
- Howlin, P., Goode, S., Hutton, J., & Rutter, M. (2012). Savant skills in autism: Psychometric approaches and parental reports. *Philosophical Transactions of The Royal Society B: Biological Sciences*, *364*, 1359-1367. doi: 10.1098/rstb.2008.0328

- Hullfish, H. G., & Smith, P. G. (1978). *Reflective thinking: The method of education*. Westport, CT.: Greenwood Press.
- Hundt, T. (2002). Videotaping young children in the classroom. *Teaching Exceptional Children, 34*, 38-43. Retrieved through EBSCOhost. (5995644)
- Hylton, J. B. (1981). Dimensionality in high school student participants' perceptions of the meaning of choral singing experiences. *Journal of Research in Music Education, 29*, 287-303. doi: 10.2307/3345005
- Iacoboni, M., & Dapretto, M. (2006). The mirror neuron system and the consequences of its dysfunction. *Nature Reviews. Neuroscience, 7*, 942-51. doi:10.1038/nrn2024
- Jarrold, C., & Russell, J. (1997). Counting abilities in autism: Possible implications for central coherence theory. *Journal of Autism and Developmental Disorders, 27*, 25-37. doi: 10.1023/A:1025817121137
- Jellison, J. A., & Flowers, P. J. (1991). Talking about music: Interviews with disabled and nondisabled children. *Journal of Research in Music Education, 39*, 322-333. doi: 10.2307/3345751
- Jensen, E. P. (2000). *Brain-based learning: The new paradigm of teaching*. Thousand Oaks, CA.: Corwin Press.
- Jinah, K., Wigram, T., & Gold, C. (2009). Emotional, motivational, and interpersonal responsiveness of children with autism in improvisational music therapy. *Autism, 13*, 389-409. doi: 10.1177/1362361309105330
- Jorgenson, E. R. (2002). The aims of music education: a preliminary excursion. *Journal of Aesthetic Education, 36*, 31-49.
- Jorgensen, E. R. (2003). *Transforming music education*. Bloomington: Indiana University Press.
- Kanellopoulos, P. A. (2007). Children's early reflections on improvised music-making as a wellspring of philosophical thinking. *Philosophy of Music Education Review, 15*, 119-141.
- Kanner, L. (1943). Autistic disturbances of affective contact. *Nervous Child, 2*, 217-250.
- Kennedy, M. A. (1999). Where does the music come from? A comparison case-study of the compositional processes of a high School and a collegiate composer. *British Journal of Music Education, 16*, 157-77.

- Kern, P. (2007). Use of songs to promote independence in morning greeting routines for young children with autism. *Journal of Autism & Developmental Disorders*, *37*, 1264-1271. doi:10.1007/s10803-006-0272-1.
- Kern, P., & Humpal, M. E. (2012). *Early childhood music therapy and autism spectrum disorders: Developing potential in young children and their families*. London: Jessica Kingsley Publishers.
- Kim, J., Wigram, T., & Gold, C. (2008). The effects of improvisational music therapy on joint attention behaviors in autistic children: A randomized controlled study. *Journal of Autism Development Disorders*, *38*, 1758-1766. doi: 10.1007/s10803-008-0566-6.
- King, P., & Kitchener, K. S. (1994). *Developing reflective judgment*. San Francisco, CA: John Wiley & Sons, Inc.
- Kramer, J. H., Ellenberg, L., Leonard, J., & Share, L. J. (1996). Developmental sex differences in global-local perceptual bias. *Neuropsychology*, *10*, 402-407
- Kratus, J. (1989). A time analysis of the compositional processes used by children ages 7-11. *Journal of Research in Music Education* *37*, 5-20. doi: 10.2307/3344949
- Kratus, J. (1991). Characterization of compositional strategies used by children to a melody. *Special ISME Research Edition, Canadian Music Educator*, *33*, 95-103.
- Krauss, S. J. (1995). Attitudes and the prediction of behavior: A meta-analysis of the empirical literature. *Personality and Social Psychology Bulletin*, *21*, 58-75. doi: 10.1177/0146167295211007
- Kushner, S. (1995). Learning from experience: The construction of naturalistic methodology for evaluating music education. *Bulletin of the Council for Research in Music Education*, *123*, 97-111.
- Ladson-Billings, G. (1995). Toward a theory of culturally relevant pedagogy. *American Educational Research Journal*, *32*, 465-491. doi: 10.3102/00028312032003465
- Lamont, A., Hargreaves, D. J., Marshall, N. A., & Tarrant, M. (2003). Young people's music in and out of school. *British Journal of Music Education*, *20*, 229-241. doi: 10.1017/S0265051703005412
- Lee, L. (2008). *Peer reciprocity, acceptance and friendship quality in children with autism in general educational settings* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses Full Text. (AAT 3335941)
- Losh, M. (2004). *An investigation of personal accounts of emotional experience in high-functioning autism and typical development: links to narrative ability and*

