

THE EFFECT OF MUSIC THERAPY UPON LANGUAGE ACQUISITION FOR CHILDREN
ON THE AUTISM SPECTRUM AGED 3-8 YEARS

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AUTHORIZATION TO SUBMIT
DISSERTATION

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DEDICATION

My awe and appreciation goes to the parents of children diagnosed with Autism Spectrum Disorder who consistently seek resources for their children and for the special education teachers who dedicate themselves to partnering with parents.

ABSTRACT

Research indicates the characteristics of Autism Spectrum Disorder include challenges with receptive and expressive language, which can negatively impact social-emotional development and physical regulation. The needs of children with autism are expected to greatly impact the current medical and educational resources, thus effective intervention for language development is considered crucial. A recently implemented intervention is music therapy. Effective intervention strategies for families and special education staff are constantly being sought after. This qualitative study sought to determine, (a) how does music therapy affect the receptive and expressive language skills in children diagnosed with Autism Spectrum Disorder aged 3-8 years? (b) what components of music therapy do parents and music therapists profess to make the most impact on language acquisition development in their child diagnosed with Autism Spectrum Disorder, aged 3-8? Participants included ten family units in southern California and six music therapists in the states of California, Oregon, Idaho and Washington. The participants were asked to provide information pertaining to the language ability of their child/client before and after participating in music therapy. Results showed an increase in word utterance, progress toward special education goals, emotional wellbeing, expressive communication in the home and community, and an increase in social skills. The language ability of the children before and after participating in music therapy sessions ranged from a nonverbal state to singing songs, from using gestures to speaking three to four word phrases, from using language without pragmatics to making friends, and from uttering one to two word phrases to regulating their emotions.

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CHAPTER I

INTRODUCTION

A small child and his mother walk into the store. The child is apprehensive and does not want to go in. He senses the sights, sounds, smells, and temperatures. They all converge into one to create an incredible experience. His heart beat races, the buzzing and flickering of the lights sound loudly in his ear and brain so intensely. He has so much to say and only wants to get away from these sights, sounds, and temperatures. However, he does not have the ability to choose or retrieve the correct words. It is confusing, terrifying. This is the life of a child with limited receptive language ability and/or expressive language ability, which is the most significant characteristic of those found to be within the autism spectrum (Gambino, 2014; Lai, 2013; Lim, 2010).

The focus of this dissertation and its theoretical framework is language acquisition. This dissertation presents the characteristics of Autism Spectrum Disorder, the challenges with expressive and receptive language upon daily living skills and social skill development, and the impact of music therapy on children with receptive and expressive language challenges. Research of both autism and music therapy indicate a quest for effective strategies so as to assist the education of the general community, education staff, and parents of children diagnosed with Autism Spectrum Disorder (Gambino, 2014; Heasler, 2011; Lai, 2013; Lim, 2010). Autism is categorized as a spectrum disorder, meaning that it spans a multitude of characteristics that vary in their degree of intensity (Gambino, 2014; Lai, 2013; Lim, 2010). Often, parents may not see the characteristics of autism until the family physician and/or close family members alert them, thus delaying early intervention strategies (Gambino, 2014; Just, Cherkassky, Buchweitz, Keller,

& Mitchell, 2014; Lai, 2014). Therefore, the educational setting often becomes the initial environment for intense instruction (Gambino, 2014).

A significant characteristic of the disorder is in the area of communication, specifically the individual's receptive and expressive language skills. This is critical because language skills are foundational to the student's ability to communicate their wants and needs and to practice the skill of social reciprocity (Gambino, 2014). When a child is not able to communicate effectively, the child becomes anxious, fearful, has difficulty understanding the situation, and often exhibits the inability to interpret the words and facial expressions of others. This sometimes results in emotional frustration and is realized in the form of isolation from family and peers, self-harm and/or inflicting harm to others and objects (Gambino, 2014; Lai, 2013). The student's delayed development of adaptive behavior skills impacts their ability to convey wants and needs and to establish and maintain friendships resulting in frustration and at times, escalated behavior (Gambino, 2014; Gattino, dos Santos Riesgo, Longo, Leite, & Faccini, 2011).

Current research regarding autism and music therapy provides insight into the development of interventions (Gambino, 2014; Geretsegger, Holck, Carpena, Elefant, Kim & Gold, 2015; LaGasse, 2012). The language development skills of children diagnosed with autism prompt continued research, especially results found among the younger ages, three to eight years. The theoretical framework of this dissertation is designed to provide the reader with a correlation between theorists' findings regarding behavior and language development, components of music therapy, and the overarching deficit of receptive and expressive language related to Autism. These themes include the neuro development specific to autism, receptive and expressive language challenges, the negative impact of limited language, and similar and current educational programs.

Statement of the Problem

A continuing investigation of effective interventions designed to support the language acquisition of children diagnosed with autism is imperative. Music therapy appears to positively influence the characteristics of children with autism (Byers, 2012; Geist & Geist, 2012; Hargreaves & Aksentijevic, 2011; Thaut, Molinari, & Leggio, 2007). The process of diagnosing Autism Spectrum Disorder has been developed in the past decade, resulting in the current rate of one in 68 children (Center for Diseases Control and Prevention, 3/2014). This increased number of children exhibiting autism-like characteristics requires attention as it significantly impacts the educational system in terms of staffing, training, and the auxiliary support systems like assistive technology (Belger, Carpenter, Yucel, Cleary, & Donkers, 2011; Caruso, 2010). Effective intervention strategies for families and special education staff are constantly being sought after, such as the research study requested by hospital nurses for information to provide for parents at the initial diagnosis (Heasler, 2011).

Music therapy is commonly known for its therapeutic application with veterans, people with mental health diagnosis, people who have experienced brain injury from a stroke, dementia, traumatic brain injury, as well as with students with special needs such as autism (De l'Etoile & LaGasse, 2013; Kern & Humpal, 2012). Historically, music therapy has played an influential role in facilitating growth in many areas like mental health and stroke rehabilitation, due to its effect on brain function (Abrams, 2010; Davis, 2012; De l'Etoile & LaGasse, 2013; Lim, 2010). Music therapy has recently combined with other instructional strategies for students diagnosed with autism and is continually studied for its effects upon language and self-regulation skills (Abrams, 2010; Brandt, Gebrian, & Slevc, 2012; Kern & Humpal, 2012). Studies conducted on the direct effects of music therapy upon speech production in children diagnosed with autism

spectrum disorder concluded that children ages three to five years old attain linguistic information in the form of music as it is composed of patterns that influence functional speech (Lim, 2010; Reschke-Hernández, 2011). A board certified music therapist is specially trained in the clinical application of using music in therapeutic sessions as part scientist and part artist (Abrams, 2010; Brandt et al., 2012). The music therapist uses specific assessment tools, combined with all manner of creativity and intention in order to meet the dynamic needs of the client (Abrams, 2010; Brandt et al., 2012).

Background

What is known about autism primarily relates to challenges with receptive and expressive language (Gambino, 2014; Just et al., 2014; Kanner, 1943). Receptive language comprises the verbal and nonverbal words, cues, and gestures associated with interpreting the words and gestures of others, while expressive language uses a combination of verbal and gestural cues to express oneself (Gambino, 2014; Just et al., 2014). Additionally, it has been determined that children with autism spectrum disorder often demonstrate the inclination toward the following behaviors: profound social withdrawal, a strong desire for established routine as opposed to changes in the environment, repetitive behaviors and/or a restricted range of interests in activities, and severe challenges with language ability (Gambino, 2014; Just et al., 2014; Kanner, 1943; Lai, 2013; Moore, 2013). Frequently referenced is the initial work of Kanner (1943) who used the Greek word *eaotos*, meaning “self” for those who appeared uninterested in other people and relationships, as well as those with very low language skills resulting in functional speech (Lyons & Fitzgerald, 2007). The characteristics observed of autism were primarily language-based and limited effective communication of self-advocacy, expressing wants and needs, and

sharing reciprocal conversations with peers and caregivers (Gambino, 2014; Lyons & Fitzgerald, 2007).

Children diagnosed with autism spectrum disorder, therefore, require instructional strategies to target communication skills, which ultimately enhance emotional stability and social interactions (Gambino, 2014; Just et al., 2014; Lai, 2014; Moore, 2013). The topic of language acquisition for the child with autism impacts the social realm of their lives. When one finds difficulty in expressing themselves and/or not understanding the social context, frustration on the part of the child is apparent (Gambino, 2014; Just et al., 2014; Lai, 2014; Moore, 2013). Wilson (2013) presented the effectiveness of *In Vivo* (live) modeling to that of video modeling. Both interventions were presented to five young students who received their education in the general education classroom. In addition to the comparison of live modeling versus video modeling, Wilson (2013) defined visual attention and social validity (the educator's perception of the interventions). Wilson's (2013) premise is founded on the previous research of Skinner who is known for defining behavior modeling and social learning theory. These areas are often delayed and become a topic of necessity, especially since the students receive their instruction with neuro-typical peers.

A deficit in receptive and expressive language skills is defined in the term *theory of mind* (Dimitriadis & Smeijsters, 2011). Theory of mind involves the complexity of understanding social situations, how to maintain self-regulation, and respond appropriately with usually delayed receptive and expressive language skills (Dimitriadis & Smeijsters, 2011). A unique relationship that is derived from theory of mind is the students' motivation level, specifically coherence of the social situation and consciousness of the appropriate social language to use (Dimitriadis & Smeijsters, 2011; Moore, 2013; Verhoeven, De Cock, Lagae, & Sunaert, 2010). What was

particularly interesting was the aspect of music therapy and developmental psychology. Dimitriadis and Smeijsters (2011) described how music is able to transcend the level of intelligence and language ability to enhance the core-self. The student expresses their inner self in response to the music, which in turn is able to foster the relationship between music and the under-developed social skills.

Music in the child's environment is known to change the mood and behavior of the child from lethargy to activity, and from anxiety to calm (LeGasse, 2014; Moore, 2013). Since children on the autism spectrum are reported to have specific cognitive defects involving language and sensory perception, their emotional response to music has exhibited positive results (LeGasse, 2014; Moore, 2013). This is attributed to the concrete and perceptual aspects of a musical experience (Moore, 2013). LeGasse (2014) affirmed the value of music therapy with a study conducted to determine the rate of progress on social skills and to measure joint-attention with peers specifically for the student to use eye-gaze. The success was notable, giving clear indication that music therapy is worthy of further research for use with students diagnosed with autism spectrum disorder.

Research Questions

Given the challenge with expressive and/or receptive language delay, it is crucial for children diagnosed with autism spectrum disorder to progress with the educational goals as developed in an Individualized Education Plan (Individuals with Disabilities Education Act, 2004). The purpose of this study was to determine to what extent the use of music therapy increases the students' expressive and receptive language ability as perceived by their parents and board certified music therapists. The theoretical framework pertaining to a historical perspective of music upon mankind guides the research to explore the relationship between a

present day topic of music and language acquisition and to present new insights toward effective interventions.

Questions that guided the research include the following:

1. How does music therapy affect the receptive and expressive language skills in children diagnosed with Autism Spectrum Disorder aged 3-8 years?

2. What components of music therapy do parents and music therapists profess to make the most impact on language acquisition development in their child diagnosed with Autism Spectrum Disorder, aged 3-8?

Description of Terms

Academic, medical, and specific language terms all contribute to the vocabulary of case managers, music therapists, and parents alike. The following terms may assist the reader in understanding the context of the information provided.

Broca's area is located in the left hemisphere, frontal lobe of the brain. This brain function is responsible for producing speech (Neville, 2005).

Diagnostic Systematic Manuel of Mental Disorders, 5th Edition provides an alphabetical listing of mental disorders and their description. Psychiatrists and psychologist refer to the DSM-V (America Psychiatric Association, 2013).

Emotional regulation is the ability to self-regulate one's emotions, such as when events become unpredictable, when desired (Graziano, Reavis, Keane, & Calkins, 2007).

Executive function is the ability of the person to plan, organize, and understand the perspective of others. It is housed in the frontal lobe of the brain (Hargreaves & Aksentijevic, 2011).

Expressive language is the production of purposeful sounds in an effort to communicate to another person (Lai, 2013).

Functional speech is the level of language that communicates wants and needs (Garvey, 1975).

Implicit memory is the power or process of reproducing or recalling what has been learned and retained especially through associative mechanisms. The type of memory that assists with performing tasks fluently (Neville, 2005).

Phoneme is defined by the Oxford Dictionary as, “Any of the perceptually distinct units of sound in a specified language that distinguish one word from another, for example *p*, *b*, *d*, and *t* in the English words *pad*, *pat*, *bad*, and *bat*” (Oxford Dictionary of English, 2014).

Receptive language is the understanding of a situation or language of others and developing a response to the person (Gambino, 2014; Heasler, 2011; Karmilof, 2010; Lai, 2013; Lim, 2010).

Repetitive movements is the repetitive behavior is used as a self-calming activity, such as flapping hands or twirling fingers in front of eyes (Kanner, 1943; Lai, 2013; Moore, 2013).

Sensory integration disorder or Sensory processing disorder is the challenge of physically interpreting the environment, such as temperature, lighting, texture, alertness, and hunger (Lim, 2010).

Social reciprocity is the ability to engage with family and peers in a mutually beneficial exchange (Gambino, 2014; Just et al., 2014; Lai, 2013).

Social withdrawal occurs when the child has not acquired a language base verbal or non-verbal that assists him to understand the situation, retrieve appropriate words for the situation and/or to regulate physical conditions (Kanner, 1943; Lai, 2013; Moore, 2013).

Theory of mind is the act of using mental process to predict the actions of others, such as pretending, predicting, and planning (Just et al., 2014).

Wernicke's area is located in the Temporal Lobe of the left cerebral hemisphere and produces meaning of what is heard (Neville, 2005).

Significance of the Study

Characteristics of autism vary and range in intensity for each student. Each characteristic impacts the child's ability to function with ease within their family and in the community. Children with autism can show difficulty with the ability to participate in social events, make academic progress, make and keep friends, and share and express emotions with family and friends (Gambino, 2014; Heasler, 2011; Lai, 2013; Lim, 2010). Ultimately, the autism characteristics can create frustration for the child and family. Students diagnosed with autism can become physically and/or emotionally deregulated depending on their level of communication ability (Just et al., 2014; Kanner, 1943). Children with specific language impairments require additional therapy to instruct them with the appropriate word phrases for self-regulation and adaptive skill development (Hughes, Crowell, Uyeji, & Coan, 2012; Panksepp, 2012; Ryder & Leinonen, 2014). Receptive and expressive language are necessary for understanding social situations, expressing wants and needs, and self-regulating when physically and emotionally frustrated (Gambino, 2014; Heasler, 2011; Lai, 2013; Lim, 2010). Due to the severity and extent of the autism characteristics, the medical and education systems have been significantly impacted through the need for behavioral therapy, speech and language therapy, and occupational therapy (Center for Diseases Control and Prevention, 3/2014). While a significant amount of research has contributed to the understanding of specific characteristics of autism, affirmative data has been needed in order to refine the intervention strategies for children

diagnosed with autism (Gambino, 2014; Heasler, 2011; Lai, 2013; Lim, 2010). To alleviate the stressors related to communication delay, music therapy as applied by a board certified music therapist is designed to assist with skill attainment through singing and movement.

Overview of Research Methods

In order to derive the most accurate information from those closest to the children diagnosed with autism, this study applied qualitative research methods involving the use of a questionnaire placed on two websites, face-to-face interviews of parents, and telephone interviews with board certified music therapists (Creswell, 2016; Turner, 2010; Turner, Kim, & Anderson, 2013). Creswell (2016) has instructed researchers to utilize information in a systematic manner such as, drafting methods, gaining peer review, testing the limits, and ruling out inconsistency.

Due to the nature of language acquisition, autism, and music therapy programs, accessing the information held by the specialists and parents gave the most pertinent information. For this study, the qualitative format accessed information relayed by parents and board certified music therapists. The parents and music therapists were made aware of the process of the research study, confidentiality, and the ability to decline their participation at any point within the study. The questionnaire and interview questions were created and piloted before made available on the website link and used within the interviews. The interviews were designed to supply information at a personal level regarding the challenges and successes of the students' in their ability to acquire language.