*psychological well-being*. (Doctoral dissertation). Available from ProQuest Dissertations and Theses Full Text. (AAT 3146936)

- Lucas, M. (2011). Adolescent male attitudes about singing in choir. *Update: Applications of Research in Music Education, 30*, 46-53. doi: 10.1177/8755123311418623
- Lum, C. H., & Campbell, P. S. (2007). The sonic surrounds of an elementary school. *Journal of Research in Music Education, 55*, 31. doi:10.1177/002242940705500104
- Marendaz, C. (1985). Global precedence and field dependence: visual routines? *Cahiers de Psychologie Cognitive, 5*, 727-745.
- Marley, B. (1977). Three little birds. On *Exodus* [CD]. Jamaica: Tuff Gong.
- Marley, B., & Mayfield, C. (1965). One love. On *The wailing wailers* [CD]. Jamaica: Studio One.
- Marley, B., & Mayfield, C. (1977). One love. On *Exodus* [CD]. Jamaica: Tuff Gong.
- Matthews, M. V. (1980). The sequential drum. *Computer Music Journal, 4*, 45-59.
- McGillen, C., & McMillan, R. (2005). Engaging with adolescent musicians: Lessons in song writing, cooperation and the power of original music. *Research Studies in Education, 25*, 1-20. doi: 10.1177/1321103X050250010401
- McLennon, S. (2002). Defining musical creativity: A critical examination of concept and measurement. In T. Sullivan & L. Willingham (Eds.), *Creativity and music education* (pp. 35-51). Edmonton, AB Canada: Canadian Music Educator's Association.
- McMahon, O. (1987). An exploration of aesthetic awareness in pre-school age children. *Bulletin of the Council for Research in Music Education, 91*, 97-102.
- McPeck, J. E. (1981). *Critical thinking and education*. New York: St. Martin's Press.
- McPeck, J. E. (1984). Stalking beasts, but swatting flies: The teaching of critical thinking. *Canadian Journal of Education, 9*, 28-44.
- McPeck, J. E. (1990). *Teaching critical thinking: Dialogue and dialectic*. New York: Routledge.
- Mehta, A., & Dattani, M. (2004). Clinical aspects of septo-optic dysplasia. *Eye Contact, 38*, 5-7.

- Merriam, S. B. (1998). *Qualitative research and case study applications in education*. San Francisco, CA: John Wiley & Sons, Inc.
- Merrill-Mirsky, C. (1988) *Eeny meeny pepsadeeny: ethnicity and gender in children's musical play* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses Full Text. (8826013)
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook* (2<sup>nd</sup> ed.). Thousand Oaks, CA: SAGE Publications, Inc.
- Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). *Qualitative data analysis: A methods sourcebook* (3<sup>rd</sup> ed.). Thousand Oaks, CA: SAGE Publications, Inc.
- Miller, L. K. (1989). *Musical savants: exceptional skill in the mentally retarded*. Hillsdale, NJ: Lawrence Erlbaum and Associates.
- Miller, L. K. (1998). Defining the savant syndrome. *Journal of Developmental and Physical Disabilities, 10*, 73–85.
- Miller, L. K. (1999). The savant syndrome: Intellectual impairment and exceptional skill. *Psychological Bulletin, 125*, 31–46.
- Minks, A. (1999). Growing and grooving to a steady beat: Pop music in fifth-graders' social lives. *Yearbook for Traditional Music, 31*, 77-101.
- Molnar-Szakacs, I., & Heaton, P. (2012). Music: A unique window into the world of autism. *Annals of the New York Academy of Sciences, 1252*, 318-24. doi:10.1111/j.1749-6632.2012.06465.x
- Moss, J., & Howlin, P. (2009). The assessment and presentation of Autism Spectrum Disorders in genetic syndromes: implications for diagnosis, intervention and understanding the wider ASD population. *Journal of Intellectual Disability Research, 53*, 852-872.
- Mottron, L., & Belleville, S. (1993). A study of perceptual analysis in a high-level autistic subject with exceptional graphic abilities. *Brain and Cognition, 23*, 279–309. doi:10.1006/breg.1993.1060
- Mottron, L., Belleville, I., & Menard, E. (2000a). Local and global processing of music in high-functioning persons with autism: beyond cerebral coherence? *Journal of Child Psychology and Psychiatry, 41*, 1057–1065.
- Mottron, L., & Burack, J. A. (2001). Enhanced perceptual functioning in the development of autism. In J. A. Burack, T. Charman, N. Yirmiya, & P. R. Zelazo (Eds.), *The development of autism* (pp. 131–136). Mahwah, NJ: Lawrence Erlbaum Associates.