CHAPTER II

LITERATURE REVIEW

Introduction

The literature review encompasses the topics of autism, language acquisition and music therapy. This chapter provides an examination of the characteristics of autism and fully describes how the characteristics of autism impact daily living skills, specifically language acquisition and its delay. The topic of language acquisition will provide the specifics of how the brain functions are involved in communication skills and communication disorders, and how communication skills are involved with appropriate self-regulation skills. A description of music therapy presents its history and its unique components. Autism Spectrum Disorder and music therapy have been researched most fervently in recent years. The deficit of receptive and expressive language skills for a child diagnosed with autism is found to be a primary concern (Gambino, 2014; Just et al., 2014; Lai, 2013). Similarly, music therapy has been noted as making an impact upon language development for children with autism (Ettlenger et al., 2011; Gambino, 2014; Geist, 2012). Additionally, the theoretical framework references how the work of theorists specializing in language and behavior relate to the components of music therapy and features the common brain functions activated by music therapy.

Autism is defined as a neurodevelopmental condition that is a spectrum disorder (DSM-V, 2013). Autism can be evidenced in a child at the early age of two years (Gambino, 2014; Lai, 2013). As a spectrum disorder, characteristics are found to vary, as well as demonstrate differing intensity levels for each characteristic within the individual child (Belger et al., 2011; Gambino, 2014; Hurkmans et al., 2012; Just et al., 2014). Leo Kanner and Hans Asperger were the first researchers to identify the characteristics of autism (Carpenter et al., 2011; Gambino, 2014;

Hurkmans et al., 2012; Just et al., 2014; Kanner, 1943). Related to language delay, Kanner (1943) found the children to be impaired with social development, preferred being alone, behaved with extreme measures, as well as exhibiting motoric mannerisms and repetitive actions. Children in his study were found to exhibit a language delay, as seen specifically in limitations in social interaction, and communicating wants and needs. The predominant challenge for the child on the autism spectrum involves delayed development of receptive language and expressive language, which impacts the child's social language, their ability to process the environment, and to appropriately manage emotional regulation (Gambino, 2014; Just et al., 2014; Kanner, 1943; Lai, 2013).

Currently, music is not only enjoyed in entertainment or relaxation, but also it is used in the form of therapy for mental illnesses, physical traumas, and to increase language development and sensory integration skills for children on the autism spectrum (Reschke-Hernández, 2011). Melody and lyrics have been reported to influence emotions (Borroff, 1977; Galli, 2002; Geist, 2012). While music therapy is a relatively new discipline, music theorists describe the psychology of music as a combination of psychology, musicology, sociology, anthropology, and acoustics. The psychology of music is a broad and complex discipline that intertwines education, music, and psychology (Bruscia, 2012; Gritten & King, 2011). Through melody and lyrics, music has been reported to influence emotions, which then promotes memory of the skill (Borroff, 1977; Galli, 2002; Geist, 2012). The theoretical framework included in this chapter connects the principles of neuroscience to the effects of music therapy upon the language acquisition skills of children diagnosed with autism.

Theoretical Framework

A theoretical framework provides the connection between theories to support the area of research; therefore, the format of the theoretical framework is comprised of language acquisition, music therapy, and theorists (See Table 1) (Marshall & Rossman, 2016). The unifying emphasis of each theorist is in the manner in which experiences enhance and activate language. Based on the theorists' perspective, theories can be flexible. Theories comprise a way of thinking in the form of a descriptive, interpretive, or speculative nature of the theorist (Bruscia, 2012). While music therapy is relatively new to the field of therapies, the work of previous and current theorists highlighted in the Theoretical Framework suggest a commonality with music therapy. Theories define how humans logically organize or conceptualize ideas and procedures, and provide a theorem or proposition for actions. By understanding the purposes of theories, the following occurs (a) further defining a practice or knowledge base, (b) using a practice or knowledge base to change a prospective, (c) determining patterns that lead to additional insights, (d) identifying cause-effect relationships of the practice or knowledge base that supplies the theorist with the ability to control the details, and (e) evaluating the practice or knowledge base that leads to a change in priorities (Bruscia, 2012). After thorough reading of literature relating to language development, components found within the work of Vygotsky, B.F. Skinner, Piaget, and Noam Chomsky became evident to the researcher as a unifying theme relating to language development. The theories of Vygotsky, B. F. Skinner, Piaget, and Chomsky provide an overarching connection between music therapy and language acquisition through their attention to the interaction between brain functions and the actions of people. They each studied separate components of human nature, however, a commonality of the use of language is evident. The

manner in which humans accessed available resources (people, environment), how the person moved within their environment, how the degree of success or with difficulty was also noted.

Researchers have sought to find a correlation between language development and behavior for the purpose of developing refined intervention strategies (Hargreaves & Aksentijevic, 2011; LaGasse, 2012). The Behaviorist theory, founded by B.F. Skinner (1904-1990), brought groundbreaking information to the general public, which highlighted language learning, the use of language, and behavior (Skinner, 1974). The Behaviorist theory provides information regarding the shaping of the person's behavior, which is directly correlated to their language development. Noam Chomsky (1928-present) founded the Innateness Theory or Nativists Theory. He proposed children are born with a linguistic device that provides the foundation for language learning (Chomsky & Halle, 1968). His focus is syntactic structures, phonology, and how biological ability is applied to the language system. Chomsky is known for his contribution to the field of Biolinguistics. Piaget (1896-1980) introduced the Cognitive Theory (Piaget, 1959). The Cognitive Theory provided a progressive timeline of cognitive development that parents and educators use for reference (Issacs, 1973). His research assists with understanding the scope and sequence of language development within cognitive development. Piaget is known for his work in the Constructivism, which makes meaning from experiences. Vygotsky (1896-1934) is known for initiating the Social Interactionist theory. He emphasized the importance of social language or how a child learns from a language rich environment, termed the zone of proximal development (Derry, 2013). Vygotsky's work also provides insight into the interactive process of learning and cognitive development and how language supports this interaction. The Zone of Proximal Development demonstrates the interaction between meaning and thought.

Table 1 displays how the components of each theorist are also found in the theory of music therapy and language acquisition. The theories provide a foundation for the interaction between the brain functions and music therapy.

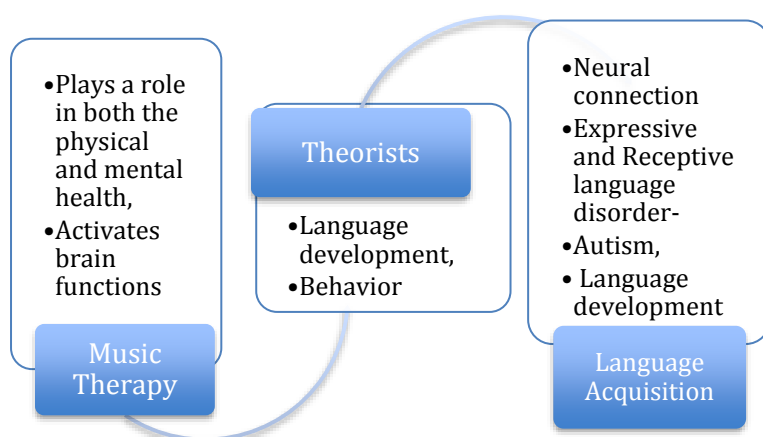
Table 1. *Theories Relating to Language Acquisition and Music Therapy*

Theorists	Language Acquisition	Music Therapy
B. F. Skinner (Skinner, 1974).	<ul style="list-style-type: none"> • Rewarding of utterances/words • Shapes speech close to adult's speech 	<ul style="list-style-type: none"> • Response to environment • Sounds specific to certain environments
Chomsky (Chomsky & Halle, 1968).	<ul style="list-style-type: none"> • Inborn or innate ability for language • Biologically prepared to interpret rules 	<ul style="list-style-type: none"> • Natural disposition toward language when listening to it
Piaget (Piaget, 1959)	<ul style="list-style-type: none"> • Understand concept before being able to express concept • Acquired in stages 	<ul style="list-style-type: none"> • Language emerges from memory, attention, problem solving
Vygotsky (Derry, 2013)	<ul style="list-style-type: none"> • Purposeful communication • Influenced by environment and culture 	<ul style="list-style-type: none"> • Language learned in context • Social interaction

Neuroscience clarifies the biological nature of behavior involving communication, emotional regulation, memory, cognitive functioning, and physical movement (De L'Etoile & Lagasse, 2013; Rushton, 2011). Neuroscience research has supplied valuable contributions toward understanding how music affects the brain. The similarity between music and language is comprised in the rule-based system and structural organization. Both are found to be systems that

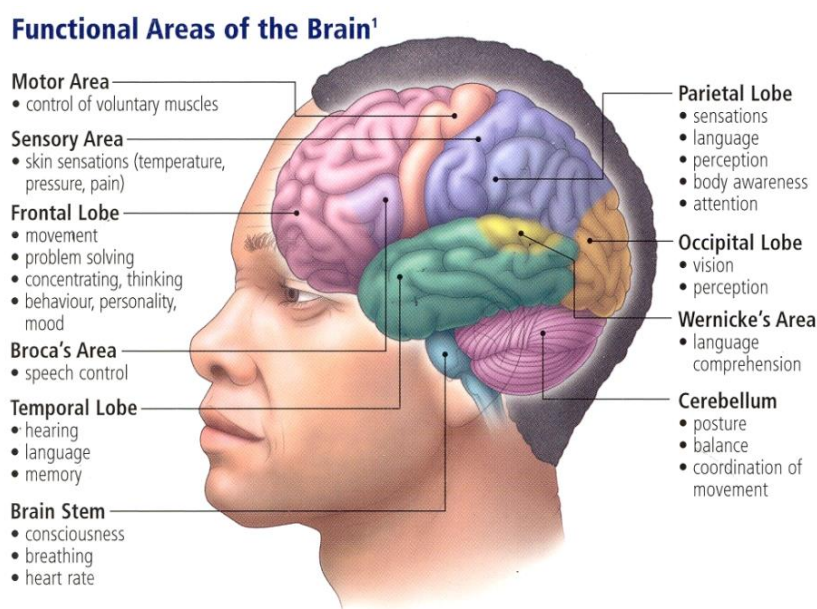
build upon each other such as scaffolding (Slevc & Okada, 2015). Through the process of language development, children acquire the rules of their primary language and musical system. The two are processed with fluidity (Chan, Han, Sze, Lau, 2015). Chomsky's work strongly purports a language center where the environment of the child enhances their innate language system (Chomsky & Halle, 1968). Figure 1 displays the connecting themes between the theorists, music therapy and the components of language acquisition.

Figure 1. *The connection of music*



Influences of musical activities have been detected within the cerebral hemispheres, brain stem, pons, and cerebellum (Hughes et al., 2012; Levitin, 2013). Musical behaviors were researched to find a correlation between specific brain mapping and music (Geretseggar et al., 2015; Gooding, 2011). The neural response detects the pitch automatically through the auditory mapping system. Additionally, music is reported to not only play a role in both the physical and mental health, but also it specifically increases gray matter density and volume of brain tissue, as well as positively influences the pleasure center of the brain (Geretseggar et al., 2015; Gooding,

2011; Hargreaves & Aksentijevic, 2011). The waveform of music is attractive to the brain. The combination of melodies, the tone, rhythm, and the pitch of music all provide influence to brain development, resulting in skill attainment (Bruscia, 2012; Peterson, & Harmon-Jones, 2012; Stern 2010). Figure 2 displays the brain with descriptions of the brain functions and corresponding responsibilities.



(Brain, accessed 4/18/2017, <http://www.basicknowledge101.com/subjects/brain.html>)

The hypothesis that rhythm perception is connected to the relation of the auditory and motoric systems of the brain has been explored. The use of functional magnetic resonance imaging (fMRI) has allowed for understanding the brain's response, specifically which brain functions process music while hearing the beat (Devlin, 2012; Fly, 2010; Grahn, 2013; Lai, 2013). The brain imaging conducted by Devlin (2012) revealed blood oxygenation and flow within activated brain regions. The area of the brain that is activated expends oxygen and glucose, which shows the exact brain functions involved with language and those influenced by

music (Devlin, 2012). When brain processes a musical beat, blood oxygenation occurs within the activated brain regions (Devlin, 2012; Grahn, 2013). Regular and irregular beat causes the motor control areas of the brain to be activated while listening to music. Specifically, the rhythmic beat of music was found to increase the ability to synchronize steps in patients with sensorimotor deficits (Geist & Geist, 2012; Grahn, 2013; Thaut et al., 2007).

Vygotsky and Piaget would conclude that communication skills are foundational to social skills, and necessary for expressing wants and needs, sharing experiences, and for emotional development (Derry, 2013; Piaget, 1959). Communication skills are agreed to be required for success in the educational setting. Piaget listed definite areas of cognition relating to language ability (Isaacs, 1973). Cognitive ability is measured in performance of social skills, reasoning, and memory ability. Specific brain functions responsible for reasoning, memory, and emotions include the frontal and posterior brain regions, prefrontal cortex and, the temporal and parietal lobes (Chan, Han, Sze, & Lau, 2015). When the frontal lobe successfully stores episodic information, memory tasks are performed with fluency, especially if the memory activities incorporate whole body moves. Effective memory is reliant on cortical activation, which is a deficit area found in children with Autism and can negatively impact cognitive processing (Chan, et al., 2015). Chomsky's work emphasized how emotions and motivation are intertwined and enhance skill attainment (Goddard, 2012). The musical signal travels from the ear through regions devoted to emotions and activates the 'feel good' chemicals in the brain (Frederickson et al., 2013; Towl, 2012).

Autism Spectrum Disorder

The term autism is derived from the Greek word *eaustos*, meaning "self". The term was first used to describe adults who appeared uninterested in other people and relationships, as well

as for adults or children who showed very limited language skills (Dimitriadis & Smeijsters, 2011; Kanner, 1943). Significant characteristics of autism that are derived from the ability to communicate effectively include the inclination for profound social withdrawal, desire for established routine in order to cope when changes in the environment occur, repetitive behaviors, and/or a restricted range of interests in activities (Chlebowski, Green, Carton, & Fein, 2010; Gambino, 2014; Just et al., 2014; Kanner, 1943; Lai, 2013). These characteristics impact effective communication with peers and caregivers as a result of a disorder with receptive and expressive language. Children diagnosed with autism spectrum disorder demonstrate a variety of characteristics that vary in intensity with the most complicated characteristic as receptive and expressive language (Gambino, 2014; Just et al., 2014; Kanner, 1943; Lai, 2013). It is known that communication is composed of both nonverbal and verbal qualities (Goldbart, Chadwick, & Buell, 2014; Krashen & Terrell, 1983). The child diagnosed with autism may or may not use these qualities effectively.

Neuroscience research has accelerated in recent years and has provided information regarding how very young children process language. Determining the neural aspect of children suspected with autism could result in understanding the skill level of functional communication of the child (Just et al., 2014; McPartland & Pelphrey, 2012; Nagy & Townsend, 2012). Through the brain imaging system of the fMRI, the localization of brain activity is seen. Research affirmed that the dendritic spine density decreases in typical peers, but remain the same in children with autism spectrum disorder (Bowling & Klann, 2014; Price, Peterson, & Harmon-Jones, 2012). A lower amount of neuronal population was found in the area of neural composition of children diagnosed with autism, reducing the connectivity and thereby increasing the likelihood of misunderstanding, miscommunication, and escalated behavior (Just et al., 2014;

Lim, 2010). Bowling and Klann (2014) stated that when the synaptic connections are deregulated, behavioral deficits are known to occur. Brain scan results were also used by Lim (2010) to determine which social contexts are being processed to further guide appropriate instructional strategies. This information guides the specific interventions to focus on attaining pathways since the prevalence of dendrite has been determined to impact the flow of communication efforts and motoric messages (Bowling & Klann, 2014; Gambino, 2014; Lai, 2014).

Brain functions affected by the characteristics of autism involve not only communication efforts, but also emotional regulation, and social interaction (Gambino, 2014; Howard, Perkins, & Sowden, 2012; Just et al., 2014; Lai, 2014). Without the skills to understand the social situation, the child with autism can show severe delays in self advocating, sharing enjoyment, and participating in a reciprocal conversation (Just et al., 2014; Kalas, 2012; Koegel, Koegel, Green-Hopkins, & Barnes, 2010). The potentially severe nature of language development for students on the autism spectrum has been explored for the purpose of determining functional speech (Park, Yelland, Taffe, & Gray, 2012; Schreibman & Stahmer, 2014). Results indicate that when a child acquires functional speech by the age of five, the more apt they are to express their wants and needs (Park et al., 2012). The research was focused on the morphological and syntactical component of the language development for children with autism (Park et al., 2012; Schreibman & Stahmer, 2014). By using standardized assessment tools, the grammatical skills of children with autism, children with developmental delay, and typical peers, were assessed (Park et al., 2012). The children with autism along with children with developmental delay were able to learn morphological rules; however, it was found they applied the morphological and syntactic skills inconsistently over time, indicating the consistent need for repetition to activate the

memory ability (Park et al., 2012; Schreibman & Stahmer, 2014).

Recent data indicates that 30% to 50% of children with autism exhibit a delay in developing functional speech, which is considered to be an adaptive skill. Functional speech includes expressing of wants and needs, participating in the sharing of an activity, and sharing in conversation with other people (Chlebowski et al., 2010; Low & Lee, 2011; Sterponi & Fasulo, 2010). As well, many children diagnosed with autism are challenged to develop significant verbal speech by the age of five (Gambino, 2014; Just et al., 2014; Lai, 2013; Stagg, Davis, & Heaton, 2013). The significant issue regarding academic and social skills progress is founded in the level of functional speech. An increase in functional speech is known to develop the child's adaptive skills (Chlebowski et al., 2010; Low & Lee, 2011; Sterponi & Fasulo, 2010).

The impact of receptive and expressive language deficit is determined to effect the participation in social situations, known as *theory of mind* (Dimitriadis & Smeijsters, 2011; Kuhl, 2010). Theory of mind involves the complexity of understanding social situations, the messages and actions of other people, how to maintain self-regulation, and appropriately respond verbally (Just et al., 2014; Kalas, 2012; Koegel et al., 2010). Kuhl (2010) targeted the lack of language acquisition and development upon social interaction. Expressive and receptive language is necessary for effective social interaction and when not evident, can cause anxiety for the child diagnosed with autism (Kraft, 2012; Kuhl, 2010). It was found that children with autism respond more readily to visual input than the auditory counterpart. Facial expressions are a type of visual input that positively enhances language development in the area of social skills and social communication, specifically in response or interest to people (Goldbart et al., 2014; Stagg et al., 2013). The interest level in facial expressions by children with autism was found to directly relate to the emphasis on joint attention upon language development and assist with developing

theory of mind (Stagg et al., 2013). The child was more likely to develop language ability when learning from facial expressions. However, words, phrases, and sentences might develop normally but the pragmatic language may not. Confusion for the child occurs when they do not understand the social situation. They may withdraw or become frustrated to the point of harming themselves or others (Koegel et al., 2010; Stagg et al., 2013).

Research of the brain functions of children diagnosed with the autism spectrum disorder reports hyposensitivity or hypersensitivity to sensory stimuli and thus impacting their progress with social skills (Gambino, 2014; Just et al., 2014; Lai, 2014; Lim, 2010; Solomon & Bagatell, 2010). The social interaction ability of typically developing children differs dramatically as opposed to those diagnosed with autism spectrum disorder (Rezka, Odom, & Hume, 2012). Typically developing peers are more socially active during times of unstructured play, while children on the autism spectrum require constructed situations that foster social interaction such as small group facilitation by the adult (Rezka et al., 2012; Sterponi & Fasulo, 2010). Due to the limited receptive and expressive language ability, children with autism are not known to take the perspective of others, and will generally display limited response to people. The children will not usually integrate with other children and will play in a parallel fashion with peers, which demonstrates a lower ability to engage in joint attention. Children diagnosed with autism are known to become frustrated with their inability to communicate and will rely on adults to supply the wording and/or to understand the child's wants and needs through contextual clues (Adamson, Deckner, & Bakeman, 2010; Just et al., 2014; Kalas, 2012; Lai, 2014).

Language Acquisition

It has been determined that language acquisition is dependent upon communication, and that communication is both verbal and nonverbal in nature (Goldbart et al., 2014; Krashen &

Terrell, 1983). Communication is composed of physical mechanisms of the brain and is used for not only social and emotional development, but also is involved in cognitive development. Communication is used for expressing oneself, developing social and emotional skills, such as relationship building. The ability to perceive language messages and therefore initiate a response has been determined to develop before the age of one year when the significant factors of biological preparation, successful nurturance, and sensorimotor and linguistic experiences are present (Goldbart et al., 2014; Krashen & Terrell, 1983).

Language acquisition has been determined to follow a developmental process and is acquired unconsciously through experiences while the specific language rules and grammar are taught by means of conversation and experiences (Krashen & Terrell, 1983; Visser et al., 2013). Language studies conducted by Krashen and Terrell (1983) indicate that language acquisition occurs more readily when the brain is presented with messages in a simultaneous, multi-modal manner such as auditory, visual, and kinesthetic. In terms of processing language, the corpus callosum plays a large role with language as it transfers information from the left hemisphere where it processes language, to the right hemisphere which processes rhythm and melody as well (Sandiford, Mainness, & Daher, 2013).

Language acquisition depends on the input of neural connections required by the brain functions associated with visual, tactile, and olfactory information in order for the learner to comprehend input, linking the word(s) with their meaning (Krashen & Terrell, 1983). It is known that neural connections become stronger and more complex over time as exposure to language increases (Partridge, 2009). As neural connections strengthen, so do the auditory memory processing and visual memory processing skills that are applied when acquiring the ability to decode phonemes, which is crucial for the development of fluent reading and speaking skills

(Partridge, 2009). Partridge (2009) reiterated that the speed of acquiring language depends on the frequency of being exposed to language. Both language acquisition and cognitive growth may not progress normally if the brain does not receive messages, if messages are inconsistently received, and when the messages are received without connecting with the appropriate brain function (Sousa, 2006).

Specific language centers required for communication, located in the temporal lobes of the brain, are known as Wernicke's Area and Broca's Area (Sousa, 2006). Both comprise the so-called language loop (Sousa, 2006; Stagg et al., 2013; Visser et al., 2013). Development of the language loop is vital given that both receptive and expressive language are involved in communication efforts. Wernicke's Area is responsible for the auditory processing of receiving environmental sounds, as well as the attachment of meaning to the words, referred to as *receptive language* (Sousa, 2006). The Broca's Area supports expressive language, which means that it is involved with understanding social situations, retrieving the appropriate words or phrases, and producing the desired verbal message (Sousa, 2006). When these two areas of the language center do not function appropriately a speech or language impairment will impact the ability to express wants and needs and to develop relationships with family and peers (LaGasse, 2012; Low & Lee, 2011; Thiemann-Bourque, 2010).

A language disorder involving receptive and expressive language ability creates a significant impact upon daily living skills, social-emotional development, and self-regulation skills (Bolte, Westerwald, Holtmann, Freitag, & Poustka, 2011; Gambino, 2014; Just et al., 2014; Kanner, 1943; Lai, 2013). Current therapy interventions include guiding the student with sequential movement activities, sensorimotor cues, targeting specific sounds for development, and touch cues, to name a few (LaGasse, 2012; Long, 2011). Additionally, procedural learning,

such as following a visual sequence, assists children when the speech and language mechanisms of the brain are poorly developed (Karmilof, 2010). Procedural learning teaches the process, the sequence of a task, and emphasizes the vocabulary and language structures associated with it.

Since it is known that learning and mastering concepts is complex and begins with language, linguists purport that humans acquire language through visual and verbal exchanges (Krashen & Terrell, 1983). Communication is not only used for expressing oneself, but assists with developing personal social and emotional skills, and to participate in relationships. The ability to perceive language messages, and therefore initiate a response, has been determined to develop before the age of one year when the significant factors of biological preparation, successful nurturance, and sensorimotor and linguistic experiences are present (Goldbart et al., 2014; Krashen & Terrell, 1983). While research found the amount of language a child is exposed to increases their language production, much of the environmental cues foster language (Gagliardi, 2013). The significance directs the therapists' attention to utilize the environment to build language ability.

Communication has been determined to involve the non-verbal component of gestures, similar to the inflections of the voice when speaking, which provide intricate context clues during conversation (Howard et al., 2012; Ryder & Leinonen, 2014). Gestures are a large component of language and are represented in a literal action such as pantomime of throwing a baseball (Iconic) or a gesture that emphasizes an abstract concept (Metaphoric). As well, gestures are noted to increase comprehension and to provide contextual clues (Howard et al., 2012). In similar theory, it was determined that language acquisition is closely related to the learning theory (Clark & Lappin, 2013; Nagey & Townsend, 2012). Various language models were reviewed by Clark and Lappin (2013), such as the Chomsky hierarchy (Chomsky, 1968),

the Gold model of identification, and the Bayesian model. The models of language acquisition as proposed by Chomsky (1969) and the Bayesian model affirmed children acquire language through a combination of various modes of input that include environment, non-verbal, direct instruction, and language models (Clark & Lappin, 2013). The question of how a child attains language was revised to how a child navigates through the language stimulus when acquiring language (Gagliardi, 2013).

The approach of nature versus nurture relating to language acquisition was explored and found to align with Chomsky's theory of an innate language device (Chater & Morton, 2010; Chomsky & Halle, 1968). It was purported that the cultural rather than the biological evolution has a greater effect on language acquisition. Chater and Morton (2010) sought to study the relation of cultural induction (C-Induction) and the Nature induction (N-Induction) upon language acquisition. The assumption is that language acquisition is based on the aspect that people use generally approved language (cultural evolution) as opposed to the previous thought specific instruction and practice (nature). The children in the study were observed to mimic their elders not only showing that the 'norm' of language will be preferred, but also that children exhibit a type of language head start. Their study surmised that future research should specify constraints upon language acquisition and their influence on the patterns of language (Chater & Morton, 2010).

Researchers and teachers would agree that in order to increase language acquisition, early intervention is imperative. A high percentage of language impairment is reported to occur in preschool aged children (Ronski et al., 2011). The identification system involving categorizing the language development has been determined to benefit young children entering the school system (Bronwyn, Kaff, Holmberg, Teagarden, & Delreal, 2014; Ukoumunne et al., 2011). The

early years of preschool age were noted to be the most significant years to develop speech and language patterns (Low & Lee, 2011; Nagy & Townsend, 2012). Knowing that the primary characteristics involve social communication challenges due to receptive and expressive language disorders, Gambino (2014), and Low and Lee (2011) emphasized early intervention at or before age 2, preferably between 12 and 18 months. It had been determined that infants respond to the presentation of phonemic components of language and give clues as to the development of pre-reading skills and to the involved brain function systems (Kuhl, 2010). The early years of preschool age were noted to be the most significant years to develop speech and language patterns (Low & Lee, 2011; Nagy & Townsend, 2012).

It has been determined that infants respond to the presentation of phonemic components of language and give clues as to the development of pre-reading skills and to the involved brain function systems (Kraft, 2012; Kuhl, 2010; Ronski et al., 2011). To support this intervention, a government program in Australia designated for mothers and their children was accessed to study the language development at monthly increments. Categories of language development included typical, precocious, and impaired development (Bronwyn et al., 2014; Ukoumunne et al., 2011). Children will either experience a period of accelerated development, delayed development, or show a period of catching up when supplied with effective interventions. For skill acquisition to take place, memory will not occur unless interest is established. Language acquisition relies on memory (LaGasse, 2012; Sousa, 2006; Ukoumunne et al., 2011).

Music Therapy

Music infuses our living environments and has been experienced by the researcher to evoke previous memories and even recall lyrics to songs learned long ago. Music is documented that the ancient Greeks and preindustrial societies recognized a neurochemical influence of

music and has been used as early as 1789 in the United States as an alternative resource for health concerns (Levitin, 2013). The American Music Therapy website presents the earliest study conducted with music, “Music Physically Considered”, dated 1789 (Research, musictherapy.org, accessed on 6/15/2016). The 1940s are known as the era when music therapy became established as a therapy due to the contributions of Ira Altshuler, Willem van de Wall, and E. Thayer Gaston (Abrams, 2010; Geist & Geist, 2012; Register, 2013). Willem van de Wall is known for the research conducted with music in the hospital setting in 1946, while in 1949, Ira Altshuler contributed the research titled, “Industrial and Therapeutic Uses of Music” (Altshuler, 1949).

Their contribution is recognized as greatly assisting the field of music therapy (Abrams, 2010; Register, 2013). Historically, music therapy has been used in the eastern and central regions of the United States for various purposes: therapy, healing, and the ability to soothe, and primarily used in the western region for children diagnosed with autism (Geist & Geist, 2012; Geretseggar et al., 2015). The foundations of music therapy not only signify its evidence-based results but also direct research to combine with the continued research of autism.

Music has been found to play a role in both physical and mental health, specifically within select brain functions, such as emotions, thoughts, actions, and/or motor movements. Additionally, music behaviors have also been found to correlate between specific brain mapping and music (Levitin, 2013). Domain specific neural structures were reviewed to find the relation between music and perceptual-cognitive, emotional response and health. An example of how music can affect the areas of cognitive ability is seen within formal music instruction. A relationship was found between music education and brain development in the areas of physical development and emotional development (Collins, 2014). Collins (2014) selected 14 studies from a broad literature review of neuroscience and music education that combined adult and

child participants in formal music education. The intent of the study was to show the differences in the brain functions of musicians and non-musicians. It was determined the brains of musician's process language in a more sophisticated manner, exhibit more advanced short-term and long-term memory, as well as storage and retrieval (Collins, 2014).

Music and language were found to follow a sequential pattern. Language learning and sensory-motor integration share similar learning sequences (Ettlinger et al., 2011; Grahn, 2013). Implicit learning, memory that has not been explicitly taught but rather unconsciously learned, is derived from a three-way overlap between neural functions, language, and musical components (Ettlinger et al., 2011; Levitin, 2013; O'Kelly & Magee, 2013). Implicit memory has a role in acquiring grammar along processing the melodic structure of rhythm and pitch of language (Ettlinger et al., 2011; Levitin, 2013). Rhythm was found to positively impact skill attainment plus assist with accurate reading of motor messages. Additionally, music is reported to increase gray matter density and volume, as well as positively influence the pleasure center of the brain, which enhances the development of both the emotional response and the stress response.

Self-regulation is necessary for keeping the self in a state where participation in conversations can occur which leads to the development of social language and functional language (Ettlinger et al., 2011; Gambino, 2014; Geist & Geist, 2012). The brain functions that are positively affected by music are the amygdala, the frontal lobe, the orbitofrontal cortex, and lateral prefrontal cortex. These same brain functions are related to those assisting with expressive and receptive language (Geist & Geist, 2012; Moore, 2013). Exploration of the brain's response of specific brain functions to the tonality component of music assists to determine effective interventions (Geist & Geist, 2012; Moore, 2013).

Related to receptive and expressive language is the relationship between music and executive function (Hargreaves & Aksentijevic, 2011; Peterson, 2011). Executive function involves the ability to plan, self-regulate, understand the perspective of others, and to demonstrate appropriate social skills as determined by the level of social language. We know that a normal conversation involves an interest in the other person, a certain amount of turn taking in the conversation, or at least knowledge of the social cues associated with conversation. Joint attention involves the appropriate skills for gaining a person's attention for the purpose of sharing an experience (Adamson et al., 2010; Peterson, 2011; Vaiouli, 2014). The component of social language is shared between theory of mind, executive function, and joint attention. All require social language development for full participation with peers and adults.