- Mottron, L., Dawson, M., & Soulières, I. (2009). Enhanced perception in savant syndrome: Patterns, structure and creativity. *Philosophical Transactions of The Royal Society B: Biological Sciences*, *364*, 1385–1391. doi:10.1098/rstb.2008.0333
- Mottron, L., Dawson, M., Soulières, I., Hubert, B., & Burack, J. A. (2006). Enhanced perceptual functioning in autism: An update, and eight principles of autistic perception. *Journal of Autism and Developmental Disorders*, *36*, 27–43. doi: 10.1007/s10803-005-0040-7
- Mottron, L., Peretz, I., & Menard, E. (2000b). Local and global processing of music in high functioning persons with autism: Beyond central coherence? *Journal of Child Psychology and Psychiatry*, *41*, 1057–1065.
- Moustakas, C. (1990). *Heuristic research: Design, methodology, and applications*. Newberry Park, CA: Sage Publications.
- Music Educators National Conference (MENC). (1994). *National standards for arts education: Dance, music, theatre, visual arts: what every young American should know and be able to do in the arts*. Reston, VA: Music Educators National Conference.
- National Center on Birth Defects and Developmental Disabilities. (2012). *Key findings: trends in the prevalence of developmental disabilities in U.S. children, 1997-2008*. Retrieved from <http://www.cdc.gov>
- National Joint Committee for the Communication Needs of Persons With Severe Disabilities. (1992). *Guidelines for meeting the communication needs of persons with severe disabilities*. Retrieved from [www.asha.org/policy](http://www.asha.org/policy) or [www.asha.org/nj](http://www.asha.org/nj)
- National Research Council (NRC). *How people learn: Brain, mind, experience and school* (Expanded ed). Washington, D.C.: National Academy Press.
- Nelson, N. W. (1993). *Childhood language disorders in context*. New York: Macmillan.
- Nicolosi, L., Harryman, E., & Kresheck, J. (1996). *Terminology of communication disorders*. Baltimore, MD: Williams & Wilkins.
- Ockelford, A. (2000). Music in the education of children with severe or profound learning difficulties: Issues in current U.K. provision, a new conceptual framework, and proposals for research. *Psychology of Music*, *28*, 197-217. doi: 10.1177/0305735600282009
- Ockelford, A. (2002). *Objects of reference: Promoting early symbolic communication*. London: Royal National Institute for the Blind.

- Ockelford, A. (2004). On similarity, derivation and the cognition of musical structure. *Psychology of Music*, 32, 23-74. doi: 10.1177/0305735604039282
- Ockelford, A. (2007). Exploring musical interaction between a teacher and pupil, and her evolving musicality, using a music-theoretical approach. *Research Studies in Music Education*, 28, 3–23.
- Ockelford, A. (2008). *Music for children and young people with complex needs*. Oxford: Oxford University Press.
- Ockelford, A. (2012). Songs without Words: Exploring how music can serve as a proxy language in social interaction with autistic children who have limited speech, and the potential impact on their wellbeing. In R. MacDonald, G. Kreutz and L. Mitchell (Eds.), *Music, health and wellbeing*. Oxford: Oxford University Press.
- Ockelford, A. (2013a). *Applied musicology: Using zygonic theory to inform music education, therapy and psychology research*. Oxford, UK: Oxford University Press.
- Ockelford, A. (2013b). *Music, language and autism: Exceptional strategies for exceptional minds*. London: Jessica Kingsley Publishers.
- Ockelford, A., & Pring, L. (2005). Learning and creativity in a prodigious musical savant. *International Congress Series*, 1282, 903-907. doi: 10.1016/j.ics.2005.05.051
- Ockelford, A., Welch, G., & Zimmermann, S-A. (2002). Music education for pupils with severe or profound and multiple difficulties- current provisions and future need. *British Journal of Special Education*, 29, 178-82. doi:10.1177/0305735600282009
- Ockelford, A., Welch, G., Zimmerman S-A., & Himonides, E. (2005). “Sounds of intent:” mapping, assessing and promoting the musical development of children with profound and multiple learning disabilities. *International Congress Series*, 1282, 898-902. doi: 10.1016/j.ics.2005.04.007
- O’Connor, N., & Hermelin, B. (1991). Talents and preoccupations in idiots-savants. *Psychological Medicine*, 21, 959–964. doi:10.1017/S0033291700029949
- Office of Special Education and Rehabilitative Services (OSERS). (2010). *Thirty five years of progress in educating children with disabilities through IDEA*. Retrieved from [http://www2.ed.gov/about/offices/list/osers/idea35/history/index\\_pg10.html](http://www2.ed.gov/about/offices/list/osers/idea35/history/index_pg10.html)
- Oldfather, P., & West, J. (1999). *Learning through children’s eyes: social constructivism and the desire to learn*. Washington, D.C.: American Psychological Association.