Music therapists and special education teachers envision the student to perform the desired ability across the environments of home, in the community, and at school. The child is assessed by the music therapist for their level of social skills ability before, during, and after the social skills instruction in order to continually evaluate progress. LaGasse (2014) furthered research on the topic of joint attention skills. This skill is required for appropriate communication in terms of reciprocal interaction, which impacts the child's social skills and social language when there is a language deficit. Additionally, the author commented on sensory modulation and how necessary it is for the child to appropriately self-regulate in order for the desired skill to be attained. The research process involved 17 students identified to be on the autism spectrum who were split into two groups. One group received instruction on social skills with the added component of music therapy, and the other group only received the social skills. The desired social skills to be attained were joint attention and eye gaze. The students' parents participated periodically with a survey to chart the progress. The results indicated that both

groups made progress toward the goal, however, the group with the added component of music therapy progressed remarkably (LaGasse, 2014). Further studies demonstrated that music therapy is able to instruct students in the correct manner of responding in social situations and for skill attainment. Gooding (2011) and Hargreaves and Aksentijevic (2011) devised wording to familiar tunes in order to foster skills. Gooding (2011) predicted that direct instruction of social skills through the medium of Music Therapy would increase the likelihood of children on the autism spectrum to independently implement appropriate social skills (Gooding, 2011; Geretseggar et al., 2015; Hargreaves & Aksentijevic, 2011; Maslow, 1943).

Previous research on the topic of child-centered music therapy has shown an increase in the joint attention skills in the area of eye contact and the use of non-verbal and/or gestural skills (Vaiouli, 2014). An intervention was created through implementing the following phases of skills: focusing on faces, responding to joint attention, and initiating joint attention over a five-month period of time. The results indicated a positive effect on the generalization of joint attention skills (Adamson et al., 2010; Brown & Jellison, 2012, Can et al., 2016; Vaiouli, 2014). Similarly, Vaiouli (2014) conducted a mixed-methods study on how music therapy can assist in developing joint attention. We know that a normal conversation involves an interest in the other person, a certain amount of turn taking in the conversation, or at least knowledge of the social cues associated with conversation. Joint attention involves the appropriate skills for gaining a person's attention for the purpose of sharing an experience, not for requests of a need (Adamson et al., 2010; Brown & Jellison, 2012; Vaiouli, 2014). Vaiouli (2014) noted that previous research on the topic of child-centered music therapy had shown an increase in the joint attention skills, in the areas of eye contact, and the use of non-verbal and/or gestural skills.

In an attempt to refine the effectiveness of music therapy, Improvisational Music Therapy was designed to enhance emotional regulation. Improvisational Music Therapy targets the social communication skills of the student related to self-advocacy, clearly declaring wants and needs while fostering the joint attention skill of appropriately bidding for attention and sharing enjoyment with peers and/or adults (Geretsegger et al., 2015). Areas of focus included musical and emotional attunement, scaffolding interaction musically, tapping into shared musical history, positive therapeutic relationship, following the child's lead, secure environment, and treatment goals.

Using Music Therapy with Children Diagnosed with Autism Spectrum Disorder

The relationship between music and language is seen as harmonious and therefore positively impacting necessary adaptive skills such as social language, expressing wants and needs, and emotional development (Ettlenger et al., 2011; Geist & Geist, 2012). The brain treats the spoken word and the musical sound system differently (Geist & Geist, 2012; Patel, 2008). As well, spoken language is considered difficult to learn when separated from musical qualities, which demonstrates a connection between the nature of music and language acquisition (Brandt et al., 2012). Table 2 provides a visual synopsis of the components of language acquisition and music therapy.

Table 2

Components of Language Acquisition and Music Therapy

Components of Language Acquisition and Music Therapy	Brain Functions	Behavior
Language Acquisition	<ul style="list-style-type: none"> • Expressive language • Receptive language 	<ul style="list-style-type: none"> • Self-Regulation • Expressing wants and needs
Music Therapy	<ul style="list-style-type: none"> • Skill attainment • Memory 	<ul style="list-style-type: none"> • Social language (peer interaction) • Self-regulation

When provided with musical therapy, students diagnosed with autism have been recorded as participating for longer periods of academic rigor. Functional imaging studies have helped to determine that the temporal lobe and frontal lobe are critical for tonal working memory, which assist in the areas of academic skills and social skills (Geist & Geist, 2012; Moore, 2013). A correlation was found between music lessons and cognitive ability due to the development of processing skills (Roden et al., 2014). In addition to an increase in sustained attention, the students diagnosed with autism were noted to have improved in word recognition (Geist & Geist, 2012; Raglio, Traficante, & Osmano, 2011).

The union of speech and melody as used in music therapy is beneficial for the child with autism due to its effect upon the emotional state, which affects the ability to maintain ones' composure during occasions of stress (i.e. change in routine, denied a preferred item or activity, perceived event) (Ettlenger et al., 2011; Gambino, 2014; Geist & Geist, 2012). A child's social and emotional development is directly related to the language ability (Ettlenger et al., 2011; Geist & Geist, 2012). Pasioli (2012) and Ettlenger et al. (2011) emphasized the relationship between

the parent-child and the social-emotional development of the child. Areas of the parent-child relationship that contributed to the social-emotional development of the child include positive communication as seen in the form of enjoying activities together, maintaining a family system or shared rituals, agreement in the activities and/or agreed upon systems to negotiate agreement, emotional bonding as seen with 'safe' exchanges, and trust. Highlighted in this study was the significance of the impact of maternal depression upon the bonding with the baby. Poor attachment between the child and mother results in future challenges with academics, relationship forming (peers, other adults), and healthy self-concept. The music therapy session involved musical instruments, familiar tunes with revised lyrics, along with guided wording and behavior by the music therapist. Benefits observed in the music sessions include mutual enjoyment, imperative for the emotional bonding, the establishment of family systems (routines), and a relaxed manner of the parent, which enhances communication skills (Ingram, 2009).

Musicality becomes the basis for the child's social and emotional development (Ritblatt, Longstreth, Hodoka, Cannon, & Weston, 2013). Ritblatt et al. (2013) identified the benefits of music skills taught in early life that are known to continue to benefit the child as an adult. Social skills and self-regulation strategies ranked the highest for success in kindergarten, well before the areas of being disruptive, following directions, and taking turns. Parents and teachers were given the songs to incorporate into all areas of daily living. The results indicated that an increase in social skills was displayed within the educational setting, but not to that degree when in the home (Ritblatt et al., 2013). It was surmised that while the parents want their child to cooperate and enjoy the school atmosphere, there is also a different dynamic at home.

Exploration of the brain's response to music, specifically its response to tonality and the activation of specific areas of the brain when processing tones assists to determine effective

interventions (Geist & Geist, 2012; Moore, 2013). Roden et al. (2014) researched the effects of music upon the cognitive ability, processing ability, and attention skills by assessing the students' visual attention, information processing speed and auditory processing ability. They proposed that students who receive music lessons are more apt to develop auditory processing skills (Roden et al., 2014). The students were assessed for tonal and rhythm discrimination against a control group. It was determined that music improved auditory processing and visual processing skills and then attention skills naturally improved, thus increasing cognitive ability (Roden et al., 2014).

Functional imaging studies have helped to determine that the temporal lobe and frontal lobe are critical for tonal working memory, which assists in the areas of academic skills and social skills (Geist & Geist, 2012; Moore, 2013). On the premise that each hemisphere processes pitch, tone, and cadence differently, Moore (2013) chose 50 studies encompassing 811 participants of mixed age and gender. The studies focused on the positive impact of music upon brain functions, which then aides with self-regulation. The same areas of the brain related to expressive and receptive language, the amygdala, the frontal lobe, the orbitofrontal cortex, and lateral prefrontal cortex are also positively affected by music (Geist & Geist, 2012; Moore, 2013). Ritblatt et al. (2013) continued the research regarding the importance of attending to the socio-emotional status of 102 preschool age children. An early childhood expert and music business professionals developed a school-readiness music program that comprised songs designed for socioemotional habits, such as teaching how to wash hands, stand in line, and choose healthy food. It was provided to two classes of preschool students, while two other classes did not receive the music program. Baseline ability was established for the areas of cognition, language development, socio-emotional state, motor ability, and self-help skills prior

to implementing the music program and conducted a post-test as well (Ritblatt et al., 2013). Their premise was that school-readiness comprises the ability to self-regulate, to care for oneself, display a positive attitude toward peers and adults, communicate wants and needs, exhibit interest in the world, engagement, and to be motivated to learn (Ritblatt et al., 2013).

An early intervention emphasis is being realized as effective and a viable use of resources (Gambino, 2014; Just et al., 2014; Lai, 2014). Lim (2010) conducted a study of 50 children on the topic of effect of developmental speech and language training through music on speech production in children with autism spectrum disorders. Lim concluded that children, ages 3 to 5, attained linguistic information in the form of music as it is composed of patterns that influence functional speech. Thompson (2012) researched the family-centered music therapy approach in the home environment. Thompson utilized the strong parent-child bond and incorporated the activities with these partners as the crux. The components included interpersonal engagement between the parent and child through turn taking, dyadic play, joint attention bids, and face gaze (Thompson, 2012). The benefit of the partnership is the strongest when the parent is trained by the music therapist to intervene and develop spontaneous activities based on the instruction of the music therapist. This then becomes a model for family-centered music therapy and collaboration with the parent (Thompson, 2012).

Conclusion

Music has been an integral force throughout history, as evidenced by its use within religious settings, classrooms, therapy sessions, and personal entertainment. Presently, music therapy assists many individuals and is documented to have a positive effect on the rate of language acquisition in children diagnosed with autism, who are known to require specialized instructional strategies due to the extent of the characteristics of delayed receptive and expressive

language skills (Bowling & Klann, 2014; Gambino, 2014; Lai, 2014). Delayed receptive and expressive language ability has been noted to negatively impact the development of relationships with peers and adults, and functional language (Ettlenger et al., 2011; Gambino, 2014; Geist & Geist, 2012). The benefits of music for the child exhibiting autistic characteristics involve activation of brain functions specific to language ability, emotional development and with executive function skills (Gambino, 2014; Just et al., 2014; Lai, 2013). Music therapy is a unique therapy that is continually being researched. The music therapy sessions are known to assist brain functions in acquiring the desired skill by using interest, which then activates memory, to finally retain the skill (Geist & Geist, 2012; Moore, 2013).

CHAPTER III

DESIGN AND METHODS

Introduction

Research in general is composed of many roles. It expands on an existing idea to provide more information or presents a different perspective to the same topic, it defines similarities and/or differences of concepts, it develops a theory, it refines previous research, or it identifies areas of needed research (Creswell 2016; Hannes & Lockwood, 2011; Marshall & Rossman, 2016; Turner, Kim & Anderson, 2013; Turner, 2010). The topic of autism has received considerable attention and will receive necessary continued research. Research results thus far have provided beneficial information in terms of the characteristics of autism and the necessary supports and interventions required by the medical and educational community for the children and their families (Autism (n.d.), CDC, <http://www.cdc.gov/ncbddd/autism/index.html>). The same can be claimed for music therapy. It is a relatively new therapy and is documented to be a therapeutic assistance for people with physical and mental health trauma by activating brain functions. As well, the area of language acquisition has received research over the years to determine the related brain functions and effective interventions implemented for increased language acquisition. The research methodology and design were carefully planned in order to gather the most beneficial information toward the impact of music therapy upon language acquisition for children diagnosed with autism.

Research questions that assisted in determining the impact of music therapy are as follows:

1. How does music therapy affect the receptive and expressive language skills in children diagnosed with autism spectrum disorder aged 3 to 8 years?

2. What components of music therapy do parents and music therapists profess to make the most impact on language acquisition development in their child diagnosed with autism spectrum disorder, aged 3 to 8 years?

Research Design

The research design of this study was composed of the following systematic guidelines (Creswell, 2016; Marshall & Rossman (2016),

- The research purpose and specific questions determined
- The data collection process organized
- Participant involvement arranged
- Distribute the questionnaire or conducting the interview
- Responses with participants reviewed
- Results discussed with colleagues

The method of qualitative research was chosen as the best manner of accessing the results of the music therapy sessions from the first-hand observers, the parents and music therapists. The researcher sought to provide a forum for the parents and music therapists to express the progress of the child/client when participating in music therapy. The nature of this specific research comprised several unique components, the voices of participants, an open-ended exploration, and the development of a complex understanding as outlined by Creswell (2016) and Marshall & Rossman (2016). Qualitative research is able to uncover experiences and perspectives not readily available in other research methods. Creswell (2016) maintains that exploring phenomena such as the perspectives and experiences of others provides for information to be obtained in a natural manner. Interviews and questionnaires that are found in the qualitative methodology assist in study phenomena in its natural state (Creswell, 2016). The interview format provided the

occasion to interpret the voices of the participants. In this particular study the parents and music therapists provided significant information toward the findings.

It is purported that research and its methods are driven by the research questions, therefore, crafting specific research questions assists with a well-constructed method. The research questions are considered foundational to the qualitative approach (Creswell, 2016). The words *how* and *what* were used to create the research questions for this study of autism, language acquisition and, music therapy. Creswell (2016) explains that the qualitative method naturally seeks in-depth information by starting with carefully crafted questions. By using the words *how* and *what* within the research questions, specific information held by the parents and music therapists regarding music therapy arose to the surface. The key to developing questions is to create questions that are both easy to answer and that are constructed in a manner to divulge information. It is recommended by Creswell (2016) to construct questions in a manner that elicits meaningful information by using a variety of questions such as attitudinal, closed and open questions, short explanation, and scaled questions. The semi-structured interview employed in this study allowed for the information from the parents and music therapists to surface. The research clarified questions and was provided with extra information relevant to the study (Creswell, 2016). In this sense, the researcher became the research instrument during the interview process.

The first question was designed to address the communication challenge of children diagnosed with autism. It focused on the expressive and receptive communication deficit as originally determined by Kanner (1943) and Asperger (1944). A deficit with receptive language poses difficulty for the child to understand the nature of the social event, often demonstrates difficulty with word retrieval, which prevents the child from developing adaptive skills and

relationships. This ultimately leads to self-harm and aggression toward others when too excited and, when too frustrated. Effective interventions are consistently sought after by parents, researchers, and professors, which led to the specific wording of the questions. Since language delay results in poorly developed adaptive behavior ability, known as functional speech and includes emotional development and social language, the child is not always able access to their environment effectively (Chlebowski, Green, Carton, & Fein, 2010; Low & Lee, 2011; Sterponi & Fasulo, 2010). Being able to access the environment and develop socially and emotionally is worthy of continued investigation of interventions designed to enhance language development.

The second research question sought the perspective of the parent and music therapist on the topic of progress made toward more expressive language after participating in music therapy sessions. This is a vital question in determining the effectiveness of music therapy. The literature review revealed that children with autism often demonstrate a deficit in communication ability. The characteristics of a limited language ability can lead to emotional distress as seen in the form of frustration, possible self-harm, and aggression to others (Gambino, 2014; Lai, 2013). However, music therapy has been noted to activate the brain functions responsible for language ability and emotional regulation (Gambino, 2014; Lai, 2013). As part of the therapy, music therapists play a key role in assessing the child's needs and delivering specific instruction of music therapy toward gaining language ability and social skills. When the diagnosis of autism occurs, parents become desperate for information and assistance with their child. Parents often are faced with either not realizing the characteristics of autism or are seeking help for their child who may exhibit profound frustration due to delayed language development. At times, parents may not see the characteristics of autism until the family physician and/or close family members alert them. This can result in the loss of early intervention, which is determined to be crucial to

the development of language (Gambino, 2014). Therefore, the educational setting often becomes the initial environment for intense instruction. Without specific instruction, the student's ability to convey wants and needs and to establish and maintain friendships remains significantly impaired.

Participants

Participants are key to providing rich and in-depth information and therefore the predominant component of the data collection process. The selection of the participants is crucial in gathering the needed information to answer the research questions in a broad sense as opposed to selecting participants who will skew the results in a certain manner (Creswell, 2016; Marshall & Rossman, 2016). Accessing key information from the first-hand observers, parents and music therapists was carefully planned. The researcher knew of the heavy demands placed on the parents with children with autism as well as the daily work schedule of the music therapists, and created a convenient, semi-structured and open-ended series of interview questions to maximize the most information regarding the results of participation within music therapy sessions (see Appendices G and E) (Creswell, 2016). The setting of the study was the convenient occasions for the music therapists and parents to complete a questionnaire and/or interview.