- Oldfield, A. (2006). *Interactive music therapy: A positive approach*. London, UK: Jessica Kingsley.
- Orr, T. J., & Miles, S. B., & Carlson, J. K. (1998). Impact of rhythmic entrainment on a person with autism. *Focus on Autism and Other Developmental Disabilities, 13*, 163-167. doi: 10.1177/108835769801300304
- Osterling, J., & Dawson, G. (1994). Early recognition of children with autism: A study of first birthday home videotapes. *Journal of Autism and Developmental Disorders, 24*, 247-57. doi:10.1007/BF02172225
- Overy, K., & Molnar-Szakacs, I. (2009). Being together in time: Musical experience and the mirror neuron system. *Music Perception: An Interdisciplinary Journal, 26*, 489-504. doi:10.1525/mp.2009.26.5.489
- Owen, R., Hayett, L., & Roulstone, S. (2004). Children's views of speech and language therapy in school: Consulting children with communication difficulties. *Child Language Teaching & Therapy, 20*, 55-73. doi:10.1191/0265659004ct263oa.
- Parker, E. C. (2010). Exploring student experiences of belonging within an urban high school choral ensemble: An action research study. *Music Education Research, 12*, 339-352. doi: 10.1080/14613808.2010.519379
- Paul, P. (2009). Aesthetic experiences with music. *Update: Applications of Research in Music Education, 27*, 2, 38-43.
- Paul R., & Cascella, P. (Eds.). (2007). *Introduction of clinical methods in communication disorders* (2<sup>nd</sup> ed.). Baltimore, MD: Paul H. Brooks Publishing Co., Inc.
- Paul, R., & Sonoma State University. (1987). *Critical thinking handbook, 4th-6th grades: A guide for remodelling lesson plans in language arts, social studies & science*. Rohnert Park, CA: Center for Critical Thinking and Moral Critique.
- Pennebaker, J.W. & Evans, J. (2014). *Expressive writing: Words that heal*. Enumclaw, WA: Idyll Arbor.
- Perra, O., Williams, J. H. G., Whiten, A., Fraser, L., Benzie, H., & Perrett, D. I. (2008). Imitation and 'theory of mind' competencies in discrimination of autism from other neurodevelopmental disorders. *Research in Autism Spectrum Disorders, 2*, 456-468. doi: 10.1016/j.rasd/2007.09.007
- Piaget, J. (1954). *The construction of reality in the child*. New York: Basic Books.
- Plaisted, K., Swettenham, J., & Rees, E. (2003). Children with autism show local precedence in a divided attention task and global precedence in a selective

- attention task. *Journal of Child Psychology*, *40*, 733-742. doi: 0.1111/1469-7610.00489
- Poirier, M., Martin, J. S., Gaigg, S. B., & Bowler, D. M. (2011). Short-term memory in autism spectrum disorder. *Journal of Abnormal Psychology*, *120*, 247–252. doi: 10.1037/a0022298.
- Pring, L., Hermelin, B., & Heavey, L. (1995). Savants, segments, art and autism. *Journal of Child Psychology and Psychiatry*, *36*, 1065–1076. doi:10.1111/j.1469-7610.1995.tb01351.x
- Pring, L., Woolf, K., & Tadic, V. (2008). Melody and pitch processing in five musical savants with congenital blindness. *Perception*, *37*, 290–307.
- Prizant, B.M., Wetherby, A. M., Rubin, E., Laurent, A. C., & Rydell, P. J. (2005). *The SCERTS model: A comprehensive educational approach for children with autism spectrum disorders*. Baltimore, MD: Brookes Publishing Co.
- Profita, J., & Bidder, T. G. (1988). Perfect pitch. *American Journal of Medical Genetics*, *29*, 763–771. doi:10.1002/ajmg.1320290405
- Quintin, E-M., Bhatara, A., Poissant, H., Fombonne, E., & Levitin, D. (2011). Emotion perception in music in high-functioning adolescents with autism spectrum disorders. *Journal of Autism and Developmental Disorders*, *41*, 1240-1255. doi: 10.1007/s10803-010-1146-0
- Ramachandran, V. S., & Oberman, L. M. (2006). Broken mirrors: A theory of autism. *Scientific American*, *295*(5) 62-69. doi:10.1038/scientificamerican1106-62
- Rapin, I., Dunn, M., Allen, D. A., Stevens, M. C., & Fein, D. (2009). Subtypes of language disorders in school-age children with autism. *Developmental Neuropsychology*, *34*, 66-84. doi: 10.1080/87565640802564648.
- Raskopoulos, J., Naimo, L., & Davis, B. (2011). 4 chords. On *Animal vehicle* [CD]. Laughspin.
- Reimer, B. (1970). *A philosophy of music education*. Englewood Cliffs, N.J: Prentice-Hall.
- Reimer, B. (1989). *A philosophy of music education* (2<sup>nd</sup> ed.). Englewood Cliffs, NJ: Prentice-Hall, Inc.
- Reimer, B. (2003). *A philosophy of music education: Advancing the vision* (3<sup>rd</sup> ed.). Upper Saddle River, NJ: Prentice Hall.

- Reimer, B., Gordon, E., Elliott, C. A., & Music Educators National Conference. (1994). *The Reimer/Gordon debate on music learning: Complementary or contradictory views?* Reston, Va.: MENC.
- Reimer, B., & Wright, J.E. (Eds.). (1992). *On the nature of musical experience*. Niwot, CO: University Press of Colorado.
- Richardson, V. (1990). The evolution of reflective teaching and teacher education. In R. T. Clift, W. R. Houston, & M. C. Pugach (Eds.), *Encouraging reflective practice in education: An analysis of issues and programs*. (pp. 3-19). New York: Teachers College Press.
- Riley, T. (1964). *In C*. Tuscon, Arizona: Celestial Harmonies.
- Riley, T. (2009). In C. *On Carnegie Hall Presents Terry Riley In C* [CD]. Sony Classics.
- Rimland, B. (1978). Savant capabilities of autistic children and their cognitive implications. In G. Serban (Ed.), *Cognitive defects in the development of mental illness* (pp. 43–65). New York: Plenum.
- Rimland, B., & Edelson, S. M. (1995). A pilot study of auditory integration training in autism. *Journal of Autism and Developmental Disorders*, 25, 61-70. doi: 10.1007/BF02178168
- Rimland, B., & Fein, D. (1988). Special talents of autistic savants. In L. Obler & D. Fein (Eds.), *The exceptional brain: Neuropsychology of talent and superior abilities* (pp. 341–363). New York: Guilford Press.
- Rimland, B., & Hill, A. (1984). Idiot savants. In J. Wortes (Ed.), *Mental retardation and developmental disabilities*, 13, (pp. 155–169). New York: Plenum Press.
- Ritchie, S. (2006). *Autobiographical accounts of autism: Implications for instructional leaders* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database. (AAT 3236796)
- Rodriguez, C. X., & Webster, P.R. (1997). Development of children's verbal interpretive responses to music listening. *Bulletin of the Council for Research in Music Education*, 134, 9-30.
- Rogers, S. J., & Pennington, B. F. (1991). A theoretical approach to the deficits in infantile autism. *Development and Psychopathology*, 3, 2. doi:10.1017/S0954579400000043
- Rogoff, B. (1990). *Apprenticeship in thinking: Cognitive development in social context*. New York, NY, US: Oxford University Press.