The participants of the study were composed of volunteer music therapists and parents, either mothers or fathers representing families with a child diagnosed with autism who participated in music therapy during the ages of 3-8 years. The parents involved within this study ranged in age, education level, economic status, and, were able to access various amounts of existing means of support for their child. The common trait of the parents interviewed was their tenacity for advocating for their child. The music therapists who volunteered to be interviewed ranged in age and career years. The six music therapists were located in Washington, Idaho,

Oregon, and California, were female, and certified and credentialed through their state regulations and the American Music Therapy Association. The career years of the music therapists varied in length. Music therapy is provided in the two main locations of the public education classroom or the office of the therapist. Two of the music therapists provide therapy sessions within the public education setting and four provided music therapy sessions within the private setting of their offices.

Data Collection Methods

All research is to be conducted in an ethical, safe, respectful manner, and especially so to protect the participants. A solid research naturally occurs when the researcher implements an ethical, credible, and well-formatted methodical process (Creswell, 2016, Marshall & Rossman, 2016; Turner, Kim & Anderson, 2013; Turner, 2010). Prior to conducting the research, certain components are required. All ethical considerations were assured through the training program of the National Institutes of Health (NIH) Office of Extramural Research (Creswell, 2016). The researcher received approval number #1654415 (see Appendix A). Prior to conducting the research, it was necessary to outline every detail and submit the research design to be reviewed by the Human Research Review Committee (HRRC) at Northwest Nazarene University. Approval by the HRRC was issued and the research was conducted August 2016 to January 2017 (see Appendix J). Creswell (2016) maintains the following components guide an ethical research product,

- Submitting a proposal to the Institutional Review Board of the institution to provide security for the participants.
- Informing the participants of their right to decline participation at any time to ensure a

feeling of being non-pressured.

- Building trust and discussing the proposed purpose of the study demonstrates respect to the participants and will deter deception.
- By reporting all findings, those in agreement and disagreement, assures a well-rounded study.
- By maintaining confidentiality of the participants and their information (i.e. assigning numbers or pseudonym, keeping information safeguarded) anonymity will be assured.
- Sharing the results with participants will clarify their comments, known as member checking (Creswell, 2016).
- Sharing the results with colleagues.

Participant consent. In order to gather the information needed for the research questions, the researcher sought access to the parents and music therapists. A description of the research was hosted by Western Region Chapter American Music Therapy Association (WRAMTA) approved websites inviting both parents and music therapists to participate in the research (see Appendices G and H). Additionally, the Autism Society Chapter for San Diego published the research proposal (see Appendix K). The opportunity to participate in a face-to-face interview or via the phone was also provided and became the main source of information for both the parents and the music therapists (see Appendices C and D). Once the parents and music therapists volunteered it was necessary to gain their informed consent for participation and to provide permission checks throughout the data collection period, and afterward to check with the participants for a review of their contribution (see Appendix B).

Content validation and interview questions. Prior to conducting the interviews, the questionnaire and interview questions were initially piloted for validity by three parents of children with autism and two speech and language pathologists. The process of norming helped to clarify questions that were unclear, wordy, and/or difficult to answer in their present format (Creswell, 2016). During the norming process, it was suggested to ask if siblings in the family were also diagnosed with autism, and if other therapies were offered such as occupational therapy or speech and language therapy. This was very helpful information. Once added, the researcher gained another perspective to the information provided by the parents. After the questions were piloted, the researcher reflected on the level of ease for the participant to answer the questions and if any difficulties arose. The questions were revised when deviations were noted. The data from the pilot exercise was discarded safely.

Interviews. This qualitative study implemented a semi-structured interview approach in order to investigate the experiences of the families and music therapists. The interviews were conducted in person and via the phone (see Appendices D and E). The value in using interviews is to provide relevant and immediate information to the data collection (Creswell, 2016). Interviews were the key source of information for this study and are known to be a strong bank of information (Creswell, 2016; Marshall & Rossman, 2016). In order to conduct ethical research that is credible and can be replicated, the right of refusal prior, during and after the interview by the participant should be maintained. Member checking allows for the participant to review their responses with the researcher in order to clarify any comments (see Appendix F). Additionally, reviewing the themes with qualified peers and keeping detailed analytic notes are also recommended to further refining of the research results (Creswell, 2016; Marshall & Rossman, 2016). The researcher's experience with families of children with special needs enhanced the

interview process in terms of accessing thoughtful and constructive answers.

The data collected for the study was derived from interviews with parents representing ten families and six music therapists. A description of the research and researcher was provided for the parents and music therapists (see Appendix G). The participants were well aware of their option to decline participation at any time (see Appendix B). Each participant was given an explanation of the informed consent and gave consent prior to the interview either by an electronic form or hard copy form (see Appendix B) (Creswell, 2016; Marshall & Rossman, 2016). Due to the potential distance of the parents and music therapists, the intended data collection was derived from either a questionnaire or an interview in person or via the phone (see Appendices E, H and D). The questionnaire for parents was also placed on the website of a local chapter of the Autism Society (see Appendix K).

In order to interview music therapists located in the western region of the United States, individual organizations listed on the WRAMTA website were contacted. Music therapists from Oregon, Idaho, Washington and California contacted by the researcher to volunteer for a phone interview and were provided with the informed consent form (see Appendix B), the interview questions (see Appendix E), and the participant debrief form (see Appendix F). As well, a description of the interview process was provided to the participant alerting them that the interview would be audio-recorded with optional participation (see Appendix C). The music therapists were asked to refer to one client when answering the questions.

Due to the limitation of the questionnaire, the researcher chose another approach to gain access to parents and music therapists. After locating social events hosted by the local San Diego Chapter of the Autism Society, the researcher visited two social events to gather parent

participants. The social events are posted on the website of the Autism Society and are publicized on the website and open to the public. During the interviews, the researcher took notes and checked the responses given by the participant with the participant so as to clarify any comment that was unclear.

Analytic Methods

Analyzing the data is not only the next step after the data collection, but also considered as technical as the data collection process (Creswell, 2016). The interviews took place in a face-to-face fashion with ten parents and with six music therapists via the phone due to time constraints and distance. The conversations were simultaneously recorded and written verbatim. Both the researcher and the participant checked the information provided for clarity within the interview. The interview length ranged from 30 to 40 minutes, were transcribed, checked for accuracy, and coded for themes. The data was kept confidential by using a password-protected computer and by providing the participants with pseudonyms. Themes were realized throughout the conversations with the parents and music therapists (see Appendix I). Enthusiasm and emotion were quickly detected by the researcher and noted within the researcher's reflective journal. Throughout the study, the researcher maintained reflective notes derived from the interviews to be coded for analysis. As well, the results were reviewed with colleagues familiar with the research topic, available music therapists, and the researcher attempted to connect with 50% of the parent participants to review their specific contribution (see Appendix F).

Limitations

Limitations can occur even when all components are carefully planned (Creswell, 2016). Specific to this study are the following limitations that the researcher experienced. An unreliable component of the study was the fact that the questionnaire was optional. The parents and music

therapists were not bound to complete it, but rather may complete if they happened upon the websites and felt compelled to offer their information. While parents and music therapists did not utilize the website questionnaire, the process of interviewing ten family units in person and six music therapists via the telephone provided information. The responses from the parents and music therapists were valuable even though the sample size could be considered small in number. A higher number might have delivered more statements regarding music therapy and their child's/client's language development, but the researcher heard repeated answers given by the parents, which was confirming and indicated a saturation point (Creswell, 2016). The music therapist participants ranged in location, Idaho, Oregon, Washington and California, and were of white, non-Hispanic culture, and female. The parents primarily resided within southern California. A larger sample size of ethnicity of parents would have brought more perspectives toward the impact of music therapy. The study accessed the perspective of families of the Hispanic culture, and of the white, non-Hispanic culture.

It should be considered that music therapists are board certified through WRAMTA and are exposed to the characteristics of children with special needs during university instruction as well as clinical practice. It isn't until the music therapist is the case manager of children diagnosed with autism that their skills are refined. The varying level of skills of the music therapists with children diagnosed with autism should be considered as a limitation since more experience with autistic characteristics might have yielded different results. Another limitation was that the research design used information from one client, whereas, data collected from more than one client within the caseload of the music therapist could have provided a broader scope of information.

Another factor is the relation of the researcher to the topic. The researcher's career has focused on families of children with special needs, most recently with children diagnosed with autism. Additionally, the researcher is very familiar with music therapy as an observer of music therapy lessons and its impact. This study was composed of a select set of characteristics within the human population. Autism is currently newsworthy, however, few families participate in music therapy, creating a select set of parents. Each family was asked about additional therapies, such as speech therapy, occupational therapy and behavioral therapy. It is necessary to acknowledge that speech therapy or occupational therapy might have assisted with music therapy.

While autism is found within all ages, all income levels and all cultures, the parents may not be aware to request music therapy for their child or may not be able to pay for music therapy. The participants would have needed a level of English that enabled them to inquire of information on the website, understand the research intent, research questions, and conduct a conversation in English. The sample size was primarily Caucasian, with a higher income base. Honesty, forthright answers given when answering questions would be necessary for accurate results.

Role of the Researcher

The role of researcher is significant in the sense that bias should not exist, that a professional and protective manner should be upheld throughout the study. The career of the researcher has been spent within the realm of special education. While the personal experience of the researcher lent itself understanding the intricate components of the study, the researcher refrained from assuming perspectives of the parent or music therapist. Creswell (2016) and Marshall and Rossman (2016) recommend for the researcher to keep a log of thoughts so as to

prevent personal opinions, added commentary, or the perspective of previous experiences to interfere. This action is referred to as Bracketing. It prevents researcher bias and allows the message to honestly flow from the participants. The researcher kept a journal during the interview process to note emerging themes and to relate interview topics. During the interviews, the researcher refrained from contributing personal career information related to the topic. Instead, the researcher maintained a positive facial expression to acknowledge comprehension and so as not to persuade the parent or music therapist.

Chapter IV

RESULTS

Introduction

As described in the literature review, music therapy is a therapy most recently implemented with children diagnosed with autism, and is a therapy of continual research (Ettlinger et al., 2011; Gambino, 2014; Geist, 2012). Characteristics of autism have been found to greatly impact the progress of communication ability, social skills and, emotional development. Children diagnosed with autism range in communication ability from non-verbal to highly verbal, vary in levels of attention toward other people and, at times demonstrate a difficulty to self-regulate emotions (Gambino, 2014; Lai, 2013; Lim, 2010). Even a child with a high verbal language ability can still exhibit confusion with the social event, show difficulty with word retrieval, or become frustrated to the point of yelling, destroying property or hurting others and self (Gambino, 2014; Heasler, 2011; LaGasse, 2014; Lai, 2013; Lim, 2010).

It is determined that language development is crucial for the participation in social situations, self-regulation skills, and academic skills, all referred to as adaptive skills (Chlebowski, Green, Carton, & Fein, 2010). One can attempt to understand the heartbreak of a parent watch their child play alone, or continue to hurt themselves or others when frustrated. It is found that music therapy is able to activate brain functions that provide assistance for understanding the social context (receptive language skills), for social language (expressive language skills), and emotional regulation (Gooding, 2011; Geretseggar et al., 2015; Hargreaves & Aksentijevic, 2011).

Research indicates that music is able to enhance brain functions from the influence of auditory pattern of pitch and tempo. When the brain functions efficiently, the child is more likely to learn the skill or concept (Ettlinger et al., 2011; Geist, 2012; Patel, 2008). The qualitative method of utilizing interviews allowed the researcher to access the current state of language development for children diagnosed with autism who have participated in music therapy. The comparison is crucial in determining the impact of music therapy upon language acquisition. The interviews explored the dynamic of the lived experiences and provided an outlet for the parents to express their journey and quest with their child's language development (Creswell, 2016).

Data Collection

Due to the varying difficulties with receptive and expressive language known to autism, the research questions intended to investigate the impact of music therapy upon language acquisition development of children diagnosed with autism (Gambino, 2014; Lai, 2013; Lim, 2010). The following research questions were used for this study:

1. How does music therapy affect the receptive and expressive language skills in children diagnosed with autism spectrum disorder aged 3 to 8 years?
2. What components of music therapy do parents and music therapists profess to make the most impact on language acquisition development in the child diagnosed with autism spectrum disorder, aged 3 to 8 years?

As outlined in chapter three, the method of gaining the information from the parents and music therapists comprised the following,

- Completion of the certificate "Protecting Human Research Participants"
- A description of the research process

- A questionnaire was placed on social media websites of music therapy organizations and a chapter of the Autism Society within the western region (California, Oregon, Idaho, Washington)
- Face to face or phone interviews with parents and music therapists

Participant perspective

The researcher sought information from parents and music therapists in a manner to illicit rich information. The face-to-face fashion of the interview added a unique dimension of extra emotion to the question responses. Knowing that music therapy is considered relatively new as an intervention and not always easy to access, it is remarkable for the parents to respond to the suggestion of implementing music therapy for their child or to seek information toward accessing music therapy (Geist & Geist, 2012; Geretseggar et al., 2015). While the parents interviewed for this study ranged in economic and education levels, they each were equally proactive for their child. Music therapy is not always offered as a special education service within the public school system where a team of professionals can recommend it, but rather is more often accessed through private means, such as health insurance or personal finances. This requires the parent to trust professionals who are recommending music therapy or to independently research music therapy and seek it for their child.

Background information was obtained by asking demographic questions specific to the family; age of the child who participated in music therapy, the number of children in the family, the age of diagnosis, the number of siblings diagnosed with autism, the length of time for music therapy sessions, and a list of other therapies implemented. It is interesting to note the ages of the children diagnosed with autism range from sixteen months to four years, signifying the families accessed early intervention programs. The parents were not asked to correlate the years of

participation with music therapy and their child's progress, instead to comment on their firsthand impressions. Table 3 provides a visual summary of the background information of the parent participants.

Table 3. *Background information of the families*

Family	Age diagnosed	Years of Music Therapy	Siblings diagnosed	Other services (Occupational Therapy, Speech therapy, Behavior support)
P1	16 months	1 year	Yes	OT and Speech Therapy
P2	2 years	1 year	No siblings	OT and Speech Therapy
P3	18 months	2 years	Yes	OT and Speech Therapy
P4	4 years	3 months	No siblings	OT and Speech Therapy
P5	3 years	3 years	No siblings	OT and Speech Therapy
P6	3 years	6 years	No	OT and Speech Therapy
P7	2 years	9 years	No	OT, Speech Therapy and Behavior support
P8	11 months	5 years	No	OT, Speech Therapy, and Physical Therapy
P9	6 years	6 months	No siblings	OT, Speech Therapy
P10	16 months	6 months	No siblings	Speech Therapy and Behavior support

Music therapists work closely with the family and can develop a vested interest in the success of the child. The music therapist is often a professional who the parents will confide in and ask detailed questions regarding progress of their child. Each of the six music therapists appeared to be the cheerleader for the families they represented and commented enthusiastically

on the progress of their clients. Music therapists are credentialed per the guidelines established by WRAMTA and the state credentialing board. They are trained to assess a child's current functioning in a certain skill area, such as expressing wants and needs, participating in conversations, cooperatively playing with peers, transitioning from one activity to another, and establishing goals for the child to accomplish through the music therapy sessions. For students who access music therapy in the public schools, the music therapist participates on the special education team and is held accountable for providing instruction for the client to make progress on the special education goals. In order for skill attainment to occur, the music therapist carefully monitors the child's pace for learning and makes adjustments within the music therapy sessions to facilitate the child's learning. Additionally, the music therapists convey strategies such as certain phrases or songs to the parents so that they may assist the child to use the strategies within the home and community.

Results for Research Question #1

Children diagnosed with autism can experience a frustration with expressing their wants and needs, making and keeping friends through social language, and participating in conversations in a reciprocal fashion (Gambino, 2014; Lai, 2013; Lim, 2010). Question #1 sought to investigate the level of language of the child after participating in music therapy sessions.

How does music therapy affect the receptive and expressive language skills in children diagnosed with autism spectrum disorder aged 3 to 8 years?

The themes associated with research question #1 include word utterance increased, progress toward Individualized Education Plan goals, and, expressive language increased in the community and in the home. As seen in Table 4, the responses given by the parents and music

therapists indicate that at least half of the music therapists and at least half of the parents state an observable increase in word utterance overall, plus an increase in appropriate language within the community. Table 4 gives an overview of the responses provided by parents and music therapists.