- Rosenblatt, A. I., & Carbone, P. S. (Eds.). (2014). *Autism spectrum disorders: What every parent needs to know*. Elk Grove Village, IL: American Academy of Pediatrics.
- Russo, N. (2008). *A key to understanding social communication deficits in autism spectrum disorders: Neural processing of sound and speech Intonation* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database. (AAT 3303669)
- Sakadolskis, E. A. (2003). *The use of figurative language in the construction of musical meaning: A case study of three sixth-grade general music classes* (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses Full Text. (3107258)
- Saldaña, J. (2009). *The coding manual for qualitative researchers*. Thousand Oaks, CA: SAGE Publications Inc.
- Saldaña, J. (2012). *The coding manual for qualitative researchers* (2<sup>nd</sup> ed.). Thousand Oaks, CA: SAGE Publications Inc.
- Saran, R., & Neisser, B. (2004). *Enquiring minds: Socratic dialogue in education*. Sterling, USA: Trentham Books.
- Sartre, J-P. (1981). *The family idiot: Gustave Flaubert*. Chicago: University of Chicago, Press.
- Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. New York: Basic Books.
- Schön, D. A. (1987). *Educating the reflective practitioner: Toward a new design for teaching and learning in the professions*. San Francisco: Jossey-Bass.
- Scripp, L. (1991). Encouraging musical risks for learning success. *Music Educators Journal*, 78(3), 36-41. doi: 10.2307/3398286
- Seach, D., Lloyd, M., & Preston, M. (2002). *Supporting children with autism in mainstream schools*. Birmingham, UK: The Questions Publishing Company Ltd.
- Shalom, B., Mostofsky, S., Hazlett, R., Goldberg, M., Landa, R., Faran, Y., McLeod, D., & Hoehn-Saric, R. (2006). Normal physiological emotions but differences in expression of conscious feelings in children with high-functioning autism. *Journal of Autism and Developmental Disorders*, 36, 395-400. doi: 10.1007/s10803-006-0077-2

- Shepard, J. M., & Greene, R. W. (2003). *Sociology and you*. New York: Glencoe/McGraw Hill.
- Shoener, R., Kinnealey, M., & Koenig, K. (2010). You can know me now if you listen: Sensory, motor, and communication issues in a nonverbal person with autism. *American Journal of Occupational Therapy*, *62*, 547-553. doi:10.5014/ajot.62.5.547
- Shore, S. M. (2003). The language of music: Working with children on the autism spectrum. *Journal of Education*, *183*, 97-108.
- Siegal, M., & Blades, M. (2003). Language and auditory processing in autism. *Trends in Cognitive Science*, *7*, 378-380. doi: 10.1016/S1364-6613(03)00194-3
- Silverman, M. (2008). A performer's creative processes: Implications for teaching and learning musical interpretation. *Music Education Research*, *10*, 249-269. doi: 10.1080/14613800802079114
- Silverman, M. (2013). A critical ethnography of democratic music listening. *British Journal of Music Education*, *30*, 7-25. doi:10.1017/S0265051712000423
- Silvey, P. E. (2005). Learning to perform Benjamin Britten's "Rejoice in the Lamb": The perspectives of three high school choral singers. *Journal of Research in Music Education*, *53*, 102-119. doi: 10.1177/002242940505300202
- Simpson, K., & Keen, D. (2010). Teaching young children with autism graphic symbols embedded within an interactive song. *Journal of Development and Physical Disabilities*, *22*, 165-177. doi:10.1007/s10882-009-9173-5.
- Sims, W. L., & Cassidy, J. W. (1997). Verbal and operant responses of young children to vocal versus instrumental song performances. *Journal of Research in Music Education*, *45*, 234- 244. doi: 10.2307/3345583
- Sloboda, J. (1985). *The musical mind*. Oxford: Clarendon Press.
- Sloboda, J., Hermelin, B., & O'Connor, N. (1985). An exceptional musical memory. *Music Perception*, *3*, 155-170.
- Smith, L. M. (1978). An evolving logic of participant observation, educational ethnography and other case studies. *Review of Research in Education*, *6*, 316-377. doi: 10.3102/0091732X006001316
- Smith, S. L. (1994). *Different is not bad, different is the world: A book about disabilities*. Longmont, CO.: Sopris West.