Table 4. *Synopsis of Research Question 1 Results*

Themes	Percentage
1. Word utterance	Parents-40% Music Therapists-50%
2. Progress toward special education goals	Parents-60% Music Therapists-20%
3. Expressive language in the home	Parents-50% Music Therapists-50%

Word utterances. The descriptions of the impact of music therapy include, the child progressing from limited vocabulary to more fluent speech (P6), and a poor language ability progressing in the area of expressive speech (P7). Music therapists affirmed the communication ability of their clients as able to make sounds or use gestures or would drag the adult to the desired item (MT1, MT2, MT5 and MT6). MT2 commented that her client increased their language ability from gestural signals (pointing, pulling adult's arm to the desired item), frequent tantrums, to now communicating his wants and needs at the store, at home, and calmly. MT6 provided that her client was experimenting with various sounds used in language and would singsong the various sounds also, in a melodic manner. She would like to see her client express his wants and needs and to increase his focus on the task.

Progress toward special education goals. When asked about the progress toward established Individualized Education Plan goals, parents indicated that music therapy has helped

their son to remember things (P3). Music therapy has helped increased sentences with music as opposed to no sentences without [music], there has been progress in language goals, which is considered a necessary expense (P4). “He’s made good progress toward his IEP goals (P5). One parent had not seen progress yet toward special Individualized Education Plan goals (P1). Two music therapists who provide music therapy within the public classroom setting develop goals for the student and indicated that the students made progress (MT1 and MT4).

Expressive language increased in the home. M8 provided that her client’s parents play the specific songs prior to a transition to getting in the car and as part of their bedtime routine (pajamas, just one story at bedtime and, brushing teeth). P2 commented that the songs are very helpful for daily activities and P3 also added that the songs are played as a continual reminder.

Results for Research Question #2

Interview questions that addressed Research Question #2 provided the parents and music therapists an opportunity to comment on their impression of the music therapy sessions, the emotional wellbeing of their child/client, the social language, and their observations of the use of music therapy sessions in the community. Research question #2 helped to determine the child’s ability to demonstrate adaptive skills after participating in music therapy sessions as reviewed in chapter five.

What components of music therapy do parents and music therapists profess to make the most impact on language acquisition development in the child diagnosed with autism spectrum disorder, aged 3 to 8 years?

The interview question that posed the greatest information was the parents’ impression of the music therapy sessions. Comments from the parents vary, “Great experience and a fun motivator” (P1), “Good tool that didn’t feel like work” (P3), “Fun-didn’t feel like therapy” (P4),

“I love them and think the world of our therapist” (P5), “Effective, enjoyable and creative” (P6), “We do private music therapy lessons at home. We see it as a necessary expense” (P7), and “He liked it” (P9).

Responses charted in Table 5 show the significance of the topics from the parents’ perspective. Eight parents found their child as achieving language acquisition skills that increased their ability to show appropriate social skills and to develop emotional regulation. Both skills are considered crucial for developing adaptive ability (Hughes, Crowell, Uyeji, & Coan, 2012; Panksepp, 2012; Ryder & Leinonen, 2014). Four music therapists provided information confirming their client demonstrated appropriate expressive language skills in the community.

Table 5. *Synopsis of Research Question 2 Results*

Theme	Rater
Emotional Well-Being	Parents-70%
	Music Therapists-30%
Social communication	Parents-80%
	Music Therapists-40%
Expressive language in the community	Parents-80%
	Music Therapists-40%

It is understood that adaptive skills are crucial to participate in life’s activities and that the level of language development correlates to the development of adaptive skills (Hughes et al., 2012; Panksepp, 2012; Ryder & Leinonen, 2014). These skills encompass the ability to express wants and needs, use words to self-calm, use receptive language to understand the situation, use receptive language to participate reciprocally in a conversation, and to use language to express

emotions. Parents have expressed to the researcher that they often experience looks from passersby when their child is crying, screaming, and not rational due to not being able to understand the situation and/or the words. The parents also commented that they do not see their child interested in friends. As well, research has found social communication to be a challenge for children diagnosed with autism. This results in poor development of social skills and a lack of interest in sharing emotions during conversations and social events. Social language skills are comprised of understanding of the social situation, word retrieval for appropriate verbal responses, and developing relationships (Bolte et al., 2011; Gambino, 2014; Just et al., 2014; Kanner, 1943; Lai, 2013).

Emotional wellbeing. The goal of P7 was for their child to express his moods. They also commented that communication skills were “something we work on constantly.” The communication ability of the children varied from being nonverbal (P1 and P2) or able to describe their feelings (P3). Parents expressed that they desire for their child to use “effective speech” (P2), “to have friends as an adult” (P5). The music therapy sessions were described as “helping him to self-regulate”. And that, “Music therapy helped with the behaviors and to self-modulate. He is happy” (P1). P2 also indicated that their child was “...happier and relates better to music.”

Social language. P1 shared that they saw improvement with regulating emotions, which allowed for their child to interact more with other children and to not be afraid. The goal of P3 was to “chit chat” with their child. His parent describes the receptive language skills as greater than the expressive language ability, but that he is using words with more meaning. More meaningful language will assist with making friends and keeping friends, as well as used with the dialogue of academic language during school hours. Another parent desired for their child to

improve with social skills and is seeing now that their child can “socially connect to others” (P5). A comment of “[music therapy] awakened his awareness in many areas.” (P6) “We are continuing working on pragmatics.” (P6) The same can be said of the child of P7, “... has made progress with goals for expressive speech. My child is severely impacted with autism so we constantly work on appropriate language.” P10 expressed the desire for functional speech so that their child could self-regulate. Two music therapists shared that their clients would gesture, drag the adult or point to the desired item and that the expressive language had developed to the point of requesting help with self-regulation strategies, using appropriate language in the store, and are not showing anxiety in public places.

Expressive language increased in the community. Children diagnosed with autism can become frustrated to the point of screaming, hitting themselves or others, crying, and/or demanding unknown items (M1, P2, P10). MT5 commented that the therapy sessions incorporate songs that teach identification of feelings and then the appropriate request for help. MT5 mentioned that the parents play the songs prior to departing for the store, birthday party, or play date. P5 and P6 provided that their child uses appropriate language on most occasions. P9 felt that their child could do better but as parents weren’t contributing toward the skill practice. A success for the child was when another shopper thanked the parent for teaching such polite skills to the child (MT3).

Summary

Chapter four provided the purpose and structure of the research methods so that the research data could be understood and appreciated. The research questions of the study focused on expressive language, social language, and emotional wellbeing. It was found that children with autism ranged in language ability from one-word utterances to complete sentences, but most

showed difficulty with social language and self-regulation before participating in music therapy. Observations by the parents and music therapists agreed that an increase in language during a transition from one activity to another activity (a source of discomfort for the child) was evident. As well, an increase in communicating wants and needs was observed more often in the community and in the home during activities that previously caused frustration. As well, music therapists and parents alike commented on the positive emotional state of the child/client. Chapter five will discuss the research results and relate the results to the problem statement and literature review.

Chapter V

DISCUSSION

Introduction

There is no question that communication is the underlying skill necessary to function easily through the demands of living. The opening excerpt of the dissertation highlights the struggle parents and children experience when receptive and expressive language ability is not developed. Children diagnosed with autism display a number of characteristics. The specific areas of receptive and expressive language are emphasized within this study in terms of describing the overall development of language and the impact upon the areas of social language, expressing wants and needs, and functional skills when a deficit in communication ability occurs. Theorists, Chomsky (1988-present), Vygotsky (1896-1934), and Piaget (1896-1980) purported both physical and environmental factors contribute in language development. Their premise involved the reciprocal learning through conversations and experiences. As well, skill attainment is determined as reliant upon cognitive development with is a direct result of language development (Deery, 2013; Isaacs, 1973; Piaget, 1959).

Research indicates that developed communication ability will guide the child to participate in conversations and will provide the academic language necessary to access their world (Gambino, 2014; Just et al., 2014; Kanner, 1943; Lai, 2013; Moore, 2013). Music therapy is also currently studied since its recent use with children diagnosed with autism and encompasses many of the components of language acquisition and behavior as outlined by the theorists. Since the early 1950's, music therapy has been used for the rehabilitative purposes in the areas of mental health and physical health and is showing effectiveness with the characteristics of autism (Geist & Geist, 2012; Hargreaves & Aksentijevic, 2011; Thaut,

Molinari, Leggio, 2007). Components of music therapy align with the theories of Vygotsky, Chomsky and Skinner in the unifying theme of presentation of language, practice of language through social events and shaping of behavior through the use of language within the context of the social event. Music therapy provides for a language rich atmosphere that molds behavior through the social event and continues to develop language through the words used in conversation. Vygotsky (1896-1934) proposed that language development occurred for a child when they were exposed to a higher level of language (another peer or adult) (Derry, 2013). Similarly, the shaping of behavior as outlined by Skinner also occurs during the social event, or music therapy session. All the while, the mechanics of language acquisition continues to develop through the exposure to language and practice of skills.

With the diagnosis rate steadily climbing to one in sixty-eight children identified with autism, the medical and educational systems are expected to be a support (Center for Diseases Control and Prevention, 3/2014). Determining the specific components of music therapy relevant to language development for children with autism as voiced by parents and music therapists was the quest of this study. Specific interventions are required to alleviate the feelings of frustration experienced by the child and by the parents. The medical and educational systems are the current resources for parents and professionals, and will be expected to assist with the growing demand for interventions. Interventions supplied by the medical community and the public school systems comprise therapies (i.e. occupational therapy, speech and language therapy, and physical therapy) and are reaching limitations (Belger Carpenter, Yucel, Cleary, & Donkers, 2011; Weintrab, 2015). In order to assist the education of parents of children diagnosed with Autism Spectrum Disorder, the general community, and education staff, this dissertation sought to

present the relationship between autism and music therapy by answering the following research questions,

1. How does music therapy affect the receptive and expressive language skills in children diagnosed with autism spectrum disorder aged 3 to 8 years?
2. What components of music therapy do parents and music therapists profess to make the most impact on language acquisition development in the child diagnosed with autism spectrum disorder, aged 3 to 8 years?

Summary of results

The following summary is organized by the predominant themes and explains the results in a manner that provides answers to the posed research questions. Interviews were conducted in a semi-structured manner with questions designed for the parents and music therapists to reflect on the progress of language development for their child/client after participating in music therapy sessions. The desired amount of interviews was a minimum of eight to ten families and six to eight music therapists. The actual participation was composed of ten family units (mother and/or father) and six music therapists. The researcher was satisfied with this amount of participation as it provided a variety of responses and highlighted the experiences unique to the families and music therapists. As well, the individual responses blended together with similar wording and phrases, and were noted to repeat on occasion. Creswell (2016), Marshall and Rossman (2016) instruct for repetitive phrases to be considered as a saturation point of the information. This is also a way to validate the participants' response (Creswell, 2016; Marshall & Rossman, 2016).

As part of the interview questions, background information of the families was obtained by asking demographic questions specific to the family, such as the age of the child who participated in music therapy, the number of children in the family, the age of diagnosis, the

number of siblings diagnosed with autism, the length of time for music therapy sessions, and a list of other therapies implemented. Of the ten parents interviewed, five were parents of young families and five were parents of upper elementary to middle-school age children. All of the children, sons, lived within a two-parent home, and eight of the ten families had more than one child. Two of the families had two siblings diagnosed with autism. All of the families received additional speech and language services. Nine of the ten families received occupational therapy and two families received additional behavioral therapy and physical therapy.

During a social gathering hosted by the Autism Society chapter, parents were asked about the goals pertaining to the language ability they desired for their child. The overarching theme was for their child to easily access their environment through language. One parent wanted their child to express his dreams and hopes, and function in the world, while another parent wanted their child to have friends, go to college, and secure a job. A common desire that surfaced often was represented in a comment by a mother to sit with her son and have a normal everyday conversation. Other parents were very specific with their goal for their child, “to improve social language skills” (P4), “learn to speak and express needs to others” (P7), and to develop effective speech (P10).

Three WRAMTA board certified music therapists participated from Idaho, one from Oregon, and two music therapists participated from southern California. The music therapists were able to set aside significant time for the interview via the phone and answered questions in regard to one client. The researcher reviewed the interview responses from both the parents and music therapists to clarify the meaning for certain comments. A common theme evident from the interviews with the parents was their tenacity for finding results for their child. They were relentless in their search for resources and by furthering their education of the characteristics of

autism. As well, the comments of the music therapists were filled with a thorough snapshot of the progress made by the client participating in music therapy. The music therapists provided explicit comments toward success of their clients.

Table 6 highlights the perspective of the music therapist when asked to provide information regarding the language ability at the initial music therapy session and the client's progress. The results show significant gains overall and are incorporated into the themes of their descriptions. The music therapists described their client's language ability when arriving to the music therapy sessions as significantly underdeveloped in the areas of expressive language and receptive language. The parents' initial report to the music therapists was that their child would often become extremely frustrated when in the store, or at a birthday party, and did not respond correctly to questions. The parents expressed that they were at a loss for resources for their child.

Table 6

Examples of language ability before and after participating in music therapy sessions

Before music therapy	After participating in music therapy sessions
<ol style="list-style-type: none"> 1. "1-2 word utterances are spoken." 2. "He is making constant vowel sounds, no word, no other method of communication. Instead he is grabbing at adults." 3. "The tantrums are frequent." 4. "She would point or drag the person to the item." 5. "He would make sounds and point or use gestures and dragged us to what he wanted." 	<ol style="list-style-type: none"> 1. "There is an increase of 3-5 words." 2. "His attention is equal to the increase in word utterances." 3. "So much progress over the last three-years has occurred. His language is organically developed, truly learned. The accomplishment is due to his team of therapists. It is seamless, has created ownership with the client as he is generalizing the skills in each environment." 4. "I am optimistic, he shows willingness and is at the point to begin strategies and social scrips." 5. "It has activated a neural function. He independently asks for a squeeze to assist him with self-regulation." 6. "He is in the community without worrying and has conversations now. He can express himself."

The theories of Skinner (1904-1990), Chomsky (1988-present), Vygotsky (1896-1934), and Piaget (1896-1980) are presented in Table 1 (page 15) of the theoretical framework. Each of the theories provided the general population with insight to the human linguistic system or human behavior, and highlights similarities between language acquisition and music therapy, specifically the components involving brain functions. A triad of information is evident to be reliant upon the other, the Theorists individual work, music therapy, and language development. Interestingly, the responses given by the parents and music therapists are similar to the

conclusions of the theorists, such as increased language development and the use of language within social context (i.e. shopping, expressing wants and needs), and regulating ones emotions by using language. The predominate themes that arose from the interviews with the parents and music therapists are interwoven in the theories presented in Table 1 (page 15) and include, word utterance, emotional wellbeing, social communication, progress toward special education goals, expressive language ability to have increased in the community, and expressive language ability in the home.

Summary of Research Question 1

Research question #1 sought to determine the impact of music therapy upon the receptive and expressive language skills of children who are known to show a deficit with communication skills. Parents have shared with the researcher that they do not understand what their child is saying and are saddened by this, or are embarrassed by their child's reaction when in public. Similarly, professionals who instruct children diagnosed with autism continually search for effective interventions. The results from the interviews with parents and music therapists strongly indicate that their child/client has been observed to increase their ability to understand the social situation (receptive language) and also to respond appropriately (expressive language) as evidenced by their participation in social activities, as well as to maintain composure in challenging situations. The ability for the child to understand the situation, respond to the situation, and participate in conversations depends heavily on the level of their communication skills (Gambino, 2014; Lai, 2013; Lim, 2010).

Parents interviewed commented on the "steady progress" of their child who was nonverbal prior to the music therapy sessions. The research results of Krashen and Terrell (1983) indicate that language acquisition occurs more readily when a combination of interest, contextual

clues, and the messages are activated in a multi-modality (auditory, visual, and kinesthetic). Comments of several of the parents whose children were very limited verbally describe their child as nonverbal before participating in music therapy. The children were then able to sing with songs after experiencing music therapy sessions (P2 and P10). A similar experience occurred with P3 and P6. Their sons spoke random utterances and also began to sing with the songs and speak appropriate words. The receptive and expressive language skills related to social language, cognitive ability and adaptive skills are developed through each experience as Chomsky (1988-present, Piaget (1896-1980) and Skinner (1904-1990) proposed (Goldbart, Chadwick & Buell, 2014; Krashen & Terrell, 1983; Sousa, 2004).