- Smith, S. L. (2001). *The power of the arts: creative strategies for teaching exceptional learners*. Baltimore, MD.: Paul H. Brookes Publishing Co.
- Smith, S. L. (2005). *Live it, learn it: The academic club methodology for students with learning disabilities and ADHD*. Baltimore, MD: Paul H. Brookes Publishing Co.
- Smithrim, K., Upitis, R. B., & Canadian Music Educators' Association. (2007). *Listen to their voices: Research and practice in early childhood music*. Toronto: Canadian Music Educator's Association.
- Spackman, M., Fujiki, M., Brinton, B., Nelson, D., & Allen, J. (2005). The ability of children with language impairment to recognize emotion conveyed by facial expression and music. *Communication Disorders Quarterly*, 26(3), 131-143.
- Spooner, C. E. (1994) *Curricular and instructional approaches for persons with severe disabilities*. Boston: Allyn & Bacon.
- Stake, R. E. (1995). *The art of case study research*. Thousand Oaks: Sage Publications.
- Stauffer, S. L. (2002). Connections between the musical and life experiences of young composers and their compositions. *Journal of Research in Music Education*, 50, 301-322. doi:10.2307/3345357
- Swanwick, K. & Tillman, J. (1986). The sequence of musical development: A study of children's composition. *British Journal of Music Education* 3, 305–39. doi:10.1017/S0265051700000814
- Sweet, B. (2010). A case study: Middle school boys' perceptions of singing and participation in choir. *Update: Applications of Research in Music Education*, 28, 5-12. doi: 10.1177/8755123310361770
- Takeuchi, A. H., & Hulse, S. H. (1993). Absolute pitch. *Psychological Bulletin*, 113, 345–361. doi:10.1037/0033-2909.113.2.345
- Temmerman, N. (2004). Student voices. In K. Hartwig (Ed.), *Artistic practice as research: proceedings of the XXVth Annual Conference for the Australian Association for Research in Music Education*. Abstract retrieved from <http://www.informit.com.au/humanities.html>
- Thaut, M. (1988). Measuring musical responsiveness in autistic children: A comparative analysis of improvised musical tone sequences of autistic, normal, and mentally retarded individuals. *Journal of Autism and Developmental Disorders*, 18, 561-571.



- Thornton, L., Ferris, N., Johnson, G., Kidwai, K., & Ching, Y.-H. (2011). The impact of an e-portfolio Program in a music education curriculum. *Journal of Music Teacher Education, 21*, 65-77. doi:10.1177/1057083710397592
- Tillman, J. (1989). Towards a model of development of children's musical creativity. *Canadian Music Educator 30*, 169-74.
- Treffert, D. A. (1989). *Extraordinary people: Understanding 'idiot savants.'* New York: Harper & Row.
- Treffert, D. A. (2009). The savant syndrome: An extraordinary condition. A synopsis: past, present, future. *Philosophical Transactions of The Royal Society B: Biological Sciences, 364*, 1351-1357. doi: 10.1098/rstb.2008.0326
- Trondalen, G., & Skarderud, F. (2007). Playing with affects...and the importance of "affect attunement." *Nordic Journal of Music Therapy, 16*, 100-111. doi: 10.1080/08098130709478180
- Turton, A., & Durrant, C. (2002). A study of adults' attitudes, perceptions and reflections on their singing experience in secondary school: Some implications for music education. *British Journal of Music Education, 19*, 33-50. doi:10.1017/s0265051702000128
- Upitis, R. (1987). *A child's development of music notation through composition: A case study.* Paper presented at the Annual Meeting of the American Educational Research Association, Washington, DC.
- Upitis, R. (1992). *Can I play you my song? The compositions and invented notations of children.* Portsmouth, NJ: Heinemann Educational Books.
- U.S. Department of Education. (1999). *Teaching students with autism.* Retrieved from <http://eric.org/digests/e582.html>
- Vandenbos, G. R. (Ed.) (2010). *Publication manual of the American Psychological Association* (6<sup>th</sup> ed.). Washington, D.C.: American Psychological Association.
- van Manan, M. (1990). *Researching Lived Experience: Human science for an action sensitive pedagogy.* Ontario, Canada: The State University of New York.
- Vanvuchelen, M., Roeyers, H., & De Weerd, W. (2007). Nature of motor imitation problems in school-aged males with autism: How congruent are the error types? *Developmental Medicine and Child Neurology, 49*, 6-12. doi:10.1017/S0012162207000047.x
- Versechaffel, L., Reybrouck, M., Janssens, M., & Van Dooren, W. (2009). Using graphical notations to assess children's experiencing of simple and complex

musical fragments. *Psychology of Music*, 38, 259-284. doi: 10.1177/0305735609336054