Word Utterance. The research results of this study found an increase in expressive language with the child's/client's participation in music therapy. It is known that communication is both nonverbal and verbal in nature and is reliant upon functioning physical mechanisms such as the language loop (Goldbart, Chadwick & Buell, 2014; Krashen & Terrell, 1983) and that music therapy activates memory (Ettlenger et al., 2011; Levitin, 2013). Word utterance is a component to be considered within communication ability as it determines the fluency with which a child/client is able to participate in their environment (Krashen & Terrell, 1983; Visser et al., 2013). Figure 1 on page 15 displays the association between music therapy and language acquisition with the commonality of similar brain functions or neural connection. Similarly, Piaget's findings regarding cognitive ability provide the same connection and is supported the evidence-based research of Zone of Proximal Development as outlined by Vygotsky. The theories founded the thought that cognitive development is supported by language development (Derry, 2013).

Parents were asked to describe their child's communication ability and their rate of communication before participating in music therapy sessions. The parents indicated that their child was nonverbal, using random utterances, or able to speak but without cohesion of ideas. The parents described the expressive ability of their child's participation in music therapy sessions as beneficial to self-regulating behavior challenges more effectively, a happier demeanor, and speaking sentences instead of random utterances. One parent commented that their child was nonverbal before music therapy services and then hummed most of the day after receiving music therapy services. "He's happier and relates better to music". (P2) Another parent commented on the length of sentences spoken had increased as compared to the one-word utterances given prior to music therapy sessions and an increase in both the length of sentences, and expressive language in the community and home was found. "My child has improved dramatically with music therapy. He's gone from very limited language to a fluent speaker". (P6) The parents' comments ranged from their child exhibiting stronger receptive skills than expressive skills to singing with songs and using words more purposeful, or that they are fully verbal but lack comprehension skills, or the communication skills could be better, and that their child can only speak random utterances, the language ability was not age appropriate, the language ability lacks appropriate skills [for event], and, the child has trouble "getting ideas expressed" (P2). It can be said that the behavior theory of B.F. Skinner applies to the cited experiences (Skinner, 1974). A music therapist commented that the client had previously received speech therapy services for two years and had not uttered a word. Within three months of participating in music therapy, the client began speaking in short phrases and has a few topics used for spontaneous language (airplanes, and the snowman song). This is an example of an extreme case of language delay and the impact of music therapy upon language development.

Research guides professionals to access the environment during instruction so as to emphasize this skill for the child/client. Skinner (1974) specifically researched the relationship of the environment to language acquisition. The shaping of speech occurred by *reinforcing* either positively or negatively by the environment (Skinner, 1974). Similarly, music therapy uses environmental cues to promote word utterance as found in the research of Geist (2012), Moore (2013) and Roden et al. (2014). Music therapy, as with procedural learning, uses the environment with nonverbal and verbal cues of sequential movement activities and teaches the child/client to develop the receptive and expressive language skills through the environmental cues (Gagliardi, 2013; LaGasse, 2012; Long, 2011). Based on the comments of parents and music therapists, music therapy enhanced the environment for the child that is then assimilated into language. The music therapy sessions afforded the clients of MT5 and MT6 more developed expressive skills. Their clients were confined to using only sounds, pointing to objects or gesturing to express their wants and needs. After participating in music therapy, the client was described as calm in the community as opposed to worrying excessively, is now involved in conversations, and can clearly speak. Another client was documented as increasing his word utterance from 1-2 words to 3-5 word phrases (MT1). A significant gain was found in the experience that MT2 relayed. Her client came to the music therapy sessions with using grabbing, frequent tantrums, no words, and no other method of communicating. After several music therapy sessions, his language began to naturally develop. The client “truly learned” and was intentional with his words. The addition of music therapy for these children helped increase their word utterance skills, according to both parents and therapists.

Progress toward special education goals. Parents and special education professionals alike are dedicated to advancing the language ability of children diagnosed with autism. Based

on research results by LaGasse (2014) joint attention skills are necessary for focus on the social event. Special education professionals integrate instructional activities to extend the joint attention skills of their students in order for more developed communication. As was determined by previous research and found evident within this study, progress toward special education goals occurs more fluidly when music therapy is incorporated into the lesson due to the foundational component of activating brain functions responsible for language acquisition (Ettlinger et al., 2011; Grahn, 2013). When given the opportunity to report on the progress toward special education goals as a result of participating in music therapy, the majority of parents provided that their child was progressing. The goals established for the client are based on assessment results as determined by a developmental scale. Similar to the work of Piaget (1896-1980) and Vygotsky (1896-1934) special education goals are rooted in language development (Derry, 2013). Vygotsky (1896-1934) and Piaget (1896-1980) emphasized the interaction between language and cognitive development and is reiterated within the education system as the foundation for progress toward special education goals. P1 did comment that her son showed strength in expressive language, but required assistance with receptive language and that music therapy was observed to assist with self-regulation. P2 and P3, state their child is making steady progress, “at least some progress on every goal”. P4 would like more progress on social skills goals but was positive regarding their participation in social events. P6 and P7 indicate progress on goals, specifically with language goals. Parents have expressed to the researcher their inadequacy with understanding the basis for special education goals and are dependent on a review of the skill markers within the natural progression of language acquisition. The gauge most commonly expressed by the parents that the researcher hears is, “they are talking more at home”, or “He/she played nicely with other children”. The researcher

purposefully created an interview question of this nature so that the parents could express their unique observations with a general statement. Many of the goals created for children diagnosed with autism relate to language development, either in the form of expressive language (word utterance, articulation) or receptive language (pragmatics). The focus of special education goals is the language development of the child. The foundational skill is the language development, however, the most recognized skill is the verbal output.

Research indicates is that the child/client is more likely to gain social skills by participating in music therapy. Both Skinner (1974) and Vygotsky (1896-1934) defined the shaping of behavior within the realm of language (Derry, 2013). LeGasse (2014) conducted a study that involved social skills instruction with the added component of music therapy. The social skills were more readily acquired when music therapy was a significant factor. Similarly, the research studies of Hargreaves and Aksentijevic (2011) and Gooding (2011) both added music therapy to social skills instruction and found positive results. The children diagnosed with autism independently implemented the required social skill when presented with the need. The perspective of the parents echoed these findings through witnessing their child increase in language ability. Eight of the ten parents indicated progress toward the special education goals, which can be attributed to the child's increase in language ability. While interventions promote the progress of special education goals, it appears that the addition of music therapy increases the likelihood of progress and is observed by parents as extremely effective. As well, the music therapists instruct their client toward using specific social language based on their need and the functional level reported by the parent. The music therapists interviewed commented that their client "[is] optimistic and shows willingness. He is at the point to begin strategies and social scrips" (MT1). MT3 shared that her client arrived to the sessions with previously receiving

speech therapy but not speaking. Her language goals established were designed to foster conversational skills, to be more consistent with spontaneous language, and to perform three-step commands. After less than five sessions, the client's language developed "dramatically...night and day progress". Music therapy is viewed by the parents and music therapists interviewed as an effective therapy that can be used in conjunction or in place of other therapies.

Expressive language in the home. Children will typically become the most frustrated at home. Parents can be tired and give in to the demands of their child. Or parents may seek outside resources to alleviate their child's frustration. Parents will request training from the music therapist to teach specific skills for the child. The request usually involves a difficult skill or an unpreferred activity where the child often becomes upset. Unpreferred activities can include teeth brushing, washing hair, going to bed, buckling a seatbelt, or toilet training. The comment made by the parent who wanted "...to one day have a chit-chat" with her son (P3) resonates with the researcher. The parents and the child are stilted by the inability to express themselves or to understand certain situations. Since engaging in music therapy, the same parent who desires to have a conversation with her son uses the music therapy songs at home by playing them in the background (P3). He also has been noted as making "steady improvement" with his rate of communication. Music therapy was described as "not really considered therapy" since it was so fun (P4). The son was observed by the parent to transfer skills learned in the music therapy sessions to the home, which, upon further questioning by the researcher, meant the child was more receptive to daily activities. For children with limited expressive language skills, the simple acts of a bedtime routine, eating a meal, getting ready for school, a transition from one activity to another, or a broken toy can send the child into a fit of frustration leaving the parent helpless and sad. Language acquisition plays a significant role in the ability to control ones' emotions is

necessary. Vygotsky (1896-1934) instructed that language development is reliant upon the influence of the culture and environment. Purposeful communication is evident through experiences and is challenged or increased by others with a more developed language (Derry, 2013). Similarly, music therapy is constructed so that the client is provided with contextual supports during instruction in an effort to stretch their development, as founded by Piaget (1896-1980) and Vygotsky (1896-1934). Ettlinger (et al., 2011), Gagliardi (2013), and Grahn (2013) found that both music and language follows a sequential pattern and the benefits of utilizing the environment. Incremental advances were seen with an increase in exposure to language. Krashen and Terrell (1983) originally surmised these findings by determining that language is acquired through visual and verbal input.

As stated previously, the music therapists are in close contact with the parents and are often the first to receive the expressions of joy or the expressions of tears from the parents in regard to the language ability of the child. MT2 commented that her client's parents attend music therapy sessions in order to reinforce the skills in the home that were learned in the session. The heartfelt message of the parents, and even the music therapists, was the desire to share common experiences with their child, to enjoy a joke or to remember an event with fondness. The ability to share together is removed when a child exhibits a language deficit. Based on the comments expressed by the parents, the shared moments are being reclaimed due to the participation in music therapy sessions. "He is happy, he dances, he can say the days of the week and sentences with music whereas he cannot without [music]". (P7) "My client went two years without uttering a word and now can use scripted phrases appropriately, will ask questions, maintains eye contact and uses more spontaneous wording". (MT3)

Summary of research question #2

The second research question sought to expand on the observations of parents and music therapists on the child's/client's participation in music therapy by specifically listing components of music therapy that were particularly effective. Two skills that appeared to be of the highest priority to parents are the emotional wellbeing of the child and their progress with academic and social skills. Research question #2 addresses these significant areas by collecting the impressions of the music therapy sessions from the first hand observers.

What components of music therapy do parents and music therapists profess to make the most impact on language acquisition development in the child diagnosed with autism spectrum disorder, aged 3 to 8 years?

Figure 1 (page 16) visually summarized the connection between language development and behavior, which signals intervention for language ability when a deficit is shown. As described previously, the level of language ability will determine the ability to use words to self-regulate. It also assists with understanding the social situation and therefore assists with maintaining composure. What is known is that children diagnosed with autism exhibit sensitivity to the environment due the limited language ability (Ettlinger et al., 2011; Grahn, 2013). It is also known that the primary characteristic for children diagnosed with autism is a limited receptive and expressive language ability which impacts their ability to access assistance when frustrated with sensory issues such as the lighting, temperature, transition to an activity (preferred or non-preferred) (Gambino, 2014; Lai, 2013).

The limited language ability also limits participation in social activities and the learning that can take place within conversations (Gambino, 2014; Just et al., 2014; Lai, 2014; Lim, 2010; Solomon & Bagatell, 2010). The child with autism does not naturally interact and will play in a

parallel fashion near to peers. Typically developing peers are socially active and learning the rules of language, sharing, and enjoyment. The people associated with the child are left to interpret their emotions and supply the missing components of the message (Adamson, Deckner, & Bakeman, 2010; Just et al., 2014; Kalas, 2012; Lai, 2014).

Emotional Well-Being. A child's ability to express when they are uncomfortable or don't understand the situation is vital to developing adaptive skills (Ettlenger et al., 2011; Geist, 2012). How a person's behavioral choices are outlined in the work of Skinner (1904-1990). His theory signifies the link between language and behavior, specifically how a child responds to language, or the shaping that takes place. Parents are dedicated to helping their child with language development for the good of expressing themselves and for participating in society. As with the research by Vygotsky (1896-1934) of language development (Derry, 2013) and similar results of music therapy by Geist (2012) and Moore (2013), MT5 found that her client could understand her by using gestures and would make verbal attempts. Her client would use clear words at times, however, when transitioning from one activity to another, the client would show harmful actions such as hitting, tearing hair, biting, and spitting. This is due in part to the difficulty with the client's level of language and similarly observed by P10 in their child. The desired goal for the client of MT5 was to see the negative behavior diminish and focus to increase to more than a few minutes. "His mother reported that he wasn't able to attend the local preschool due to behavior issues and now he has play dates". (MT5)

Music therapy is reported to activate the brain functions associated with memory, affording children diagnosed with autism the availability with an effective intervention (Geist, 2012; Moore, 2013). Ettlenger et al. (2011) and Grahn (2013) in separate studies researched how implicit learning is the result of a three-way overlap activation of neural functions, language and

musical components. The pitch and tempo are two components that play an intricate part to increase gray matter and to positively influence the emotions, and stress level (Ettlenger et al., 2011; Grahn, 2013). The union of melody and language was found to increase sustained attention, which accordingly allows for a more solid acquisition of skills based on language development (Geist, 2012; Raglio, Traficante, & Osmano, 2011). P2 noted that her hopes for her son were to hear effective speech. This would include phrases requesting help, showing discomfort or sharing enjoyment. She noted that after participating in the music therapy session that “He is happier and relates better to music”. Another parent who noted a connection between the music therapy sessions and emotional state. Her desire for her son has been for him to “learn to speak and express his needs to others”. Her perspective of music therapy is that he is using his language to interact with peers (P7). Another mother remarked, “he is shy”, and that music therapy assisted so that “now he can make introductions”. (P4)

It is reported by his mother that her son was not allowed to attend school due to his extreme behavior and that now he is able to attend, and is interacting with peers. His teacher reports that he has designated friends and “kids include him because they can understand him”. It was also shared that he is able to tolerate a change in plan or to be told, “no”. He still shows difficulty, but it was shared by the music therapist that his mother isn’t afraid to take him shopping anymore and that he has play dates now. This is a common example of the challenges faced by parents and their children when under stress of the environment. In the previous case, the client’s progress with music therapy sessions affirms how music can activate brain functions responsible for emotional regulation and language ability.

Social communication. Social language was expressed as the ultimate desire for their child. Many parents are faced with the realization that improving their child’s communication

ability was either unattainable or would require years of therapies. Parents and professionals alike are concerned with the child's ability to communicate within social situations (i.e. family events, shopping, birthday parties, school, and home). This area was noted by half of the parents in terms of a significant concern. The music therapists joined in with joy when commenting on their client's progress. Joint attention skills have been emphasized as crucial for the development of social skills (Hargreaves & Aksentijevic, 2011; LaGasse, 2014). The music therapists noted that their client required an increase in focus to attend to the skill instruction taught by the songs (MT1, MT2, MT3, MT4, MT5). LaGasse (2014) conducted research to further information on the importance of developing joint attention skills. It was determined that the ability to conduct reciprocal interaction greatly impacts the ability to share experiences, increase academic language, and to regulate emotions. Gooding (2011) and Hargreaves and Aksentijevic (2011) conducted similar studies that implemented music therapy as the instruction tool for fostering joint attention skills.

What is significant about this study is that an increase was found within the child's/client's focus and reciprocal language across all interviews with parents and music therapists. MT1 commented that her client's language strengths are the ability to form 3-5 word phrases when highly motivated. He does not typically demonstrate articulation errors and has higher receptive skills than expressive skills. He tends to lose focus. When playing music, he is able to appropriately communicate with peers and is confident. However, when not participating in a music therapy session, his phrases are repetitive, and he is not able to transfer acquired language skills into the community. The client of MT2 also demonstrated difficulty with attention. It is difficult for him to understand the adult (receptive language) and has not attained enough language ability to express his needs or converse easily. The music therapist desires for

him to process the language in the environment more effectively and reciprocate socially, “So that he can be heard and understood”. Music therapy has helped him to use all resources in the environment even if inappropriate. She concluded that her client is functioning better in society. MT4 shared that her client is generalizing language skills within the home and the community and that his words per sentence has increased. He is becoming more spontaneous with his word selection.

Both parents and music therapists found the social language to be imperative for their child to develop. To effectively instruct the child diagnosed with autism toward implementing joint attention skills, the understanding of their response to visual input was determined by Kraft (2012) and Kuhl (2010). Children diagnosed with autism showed the same skill level of referencing facial features and their level of joint attention in social situations (Kraft, 2012; Kuhl, 2010). The desired goals of the music therapists echo the client’s language ability to increase in not only word length but quality of language, and that the spontaneity of language was increased. Parents additionally provided joy when their child participated in simple activities without undue emotion or stress. Without question, the parents expressed their happiness with their child’s success and agreed that without access to music therapy, their child would not have made progress with language development.

Expressive language in the community. Parents have described public experiences as difficult. They generally prefer to shop when the other parent can watch the child at home or to shop during school hours. Receptive language ability is necessary to understand the nonverbal and verbal language within the child’s environment and is evident in the child’s ability to perceive the social situation and/or the academic task. The manner of how a child navigates through the language portion of the environment was studied by Hargreaves and Aksentijevic

(2011) and was found to require a developed sense of executive function. Executive function comprises the skills to self-regulate, the planning portion when completing a sequence of tasks, to understand the perspective of others, and to demonstrate appropriate social cues during conversation. The study conducted by Dimitriadis and Smeijsters (2011) determined that the core-self was developed when music was incorporated. The findings also indicated that in doing so, social skills included in executive function, and known as joint attention skills, were also developed. Joint attention skills are necessary to develop so that the child can access the information and adults of their environment by gaining a person's attention and sharing an experience (Adamson, Deckner, & Bakeman, 2010; Vaiouli, 2014). These skills will also be evident within social language and expressing oneself in the community and home settings.

Conclusions

The research study intended to explore the research efforts of previous studies regarding the positive impact of music therapy, by specifically investigating its impact upon language acquisition skills of children diagnosed with autism from the perspective of the parents and music therapists (Borroff, 1977; 2002; Geist, 2012). While music therapy has demonstrated success with enhancing language acquisition, emotional regulation, and a more attuned physical state, this study portrays unique perspectives of firsthand observers of the results of music therapy in an effort to magnify the seemingly effective therapy.

The results of this study indicate a positive impact upon language acquisition when music therapy is incorporated into the instruction. Parents described their child's language ability before and after participating in music therapy. The results overwhelmingly showed an increase in language ability due to the music therapy sessions. The children were more likely to use their

language skills to self-regulate, a skill necessary to maintain focus for academic learning, and participating in conversations. Specifics of language is learned by understanding the verbal and nonverbal message of others and was witnessed by the parents and music therapists as increasing due to the participation of the child/client in music therapy sessions. The common phrases heard by the researcher of the parents' comments helped to determine the specific themes of word utterance, social language, emotional control, progress toward special education goals, and expressive language increased at home and within the community;

1. Their happiness for access to music therapy.
2. Their child's advances with language.
3. Their child's overall level of happiness, instead of worry or frustration.
4. Their child's ability to participate socially.

The parents interviewed for this study were of families of children ages 5-15 diagnosed with autism as early as 16 months. The language ability of the children was described as nonverbal with several who were able to speak 1-2 words at the time of participating in music therapy. The sessions lasted in length from 3 months to 6 years and noting significant progress.

Parents and music therapists alike reported the child's/client's language ability increased to 3-5 word sentences from 1-2 word sentences, that the child was happier, and participating in social events more readily. It was also noted that the increased language ability was observed within the progress toward special education goals. The overall consensus given by the parents and music therapists was that the child/client learned and used appropriate language within the home setting and community setting, which would not have occurred had significant language ability with receptive and expressive language skills been fostered by music therapy. Another attribute due to music therapy is the movement closer to the desired communication ability of the

parents. Their desire for a “chit-chat”, or “to express his needs to others”, or “to participate in a job and have friends” is now more attainable due to the music therapy sessions.

Implications for professional practice

Autism will continue to draw research as well as music therapy, simply to refine the characteristics of autism and to match effective instructional strategies (Geist, 2012; Moore, 2013). Vaiouli (2014), Adamson et al. (2010), and Can et al. (2016) found music therapy to contribute to developing expressive language skills necessary for developing social skills and focus. Parents and professionals alike described their search for a reliable intervention to increase the language development of their child/client. Music therapy is reported as evidence-based and research-based for the very purpose of assisting with expressive and receptive language, but is required to be delivered from a board certified music therapist. Due to the low number of music therapists coupled with a growing need, Bradt, Burns, and Creswell (2016) identified the need for research in music therapy. Presently, music therapists instruct a high number of clients. Their frustration was evident during the interviews when describing the reality of balancing their caseload, the growing need, and delivering a solid product that is not rushed. At the current rate of diagnoses of autism combined with the demand upon education and medical professionals, music therapy sessions will need to be provided in a different format than person to person (Center for Diseases and Prevention, 3/2014). As well, the advantage of early intervention signals the professionals to employ music therapy interventions at an earlier age (Gambino, 2014; Geretsegger et al., 2015; LaGasse, 2012). The earliest diagnosis of the ten families represented within this study was 16 months and the average age of diagnosis was at two years. This shows that utilizing music therapy as early as eighteen to twenty-four months would greatly reduce the likelihood of a language deficit. Music therapy would greatly benefit and support the

natural developmental milestones pertaining to language acquisition when presented simultaneously. The language ability of the child would develop in tandem. Also, the necessary language skills would be present much earlier in more of a proactive manner instead of a reactive manner at age four years or older.

The theme of early intervention is ever on the mind of the researcher when attending to students in the preschool class dedicated for 3-5 year- old children identified with autism and other disabilities. The researcher hears the concern from special education teachers and parents alike for the need for developing language ability that enables the students to use their language for self-regulation skills, and making and keeping friends. MT1 is assigned to students within the same public school district as the researcher and shared a desire for a proactive manner of music therapy to be delivered. In an effort to use resources effectively, several facets of the community could be educated. Knowing that language develops during the formative years an idea supported by the interviews provided by parents of this study would be to provide government or private preschool programs with music therapy either delivered as premade songs for predictable themes the age of the children require. Government preschool programs such as Head Start, that support families in lower economic levels are in a position of positively impacting children during the child's formative years. Organizations dedicated to providing services for children with special needs within the 0-3 year range also could supply effective therapy at a pivotal developmental stage of the child. It was made evident during the interviews with the music therapists that music therapy is not commonly provided within the public school setting. School districts manage budgets and dedicate a certain amount for children with special needs beginning at age 3. The school officials may direct funding toward special education programs when educated regarding the longitudinal benefits of music therapy. The continuation of information of autism

characteristics and interventions provided by autism related organizations to the community such as awareness events, runs, emphasize emotional support for families with children diagnosed with autism.

Recommendations for further research

It has been determined that music therapy plays a positive role upon language development of children diagnosed with autism (Ettlinger et al, 2011; Geist, 2012; Patel, 2008), but that continued research in the areas of effective therapy for language acquisition are warranted. Information is immediately necessary regarding how the brain functions synthesize with each other and in response to interventions and which interventions are most effective so as to alleviate the ever-increasing demand upon the medical and educational community. A high cost of resources is currently provided within the educational system and medical community for all ages of children diagnosed with autism. However, continued research would act as a proactive approach to instruct the child at a younger age in order to alleviate increased resources required as the child becomes older.

The researcher was satisfied with the number of participants, the themes derived from the interviews, and the occurrence of repetitive themes. Even though the number of participants satisfied the researcher, a larger study could quantify the repetitive themes. The study consisted of male children, which did not lend itself to affirming or determining new information for both genders. A larger study, or a more controlled study would lend itself to equitable distribution of gender specific information. The information in this study could be perceived as skewed to males diagnosed with autism. Even though the percentage of males to females is higher, this study was conducted with a random sample instead of a controlled amount of genders. Additionally, a quantitative study in determining the actual rate of words learned would be of benefit.

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Appendix A: Certificate of Completion

The National Institutes of Health (NIH) Office of Extramural Research

The National Institutes of Health (NIH) Office of Extramural Research certifies that **Annette Jones** successfully completed the NIH Web-based training course “Protecting Human Research Participants”.

Date of completion: 1/22/2015 Certification Number: 1654415

Appendix B: Informed Consent Form

A. PURPOSE AND BACKGROUND

Annette Jones, Ed. S., a doctoral student in Educational Leadership at Northwest Nazarene University is conducting a research study related to the positive affects of music therapy upon the language development of students diagnosed with Autism Spectrum Disorder. The purpose is to chart the progress of language development when participating in music therapy sessions through the school district. The special education staff partner with you as the parent to ensure effective instruction for language development. We appreciate your involvement in helping us investigate how music therapy assists students diagnosed with Autism Spectrum Disorder.

You are asked to participate in this study because you are the parent of a student who receives music therapy within the services portion of the Individualized Education Plan.

B. PROCEDURES

If you agree to participate in the study, the following will occur:

1. You will be asked to sign an Informed Consent Form, volunteering to participate in the study.
2. You will speak with Annette Jones, primary researcher, for one interview, via the telephone and complete one questionnaire, administered electronically.
3. You will be asked to answer a series of interview questions about the language development progress while receiving music therapy. The interview will be audio taped and it will last up to 20 minutes.

These procedures will be completed at a location mutually decided upon by the participant and the primary researcher and will take a total time of about 60 minutes.

C. RISKS/DISCOMFORTS

1. Some of the interview questions may make you uncomfortable or upset, but you are free to decline to answer any questions you do not wish to answer or to stop participation at any time.
2. Confidentiality: Participation in research may involve a loss of privacy; however, your records will be handled as confidentially as possible. No individual identities will be used in any reports or publications that may result from this study. All data from notes, audio-tapes or files will be encrypted and password protected known only the primary researcher. In compliance with the Federalwide Assurance Code, data from this study will be kept for three years, after which all data from the study will be destroyed (45 CFR 46.117).

D. BENEFITS

There will be no direct benefit to you from participating in this study. However, the information you provide may help educators to better understand the influence of music therapy upon language acquisition for children diagnosed with autism.

E. PAYMENTS

There are no payments for participating in this study.

F. QUESTIONS

If you have questions or concerns about participation in this study, you should first talk with the researcher. Annette Jones can be contacted via email at annettejones@nnu.edu via telephone at (619-952-0065). If for some reason you do not wish to do this, you may contact Dr. Heidi Curtis, Doctoral Committee Chair at Northwest Nazarene University, via email at hcurtis@nnu.edu via telephone at (208) 467-7612, or by writing: 623 University Drive, Nampa, Idaho, 83686.

G. CONSENT

You will be given a copy of this form to keep.

PARTICIPATION IN RESEARCH IS VOLUNTARY. You are free to decline to be in this study, or to withdraw from it at any point. Your decision as to whether or not you participate in this study will have no influence on your present or future status in your online school.

I give my consent to participate in this study:

Signature of Study Participant Date

I give my consent for the interviews to be audio taped in this study.

Signature of Study Participant Date

I give my consent for direct quotes to be used in this study. No identifying information will be used in the report from this study:

Signature of Study Participant Date

Signature of Person Obtaining Consent Date

**THE NORTHWEST NAZARENE UNIVERSITY HUMAN RESEARCH COMMITTEE
HAS REVIEWED THIS PROJECT FOR THE PROTECTION OF HUMAN
PARTICIPANTS IN RESEARCH.**

Appendix C: Verbatim Instructions Semi-Structured, Audio- Recorded Interviews

Hi _____! Thank you for your willingness to participate in this study.

One semi-structured, audio-recorded interview will be conducted with the participant if they choose this format. These procedures will be completed at a public location mutually decided upon by the participant and the investigators and will take a total time of about 30-40 minutes.

This process is completely voluntary and you can select to suspend your involvement at any time. You can select to answer questions that are of comfort to you and are not obligated to answer all of the questions.

Do you have any questions or can I clarify anything? Thank you for your participation.

Annette Jones

annettejones@nnu.edu

Appendix D: Telephone Call Script

Hello! My name is Annette Jones and I am a doctoral student at Northwest Nazarene University. Do you remember recently filling out a short questionnaire about your child's communication challenges? Along with your questionnaire, I wanted to speak with you personally about how your child's participation has affected their language development progress. Is this a good time to chat for a few minutes?

If yes, proceed

If no, is there a time that would be better that I can call again? Thank you for your time. I will call back at our appointed time.

1. What are your student's strengths?
2. What are your goals, dreams, and hopes for your student specifically with their language development?
3. Tell me about how your student's language has progressed from birth; age when babbling, age when saying one word, and when putting words together?
4. Would you say that your student feels satisfied with their communication efforts?
5. Tell me about how they behave in public places.
6. What do their teachers say about how your child communicates in public?
7. What is your child's progress on their IEP goals?
8. Are you able to use the lessons at home?
9. Do you feel as though you can use the music therapy strategies in the community?
10. Any last comments on your child's language ability or their use of music therapy?

Thank you for your willingness to participate in the study. Do you have questions for me?

Appendix E: Interview Questions

Family demographics:

- What is the age of your child?
- How many children live with you?
- At what age was your child diagnosed with Autism?
- Is his/her sibling(s) diagnosed with Autism?
- How long has your child attended music therapy sessions?
- Does your child receive other therapies (speech therapy or occupational therapy)

1. What are your goals, dreams, and hopes for your child specifically with their language development?
2. How would you describe your child's communication ability?
3. What does your child's teacher say about how your child's rate of communication?
4. With 3-5 sentences, please compare your child's communication ability before participating in music therapy and after participating in music therapy.
5. With 3-5 sentences, please describe your child's emotional well being after participating in music therapy.
6. Do you see progress on your child's IEP goals?
7. Do you feel as though your child is using their communication skills appropriately in the community?
8. What is your impression of their music therapy sessions?
9. Do you feel as though you can use the music therapy strategies in the community?
10. Are you able to use the lessons at home?

Appendix F: Participant Debrief

Thank you for your participation in this study.

After we have an opportunity to analyze the data, we will email you the results and ask for feedback. Mainly we want to ensure that we captured the essence of our discussion, accurately portraying our discussion and your thoughts. This student will conclude by March 31, 2017.

Questions

In the meantime, if you have any questions or concerns, Annette Jones can be contacted via email at ajones@nnu.edu, via telephone at (619) 052-0065, or by writing: Annette Jones, 10125 Hermosa Way, La Mesa, CA 91941

Thank you for your participation!

Annette Jones

Doctoral Student

Northwest Nazarene University

HRRC Protocol #11042016

Appendix G: Research Description

Dear Potential Participant,

This research project involves the relationship between language development and music therapy. Your response is purely voluntary. If you choose to participate, you will be asked to answer questions that require a short answer, use a numbering system and multiple-choice questions. The questionnaire questions will focus on a description of your child's language development, their language skills, how they are responding to music therapy and your desires for future language development for your child. Your responses will be kept confidential. Once your responses are analyzed, they will be securely disposed.

Your results will assist with furthering effective instructional programs for language development for students diagnosed with Autism Spectrum Disorder. At the conclusion of the study, the results will be made available to you, along with the contact details of the researcher for follow-up questions you may have.

I'm hoping for your participation!

Annette Jones, Ed.S
Northwest Nazarene University

Appendix H: Site Permission Letter

May 2, 2016

Northwest Nazarene University Attention; HRRC Committee Helstrom Business Center 1st
Floor 623 S. University Boulevard Nampa, ID 83646
RE: Research Proposal Site Access for Mrs. Annette M. Jones

Dear HRRC Members:

This letter is to inform the HRRC that [REDACTED] has reviewed the proposed dissertation research plan including subjects, assessment procedures, proposed data and collection procedures, data analysis, and purpose of the study. Mrs. Jones has permission to place a link to her research study on the website. The authorization dates for this research study are August 1, 2016-October 30, 2016.

Respectfully, [REDACTED],

[REDACTED]

Appendix I: Human Rights Review Committee Approval

Protocol #11042016 - The affect of music therapy upon language acquisition for children on the
autism spectrum aged 3-8 years

Annette Jones 3/29/2016

Appendix J: (email) Consent from [REDACTED]

Annette:

Please fill out this form and return it with your IRB approval. I will then submit to the committee and upon approval, we are happy to post to our website and publicize the study.

Best,

[REDACTED]

-- [REDACTED] Administrator

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]