- Volkmar, F. R., Paul, R., Klin, A., & Cohen, D. (Eds.). (2005). *Handbook of autism and pervasive developmental disorders* (3<sup>rd</sup> Ed.). Hoboken, NJ: John Wiley & Sons, Inc.
- Vygotsky, L. S. (1978). In M. Cole, V. John-Steiner, S. Scribner, E. Souberman (Eds.) *Mind in society: the development of higher psychological processes*. Connecticut: The President and Fellows of Harvard College.
- Wan, C. Y., Demaine, K., Zipse, L., Norton, A., & Schlaug, G. (2010). From music making to speaking: Engaging the mirror neuron system in autism. *Brain Research Bulletin*, 27, 161-168. doi:10.1016/j.brainresbull.2010.04.010
- Webster, P. R. (1992). Research on creative thinking in music: The assessment literature. In R. Colwell (Ed.), *Handbook of research on music teaching and learning* (pp. 266-280). New York: Schirmer.
- Webster, P. R. (2003). *Annotated bibliography on music education and creative thinking in music*. Retrieved from <http://www.peterrwebster.com/createBib2010.pdf>
- Wehman, P., & Kregel, J. (1997). *Functional curriculum for elementary, middle, and secondary age students with special needs*. Austin, TX: Pro Ed Publishing, Inc.
- Weiss, L. (2011, August). Fair representation for the fairer sex in autism research. *SFARI: Simons Foundation Autism Research Initiative*. Retrieved from <https://sfari.org/news-and-opinion/viewpoint/2011/fair-representation-for-the-fairer-sex-in-autism-research>
- Welch, G., Ockelford, A., Carter, F-C., Zimmerman, S-A., & Himonides, E. (2009). 'Sounds of intent': mapping musical behavior and development in children and young people with complex needs. *Psychology of Music*, 37, 348-370. doi: 10.1177/0305735608099688
- Wetherby, A. M., & Prutting, C. (1984). Profiles of communicative and cognitive-social abilities in autistic children. *Journal of Speech and Hearing Research*, 27, 364-377. doi:10.1044/jshr.2703.364
- Wheatley, G. H. (1991). Constructivist perspectives on science and mathematics learning. *Science Education*, 75, 9-21. doi: 10.1002/sce.3730750103
- Whitaker, N. (1989). *Reflective thinking as exemplified in musical decision making* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses Full Text. (9011074)
- Wiggins, J. (2001). *Teaching for musical understanding*. Boston: McGraw Hill.

- Wigram, T., & Gold, C. (2006). Music therapy in the assessment and treatment of autistic spectrum disorder: Clinical application and research evidence. *Child: Care, Health & Development*, 32, 535-542. DOI: 10.1111/j.1365-2214.2006.00615.x.
- Williams, E., Thomas, K., Sidebotham, H., & Emond, A. (2008). Prevalence and characteristics of autistic spectrum disorders in the ALSPAC cohort. *Developmental Medicine and Child Neurology*, 50, 672–677. doi: 10.1111/j.1469-8749.2008.03042.x
- Williams, J. H. G., Whiten, A., Suddendorf, T., & Perrett, D. I. (2001). Imitation, mirror neurons and autism. *Neuroscience & Biobehavioral Reviews*, 25, 287-295. doi:10.1016/S0149-7634(01)00014-8
- Williamson, S. J. (2005). *My music: The music making and listening experiences of seventh and eighth graders not enrolled in school music ensembles* (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses Full Text (3178121)
- Wimporoy, D. C., & Nash, S. (1999). Musical interaction therapy: Therapeutic play for children with autism. *Child Language Teaching and Therapy*, 15, 17-28. doi: 10.1177/1362361309105660
- Wolfensberger, W. (1972). *The principle of normalization in human services*. Toronto: National Institute on Mental Retardation.
- Wood, D. J., Bruner, J. S., & Ross, G. (1976). The role of tutoring in problem solving. *Journal of Child Psychiatry and Psychology*, 17, 89-100.
- Yin, R. K. (2009). *Case study research: Design and methods*. Los Angeles, CA: SAGE Publications, Inc.
- Young, R. L., & Nettelbeck, T. (1995). The abilities of a musical savant and his family. *Journal of Autism and Developmental Disorders*, 25, 231–248. doi: 10.1007/BF02179286
- Yunker, B. (1996). Comparing and modeling musical thought processes of expert and novice composers. *Bulletin of the Council for Research in Music Education*, 128, 25-36.
- Yunker, B. (2000). Thought processes and strategies of students engaged in music composition 1. *Research Studies in Music Education*, 14, 24-39. doi: 10.1177/1321103X0001400103

- Yunker, B. (2006). Reflective practice through the lens of a fifth grade composition-based music class. In P. Burnard & S. Hennessey (Eds.), *Reflective practices in arts education* (pp. 159-168). Retrieved from <http://link.springer.com/>
- Zhao, R., & Orey, M. (1999). *The scaffolding process: Concepts, features, and empirical studies*. Unpublished manuscript. University of Georgia.